ACADEMIC PROGRAM REVIEW
OF GRADUATE PROGRAMS

SELF-STUDY REPORT
2017
Welcome from the Department Head

On behalf of the students, faculty, and staff in the Department of Computer Science and Engineering at Texas A&M University (TAMU), we thank you for serving as external reviewers of our academic program. We are thrilled to have the opportunity to showcase our accomplishments, share our challenges, and leverage your feedback to enhance our programs.

The following self-study report provides an overview of the program, its history, our curriculum, and a comprehensive presentation of the department’s activities, achievements, and challenges. It also includes a summary of our current departmental and administrative organization. Additional sections provide details on our degree programs, along with research and service activities in the department.

We look forward to your evaluation and recommendations as they will be critical to the improvement of our department and will support our development towards the next stage of excellence in teaching, research, and service. We recognize that this review represents a considerable time commitment. Please do not hesitate in contacting us for any additional information or assistance you may require.

Sincerely,

Dilma Da Silva
Department Head, Professor, and Holder of the Ford Motor Company Design Professorship II
Executive Summary

This report describes the activities in our graduate programs in Computer Science and Computer Engineering. Since the last Academic Program Review in Spring 2012, there have been many changes to our department. The changes were aligned with the recommendations we received in 2012 while also propelled by the initiative in the College of Engineering to grow our overall student population to 25,000 students by 2025. This opportunity for growth coincided with the surge in interest for computer science degrees and courses, enabling us to embrace the increase in demand.

With the underlying theme for the last five years being growth, this report often presents information about our program by contrasting with the previous academic review. This self-study starts with a discussion on the most important points in the feedback from 2012 from the context of where the program is today (Section 2, Recent Developments). In 2012, there were no expectations of significant change in the size of the department, but by 2014 we were on a clear growth path. Our tenured and tenure-track faculty grew from 36 faculty member in Fall 2012 to 41 in Fall 2016. The graduate student population increased from 268 to 310 in the same period. The undergraduate population went from 826 in Fall 212 (of those, 208 were freshmen) to 970 in Fall 2016 (not including first-year students).

The hiring of new faculty for the department introduced more opportunities for joint efforts. The increased faculty hiring across the college also facilitates more multidisciplinary collaboration, since the areas emphasized in the college’s strategic planning naturally require or benefit from contributions from computing research. The move towards multidisciplinary projects is manifest in the research award portfolio and on the research projects pursued by our graduate students.

The support we offer to our graduate students has evolved. Students in the Master’s program have access to a broader range of topics in the coursework. We refined our Ph.D. review process to better guide students towards timely completion of program milestones, aiming at improving the time-to-graduation. To improve our Ph.D. graduation rate, we also pursue improvements to our recruiting practices.

Our reputation will continue to improve as we strengthen our ability to publicize the impactful work of our faculty and students. Since Fall 2012, ACM and IEEE have recognized our faculty through 13 awards. We have been active in writing news articles describing our research activities. In the last six months, at least six of our stories were picked up by widely read places such as Wired, MIT Technology Review, and ACM TechNews.
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Charge to the Peer Review Team

Please examine the department and its programs and make recommendations that will help in planning improvements. Your resources are a self-study report prepared by the department, copies of materials from the program’s last review, information you gain through personal interactions while visiting Texas A&M University, copies of strategic plans and goal-setting documents at the department, college, and/or university level, and any additional information requested by you or by the department. Within the broad charge of recommending ways the department can continue to improve are some specific questions that we would like you to address:

• Based on the data information provided in the self-study report or gathered by the review team, what are the department’s overall strengths and weaknesses?

• Describe the alignment of degree program’s strategic goals and priorities with college and institutional goals and priorities.

• How would you compare this department with its peers?

• What improvements (including student learning and faculty development) has the department made since the previous program review?

• With only current resources or a modest infusion of new ones, what specific recommendations could improve the department’s performance, marginally or significantly?

The CSE Department is pleased to have this opportunity to meet with faculty peers to evaluate our degree programs and help us to provide the best possible education for our students. We hope to gain valuable insight to make our programs more competitive and more productive to enhance our students’ experiences, improve our research skills, and move forward in our national and international visibility.
Outline of the Report

This self-study report starts with a brief history of the Department of Computer Science and Engineering in Section 1. Section 2 highlights the primary developments in the last few years that impact our evolution as a department, providing context for the rest of the document. Section 3 (2012 Graduate Program Review) highlights the main feedback from our previous Academic Program Review. We discuss how the department evolved around each of the challenges and opportunities since the last review.

In Section 4 (Overview of the Department), we provide information on our faculty members, promotion and tenure processes, teaching load, research areas, publication profile, and funding profile. We also present our administrative organization and budget information.

Section 5 describes the graduate degrees offered by our department: three in computer science and three in computer engineering. The section provides information on program requirements, our annual review process, and overall program statistics.

Section 6 introduces our vision and our goals to advance the department. Throughout the document, we refer to appendices that provide additional details on several aspects our department.
1. Brief History of the Department

The Department of Computer Science and Engineering (CSE) celebrates more than thirty-four years as a department in the Texas A&M University College of Engineering at Texas A&M. Its degree program goes back to the presentation of the first master’s degree in 1964 when computer science was an established division of the Department of Industrial and Systems Engineering. A few years later, the Ph.D. program in computer science was added and the first Ph.D. in computer science was awarded by the division in 1970. The Department of Computer Science, with master’s and Ph.D. degrees in computer science, became a reality in the fall of 1983. Table 1.1 shows the department’s leadership since its inception.

In 1998, the Department of Computer Science, jointly with the Department of Electrical Engineering, began to offer degrees in Computer Engineering. The first Ph.D. in computer engineering was awarded in 1999. The Computer Engineering program quickly became such a prominent part of the department that in 2008, the department’s name was officially changed to the Department of Computer Science and Engineering.

CSE has a foundation of quality in education and research instituted by its founders and has engaged in sustained growth, offering a full range of graduate programs in both computer science and computer engineering.

Table 1.1: Department Heads in Computer Science and Engineering

<table>
<thead>
<tr>
<th>Name</th>
<th>Significant Position</th>
<th>Dates/Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniel Drew</td>
<td>CS Division Head (in IE)</td>
<td>1964 – 1983 (19 years)</td>
</tr>
<tr>
<td>Bruce McCormick</td>
<td>CS Department Head</td>
<td>1983 – 1986 (3 years)</td>
</tr>
<tr>
<td>Glen Williams</td>
<td>CS Interim Department Head</td>
<td>1986 – 1988 (2 years)</td>
</tr>
<tr>
<td>Richard Volz</td>
<td>CS Department Head</td>
<td>1988 – 1997 (10 years)</td>
</tr>
<tr>
<td>Wei Zhao</td>
<td>CS Department Head</td>
<td>1997 – 2001 (4 years)</td>
</tr>
<tr>
<td>Jennifer Welch</td>
<td>CS Interim Department Head</td>
<td>2001 – 2002 (1 year)</td>
</tr>
<tr>
<td>Donald Friesen</td>
<td>CS Acting Department Head</td>
<td>2002 – 2003 (4 months)</td>
</tr>
<tr>
<td>Valerie Taylor</td>
<td>CSE Department Head</td>
<td>2003 – 2011 (8 years)</td>
</tr>
<tr>
<td>Duncan “Hank” Walker</td>
<td>CSE Department Head</td>
<td>2011 – 2013 (2 years)</td>
</tr>
<tr>
<td>Nancy Amato</td>
<td>CSE Interim Department. Head</td>
<td>2013 – 2014 (1 year)</td>
</tr>
<tr>
<td>Dilma Da Silva</td>
<td>CSE Department Head</td>
<td>2014 – Present</td>
</tr>
</tbody>
</table>
2. Recent Developments

The CSE Department has experienced a period of growth over the past several years under expansion programs in the university and college. The main drive of these programs is to consolidate resources throughout the university and promote interdisciplinary research across different disciplines, colleges, and departments. Current president Michael Young and the College of Engineering have allocated a number of new faculty positions to those programs that have been viewed as a high priority for the future success of Texas A&M University. In 2013, the College of Engineering undertook the 25 by 25 initiative, allowing the CSE department to delineate a growth plan that aims at 61 tenured/tenure-track. Faculty allocations made to the Department of Computer Science and Engineering have been used to attract both young research-focused faculty members and well-established senior faculty. Our growth also includes the strengthening of our teaching-focused faculty. We aim to reach 21 teaching-focused faculty members by 2025, focusing on hiring Professors of the Practice and Instructional Professors.

**The 25 by 25 Initiative**

The department has experienced a period of growth over the past several years under the 25 by 25 initiative. This initiative is a transformational controlled growth initiative to increase access for qualified students to pursue engineering education at Texas A&M University to an enrollment of 25,000 students (graduate and undergraduate) by the year 2025.

This initiative began in 2013 to address the critical and growing demand in Texas and the United States for more engineers, based on the Texas Workforce Commission’s projection of a 19% growth in engineering jobs in the next 12 years and a 2012 call by President Obama’s Council of Advisors on STEM for the nation to increase the number of STEM graduates to one million by 2025. Texas A&M University is stepping forward to address this critical state and national need through an innovative, sustainable, and systemic change of its educational enterprise. The guiding principles behind this initiative are the following:

- Transform the educational experience to better prepare our students to engage in and meet the future needs of the engineering marketplace;
- Increase accessibility to engineering education at all levels;
- Deliver engineering education in a cost-effective manner.

University administration developed a carefully considered and responsible growth plan for this initiative which includes an anticipated annual growth of 6.5% of undergraduate students, 15% of master’s students (both online and on-campus programs), and 5% of doctoral students. The plan is evaluated annually and adjusted to meet market demands. Providing a high-quality education and producing well-prepared engineers who are ready to address the challenges of today and tomorrow remain the primary commitments of the program. Growth plans will be
postponed at any time if it is found that the maximum capacity is exceeded or the quality of education could be affected.

Plans to achieve and manage these goals include providing a modern classroom experience to accommodate today’s technology savvy students; developing multidisciplinary learning centers and creating flipped classrooms; providing high impact learning experiences outside the classroom; and the addition of “professors of practice”, who are industry leaders and can bring their real-world experience into the classroom to help prepare the next generation of engineers.

As of fall 2016, the current enrollment for the department is about 970 undergraduate students, 147 Ph.D. and 163 Master’s students pursuing degrees in computer science and computer engineering. It is worth noting that in 2014, the College discontinued direct admission to the departments for all first-year students and since then admits only to general engineering. Therefore, the 970 undergraduate students currently enrolled in the department does not include freshmen.

The opportunities introduced by the significant growth enabled by the 25 by 25 initiative include strategic hiring (discussed in Section 4.1). We address some of the challenges related to larger enrollments in Section 6.2.
3. 2012 Graduate Programs Review

The Department of Computer Science and Engineering’s graduate programs underwent a program review in 2012. Members of 2012 Academic Program Review team were Dr. Eugene Spafford (Purdue), Dr. Mary Jane Irwin (Penn State), and Dr. Gregory Abowd (Georgia Tech). The comments and observations in their final report were very constructive and valuable. The entire report is available upon request. Below you will find the most relevant findings and recommendations from the external review team and how the department has taken to address their findings.

Balkanization

Recommendations: The department is spread over many buildings and has some faculty in buildings separate from their laboratories and graduate students. While the quantity of space is sufficient, and the shortages identified in 2004 rectified, space, rather widely dispersed, makes collaborations difficult. While a new building is on the Dean’s list, until a new building arrives, there is a need to provide opportunities for more professional and social interactions among faculty and students. The new building needs to be planned so that encounters and spontaneous collaboration are encouraged rather than discouraged.

Since the 2012 visit, the department created a graduate student learning and collaboration center and several other collaborative spaces in and around the H.R. Bright Building where most faculty and graduate student offices are located. Additionally, we have made efforts to tie the different departmental spaces together.

- We converted the mailroom that was adjacent to the shared department kitchen and the existing faculty lounge into a graduate student learning and collaboration center. Additionally, the faculty agreed to share the existing faculty lounge with the students; it was added to our seminar room reservation system but faculty will have priority. The dean’s office agreed to support this project in October 2013, the remodeling was completed in February 2014, and the furniture was delivered in March 2014.

- Collaboration spaces on the elevator landings on the 3rd, 4th and 5th floors of the H.R. Bright Building have been created. We installed whiteboards and displays that students could connect to with their laptops, and furnished the spaces with comfortable furniture and small tables. These spaces were also completed early in the spring 2014 semester.

- We created a patio area with tables and umbrellas outside the rear entrance to the H.R. Bright Building. This provides a place for students and faculty to meet informally, have lunch, etc. This space also provides a venue for departmental receptions and other events.
• In order to better tie the different departmental spaces together, we have placed electronic displays in all department buildings, including teaching labs and advising areas that show announcements of all departmental events, including our Industrial Affiliate Program member events, advertise student organizations and their events and meetings, and publicize any other student and/or faculty events.

As space continues to be sparse throughout the college and university, attention to fostering collaboration is crucial when making space assignments.

**Narrow funding base**

*Recommendations: More efforts are needed between faculty within the department and across the college and university to compete for large grants, e.g. NSF/ERC, CISE/Expeditions, CISE/Medium and Large, NSF/IGERT, etc., and to expand the research funding base outside NSF to include DOE, DARPA, HS-ARPA, I-ARPA, ARPA-E, AFOSR, ONR, ARO, NIST and others.*

The college has put in place a number of activities to support multidisciplinary collaborations and research projects in strategic areas and ensure faculty from our department are engaged appropriately. Our faculty members have been successful in leveraging available seed grants to ignite collaboration across departments and colleges. The college assists faculty in identifying program manager type positions at federal funding agencies or visiting scientist positions at national laboratories.

Over the past several years, the number of collaborative proposals submitted by CSE faculty has increased. This increased activity has resulted in a larger number of collaborative projects and also increased leadership of them by CSCE faculty.

**Lack of visibility and promotion**

*Recommendation: Suggestions include (1) Constitute an Awards Committee for the Department and commit staff support to it; (2) Develop a strategic communications and marketing plan that effectively promotes the accomplishments and research successes of the Department; (3) evaluate Annual Report distribution—expand distribution list; (4) revamp Department website; (5) Expand the Department’s Distinguished Speaker Series; (6) take every opportunity to promote the Department (conferences, invite speakers attending nearby conferences, etc.).*

Since the review, the department has created separate awards committees for faculty, graduate students, undergraduates, and staff. The number of nominations submitted for all types of awards has considerably increased, and the number of awards obtained has steadily increased. We are also publicizing these successes more broadly with departmental-wide news stories, a monthly newsletter, and on the department website. Appendix K lists the news articles published since August 2012.
In 2015, the college consolidated communication services and allocated a communications coordinator to the department. The department works closely with the communications coordinator to identify and write newsworthy items, resulting in an increased number of articles about the department. In the last six months, four of our stories have been picked up by external entities such as ACM News. We are also producing other forms of material such as a yearly magazine and videos about research projects.

We launched a redesign of the website content in spring 2014. The college is currently working with a company on revamping the current design, and we expect to launch our new website next year.

The administrative staff now makes yearly updates to the email addresses for department heads/chairs and graduate advisors of all Ph.D. granting computer science and computer engineering departments, members of the CRA board of directors, and other identified VIPs. This mailing list allows for quick and accurate ability to share with our peers.

The department has been strategic in using its seminar series to invite department heads and other noteworthy researchers to visit. Appendix H contains the complete list of visitors for the academic years between 2012 and 2016.

The department has revitalized its external Advisory Council and expanded its role. To further assist the department, subcommittees are being utilized to focus on two particular areas of importance: fundraising and nurturing the connection with recent alumni. The council also puts a lot of attention on analyzing the possible impact of the 25 by 25 growth initiative on the curriculum and over student experience.

**Unclear operational procedures**

*Recommendation: develop a formal department policy manual and department calendar. Post them prominently on the intranet website. Ensure the Advisory Committee has a more active role. Consider adding graduate and undergraduate student representatives on the committee.*

The departmental intranet has an archive listing department policies and guidelines, faculty meeting agendas, materials and minutes (beginning with the 2013-2014 academic year), committee membership (starting from summer 2013), supporting material and reports from the annual department retreats, and other departmental materials. Bylaws are available for a few of the department’s most important committees. Committee activity reports are also available. We are currently moving from an in-house intranet repository (OSIS) to a new intranet platform being introduced by the college.

A department calendar was established that includes all departmental events such as seminars, faculty meetings, candidate visits, faculty-wide deadlines, etc. The faculty and staff have an option to subscribe so that events are automatically placed on their calendar. If they choose not to subscribe, they are still able to access and view the calendar.
The elected Advisory Committee (AdCom) has an active role in developing and providing feedback on proposals and new processes in advance of introducing them to the full faculty for discussion and voting. The composition of the committee has been modified to include non-tenure track and give more representation to junior faculty. In Fall 2017, we are adding administrative staff support to AdCom to achieve timely implementation of proposals and better documentation of rationales to be included in operating procedures.

**No current strategic plan**

**Recommendation:** formulate a department strategic plan at the next faculty retreat, preferably with a facilitator. The strategic plan should include input from faculty, staff, and students. Long and medium-term goals should be clearly articulated and addressed in the plan. Clear metrics for each goal should be associated to support evaluation over time.

In May 2012, the focus of the annual retreat was on strategic planning with the participation of a facilitator from the Mays College of Business. However, this was before the college announced its 25 by 25 plan. The initiative calls for a large expansion in the department – essentially doubling both the student and the faculty populations, with the faculty growth expected to be about 50% tenure-track and 50% teaching-focused faculty (professors of practice, instructional professors, and lecturers). With the launch of 25 by 25, the department put together a growth committee whose objective has been to plan for and monitor the growth impact.

In October 2016, the Advisory Committee identified a set of strengths, weaknesses, opportunities, and threats. The overall faculty discussed the identified topics. The process for defining the May 2017 retreat agenda helped to clarify our priorities. Now that the college is completing its 2017-2022 strategic plan document, we will focus on translating the discussion outcome from the retreat into a document that defines our plan.

**Inconsistent support from IT staff**

**Recommendations:** the department should re-examine the computing infrastructure and rethink the mission of the IT staff. The IT staff needs to be a more integral part of the overall research mission of the department, and not simply a helpdesk function. Empower the IT staff to think strategically. Grow the IT staff as necessary to support the role defined for it. Ensure that resources are provided for ongoing training and professional growth of the staff.

The college centralized the IT services in Fall 2014. Since then, the larger IT organization has put a lot of effort on restructuring their workflow and practices to improve the overall support while better utilizing individual resources. The staff previously allocated to our department had differentiated skills (e.g., experience with tool development and with a sophisticated hardware environment) that led them to leadership roles in the new organization. The day-to-day service has been working well, and now the IT team is taking initiatives to address the research mission of the college.
Grow reputation without growing faculty

Recommendations: Explore joint appointments with active collaborators: TAMU faculty that can build strong multidisciplinary ties to extend the funding base; and, adjunct appointments from industry, government and other university faculties who can contribute specific expertise. Publicize appointments on the website, newsletters, and Annual Report.

The 25 by 25 initiative and the associated substantial growth of the faculty changed the outlook considerably from when the review team visited in 2012. Since the 2013-2014 academic year, the department has hired eleven tenured/tenure-track faculty. We have hired two at the rank of full professor with tenure on arrival (T. Davis and D. Da Silva); three at the rank of associate professor level with tenure on arrival (D. Jiménez, B. Gooch, and R. Jafari); and four at the rank of assistant professor level (J. Huang, R. Huang, X. Hu, and S. Sueda).

In Fall 2017, one full (J. Garay) and three assistant professors are joining (T. Chaspari, J. Mortazavi, Z. Wang) and so far we have one assistant professor joining in Fall 2018 (C. Tsai). Five of these hires (Davis, Gooch, Hu, Jafari, and Mortazavi) were hired as part of university-level multidisciplinary research initiatives. In addition to the tenured/tenure-track faculty hiring, the department has undergone growth in numbers with the hiring of six academic track faculty. Focused on teaching and bringing industry experience into the classroom, the department has hired two instructional assistant professors (M. Moore and P. Ritchey), one associate professor of practice (M. Quinn), and two professors of practice (D. Ragsdale and A. Tyagi). In Fall 2017, two instructional assistant professors are also starting (T. Ahmed and S. Lupoli).

Besides this new growth through the addition of traditional faculty members, we also benefit by expanding joint appointments and adjunct faculty. The faculty approved new guidelines for courtesy (0%) appointments in August 2013 and revised them in August 2016. We now have eight faculty courtesy joint appointments. These faculty members are from the departments of Visualization, Geography, Health Sciences, Mathematics and Electrical Engineering. We also have five adjunct faculty from universities and industry.

The Texas Institute for Advance Studies (TIAS) provides a mechanism to bring in high profile visitors for 6-12 month visits to collaborate with Texas A&M faculty. The department hosted its first TIAS fellow, Jack Dongarrra in September 2014. The department is also participating in the recruitment of additional TIAS fellows.

Graduate student compensation

Recommendations: Graduate student stipends should be enhanced to be more competitive nationally. Consideration should be given to establishing departmental uniform stipends, with well-defined steps matching milestone progress (e.g. passing qualifier exams, passing prelims). Small discretionary funds should be made available for graduate student travel, books, software licenses, tutorial registration (e.g., $500 per student after entering candidacies). Better and timelier communication is needed about
who is responsible for payment of various fees, especially when there is a change in interpretation or enforcement of regulations. Given the pressure on the university to raise fees rather than tuition, coupled with the government funding rules about non-payment of student fees, continued attention should be focused on methods of providing fee waivers to avoid the undue financial burden on graduate students.

The department has had standardized recommended stipend values for Ph.D. and Masters students for at least ten years, and both tuition and fees have been covered for Ph.D. students for some years as well. A change in regulations in the college of engineering did cause some difficulty in compensating students for certain fees, but we have since instituted practices that reduce the burden on students. Since Fall 2014, the stipend for Ph.D. students is $2000/month.

The department and the college both have programs in place to support travel for graduate students. We improved our efforts to publicize these opportunities to students.

**Graduate student educational experience**

**Recommendation: Consider having anonymous, mid-semester student evaluations of classes. Peer evaluation of classes may be helpful, but it is important that it be done by individuals who are excellent teachers. There are likely some resources on campus for improving teaching. These should be identified and well-publicized to both faculty and TAs. Options should be considered to mitigate the load posed by the larger classes (e.g., multiple sections, additional TAs). One reason for large class sizes is the relatively large MS program. The department should continue to monitor the size of the MS program relative to the Ph.D. program. MS students do bring benefits of additional tuition dollars, more graduate students to participate in the research activities (although at a modest level), and possibly better interaction with industry. How these factors are balanced should be carefully considered by the faculty as part of the strategic planning process.**

The department encourages faculty to have students use the PICA course evaluation system for mid-semester evaluations; these are anonymous and are only reported to the instructor. Many professors use this tool with their undergraduate courses, but adoption with graduate courses has been small. For end-of-term evaluations, in the 2015-2016 academic year, 24% of the students taking graduate courses filled up the PICA course evaluation. Most of the faculty included in their annual review report a reflection on the feedback received. The Annual Review Committee\(^1\) goes through all the student evaluation reports and determines the feedback and recommendations that the department head will communicate to the faculty in their annual review meeting.

A subcommittee of the Advisory Committee (AdCom), including teaching award winners, did a pilot of a peer teaching evaluation program in 2014. In 2015, the faculty discussed the adoption

\(^1\) Until 2016, the Annual Review Committee was composed by the Department Head, the Associate Department Head, the Chair of the Promotion & Tenure Committee. In 2017, the Annual Review Committee composition to review non-tenure track faculty was augmented to include one of the two non-tenure track members of the Promotion & Tenure Committee.
of such program for all faculty, indicating support for an approach focused on providing feedback to all instructors. There was no progress on this initiative in 2016. In 2017, we are implementing a new pilot. This time, instead of assessing a few faculty volunteers in different courses, a committee will be looking at all sessions of two required courses with the goal of refining the proposed process.

All new teaching assistants are required to attend the Teaching Assistant Training sessions offered by the Center for Teaching Excellence. Information from student evaluations regarding teaching assistants is used to identify issues, areas for improvement, and best practices. The 25 by 25 initiative entails growth of both our masters and Ph.D. programs. However, it also mandates all class sizes to be limited to 100. Although having this limit is helpful, adequate TA support is still critical to the graduate experience from the perspectives of both receiving and providing teaching assistant service.

Table 3.1A provides information on the teaching assistant allocation in 2015-2016 and 2016-2017. TA stands for Teaching Assistant. Graders are graduate students that are paid per hour of work (up to 20 hours a week) and do not maintain office hours or participate in lectures. For graduate courses offered stacked with undergraduate courses, the numbers include the undergraduate students.

Table 3.1A: Support assigned to graduate courses

<table>
<thead>
<tr>
<th>Number of Sections</th>
<th>Enrollment</th>
<th>TAs</th>
<th>Graders</th>
</tr>
</thead>
<tbody>
<tr>
<td>#students &lt;=35</td>
<td>341</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>36 &lt;= #students &lt;=60</td>
<td>542</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>#students &gt; 60</td>
<td>583</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1466</td>
<td>12</td>
<td>14</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Sections</th>
<th>Enrollment</th>
<th>TAs</th>
<th>Graders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sections &lt;=35</td>
<td>483</td>
<td>1.5</td>
<td>9</td>
</tr>
<tr>
<td>Sections &gt;35 and &lt;=60</td>
<td>534</td>
<td>7.5</td>
<td>4</td>
</tr>
<tr>
<td>Sections &gt;60</td>
<td>446</td>
<td>5.5</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1463</td>
<td>14.5</td>
<td>19</td>
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</table>
Graduate student training

Recommendations: Create a more comprehensive departmental graduate orientation and career mentoring program for the Ph.D. students. This should include a more formal process of graduate student training – TA training, professional writing and reviewing, orientation into graduate student life, ethics training, presentation skill, and interviewing skills. Seek feedback from alumni about what is valuable and how the program met their needs. Seek out information on how peer institutions provide this kind of career mentorship to graduate students.

The course-related experience (discussed above) is, of course, just a part of the graduate educational experience. We deploy several approaches to identify opportunities for improvement in the advising and overall training experience offered to the students. Since 2014, the graduate student association (CSEGSA) offers a weekend “boot camp” for the incoming graduate students. The student-led training complements the orientation sessions provided by our graduate advisor and offers plenty of opportunities for socializing.

In Spring 2015, we started to conduct graduate student exit interviews. The department head has individual meetings with the Ph.D. graduates and group meetings with M.S. graduates. These sessions proved to be an effective way of learning about the graduate experience in different groups and contributes to the feedback the department head provides to faculty members yearly.

In Fall 2015, we introduced student town hall meetings for graduate students only. These meetings have been very well attended and useful in identifying particular challenges and opportunities for improvement. In Spring 2016, we worked with the leaders of the graduate student association (CSEGSA) to assess the graduate climate. The findings were discussed in the May 2016 departmental retreat, and it has been informing the work of our Graduate Advisory Committee.

In Fall 2015, we offered a mentoring workshop open to all first and second years Ph.D. students. The workshop met weekly for lunch, with each meeting addressing a different topic. Several faculty members were involved in leading sessions. The students reported a positive experience, but the engagement level for many students seemed to decrease as the time demand from their courses increased.

In Spring 2016, the student association introduced a “weekend kick-off” party that occurs every other Friday. The event is very well attended by the students, and many students report that the event helps the more senior students to expand their network. Students were able to attract faculty participation also.

At the college level, a National Labs day is being organized annually. The goal is to attract National Labs to visit TAMU Engineering, evaluate student research posters and also discuss internship and employment opportunities.
Starting Spring 2017, TAMU Career Center has hired two full-time staff dedicated to engineering students career advancement, guidance, internships etc. One of the staff members is specifically focused on MEng and MS students in engineering.

**Ph.D. milestone definitions and review procedures**

*Recommendations:* Continue to monitor the structure of the qualifying exam to make sure it is achieving the intended goals. Be open to modifying the qualifying exam as necessary to ensure that it achieves these goals. In doing this, consider how the qualifying process may or may not meet the TAMU requirements on the preliminary exam. The review committee understands the faculty motivation for introducing an earlier formal evaluation of broad and focused knowledge, but we also recognize external perceptions of a process that is too subjective in nature to ensure uniformity of evaluation. There is also a sense of faculty resistance to having those other than the advisor judge research worthiness of a student, and this issue must be addressed directly by the faculty as a whole. The Ph.D. student review process needs more clarity as to what input the students need to provide (consider creating a standard form), as to what output the student receives (do they understand what NI means), and as to when the Review occurs (the website currently lists a 2009 date).

The department’s Graduate Advisory Committee (which oversees the graduate curriculum) evaluated the existing qualifying exam and developed several alternatives. These were discussed and voted on by the faculty, and a new qualifying exam was adopted and offered for the first time in Fall 2014. This qualifying exam is a written exam that is the ETS field test in Computer Science and administered by the Texas A&M testing services. Offered three times a year, students are allowed to attempt this exam at most three times and have one calendar year to pass it after starting their Ph.D. studies. This new structure of the exam removes the perception/concern of different standards in different areas of the department.

The Ph.D. review process allows for setting up expectations and timelines while providing feedback from the students. We encourage the students to perceive a “needs improvement” positively, as it enables an explicit discussion of the next steps to be pursued and adjustments that can benefit the student growth. We make sure that students get positive feedback on accomplishments.

Some students indicate that a simple change to the Ph.D. review process was very useful to them. Our process mandates that students receiving a “needs improvement” rate derive an improvement plan and meet with the advisor and department head to discuss the plan. We now offer the students the opportunity to meet the department head before the improvement plan meeting to strategize how to approach the general meeting. Approximately 30% of the students in the improvement plan choose to take this opportunity.

**Too restrictive governance model**

*Recommendations:* Seek ways to incorporate all faculty, staff, and students in the important activities of the department. Form some new committees to offload the
burden of important tasks and to increase buy-in for departmental policies and procedures. Have Associate Professors participate in tenure cases. Have students participate in faculty recruiting to the extent the university allows. Engage staff in the timely development of awards nominations (and ensure that staff is considered for awards as well). Treat the graduate students as future junior colleagues, e.g., add graduate students to the Graduate Recruiting, Distinguished Speaker, and Awards Committee.

We updated the structure of faculty meetings in an attempt to increase faculty participation and engagement. It worked with 70-80% of the faculty regularly attending faculty meetings. Faculty meetings occur during a lunch time slot in which no teaching is scheduled, with lunch available. Agenda items are solicited from the faculty about a week before the meeting, the agenda and meeting materials are distributed 1-2 days before the meetings, and minutes are distributed before the next meeting. Moreover, all of these documents are posted and archived on the departmental intranet.

Regarding departmental committees, the faculty provide their preference for committee service and committees for the year are setup before the academic year begins. Support for the committee is improved, with a staff member assigned to assist each committee. The department awards committees were restructured and expanded. The number of nominations submitted has substantially increased and the number of awards received by departmental faculty, students and staff have also increased. A major push has been made to make all faculty memberships in professional societies current and to submit nominations for advanced member grades. To support this activity, we worked with the college to get permission for faculty to purchase lifetime memberships in professional societies with their discretionary funds.

In 2013, the college of engineering put in place new guidelines that require all departments to involve associate professors in the promotion and tenure process. In Fall 2013, the CSE department adopted new guidelines that incorporate two associate professors into the promotion and tenure committee; they participate in cases for assistant professors and non-tenure track promotions. In 2015, we added non-tenure track faculty representatives to the committee.

There have always been student members of our Undergraduate and Graduate Curriculum Committees, and we have always had students meet with faculty candidates. Student organization leaders (as a group) meet monthly with the department head, and we hold town hall meetings every semester.
4. Overview of the Department

This section provides information about our faculty, research programs, administrative organization, and our financial situation.

4.1 Faculty Profile

Appendix A lists our current faculty members.

As of Fall 2016, the Department of Computer Science and Engineering faculty consisted of 23 full professors, 14 associate professors, 4 assistant professors and 14 academic professional track faculty (8 of them full-time). These numbers include Professors Da Silva, Amato, and Taylor who all hold administrative positions (department head, senior director of the honors program, and senior associate dean, respectively). The CSE faculty are well recognized for contributions to their fields with six faculty holding the grade of fellow in prestigious professional societies and six faculty holding the designation of ACM Distinguished Scientists and Distinguished Engineers. Twenty-one faculty members have been recipients of the National Science Foundation (NSF) CAREER Award, two have received the Air Force Office of Scientific Research (AFOSR) Young Investigator Award, and one has received the Defense Advanced Research Projects Agency (DARPA) Young Faculty Award. In addition, one faculty has received the National Young Investigator (NYI) Award, one the NSF Research Initiation Award, and another faculty has been the recipient of the Presidential Young Investigator (PYI) Award. All professors have held numerous editorships of peer-reviewed journals and have won several national and international level awards Appendix O lists the awards and recognitions received by our faculty.

Six faculty members hold endowed professorships (Amato, Da Silva, Murphy, Rauchwerger, Taylor, and Welch).

Table 4.1A shows our faculty profile regarding racial, gender, and ethnicity statistics.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Ethnicity</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Professors</td>
<td>Asian/Pacific Islander</td>
<td>23</td>
</tr>
<tr>
<td>Associate Professors</td>
<td>Caucasian</td>
<td>28</td>
</tr>
<tr>
<td>Assistant Professors</td>
<td>Hispanic/Latino(a)</td>
<td>2</td>
</tr>
<tr>
<td>Academic Professional Track²</td>
<td>African American</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>13</td>
</tr>
</tbody>
</table>

² Non-tenure-track, including visiting and part-time faculty.

Table 4.1B shows the hiring and departure of tenure-track faculty over the last several years. Note that over the ten years reported in Table 4.2, the department lost only eight faculty
members (six resigned, three retired, and one is deceased). With an average of less than one loss per year, this is a remarkably small number.

Table 4.1B: Tenured/Tenure-track Faculty Hiring and Turnover

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Hired</th>
<th>Resigned</th>
<th>Retired</th>
<th>Deceased</th>
<th>Total difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-2008</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2008-2009</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2009-2010</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>-1</td>
</tr>
<tr>
<td>2010-2011</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>2011-2012</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012-2013</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>-1</td>
</tr>
<tr>
<td>2013-2014</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2014-2015</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2015-2016</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2016-2017</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>18</strong></td>
<td><strong>6</strong></td>
<td><strong>3</strong></td>
<td><strong>1</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

4.2 Promotion and Tenure

The promotion and tenure (P&T) committee consists of eleven faculty members from the CSE department: seven hold the rank of professor and are elected; two hold the rank of associate professor and are selected based on an algorithm developed and approved by the CSE faculty at large; and two hold the rank of academic professional track, with one being elected by eligible APT faculty, and the other being appointed by the CSE Department Head. The chair of the P&T committee is selected by the Department Head. Each elected member at the professor rank serves a three-year term, the associate professors and APT faculty serve a one-year term, as does the P&T chair.

The “College of Engineering Guidelines and Procedures for Annual Review, Intermediate Review and Promotion and Tenure of Faculty” document and the departmental “Promotion and Tenure Guideline” document are available at the Dean of Faculties website (http://dof.tamu.edu/Faculty-Resources/GUIDELINES/College-of-Engineering-Guidelines). Section 5 of the College’s document provides a detailed description of the promotion and tenure process, while the departmental document provides additional guidance on the timeline. In summary, upon reviewing and discussing each case, the P&T committee members
vote (via secret ballot) in each case. The rank of a committee member dictates the types of reviews the member participates in. For example, an associate professor will vote on the tenure aspect of a tenure-on-arrival case, but not in the rank determination if a professor rank is being considered. APT\(^3\) committee members will only review and vote on APT promotion cases. The P&T committee provides written feedback to the Department Head regarding each case under consideration. This feedback reflects both the majority and the minority opinions of the P&T committee. Based on the input from the P&T committee as well as her/his own review of the package, the Department Head will provide a written recommendation for the case. The Department Head recommendation and the Departmental P&T vote are forwarded to the College P&T committee.

The College P&T committee, which consists of one representative from each department, will review, discuss, and vote on each case. Similar to the process at the department level, the result of the college P&T committee vote is forwarded to the Dean of the College of Engineering. After the dean reviews and makes a recommendation, the package then goes to the provost and dean of faculties. The provost forwards recommendations to the president. Decisions on promotion by the president are final. The president then forwards recommendations for tenure to the Board of Regents through the chancellor. The Board of Regents makes final decisions on all tenure cases. Candidates are promptly informed by the Department Head of the outcome of each stage in the process, having the opportunity to withdraw the package at any point if desired.

All faculty goes through yearly evaluations by the Annual Review Committee. For the tenured/tenure-track faculty, the Annual Review Committee is composed of the Department Head, the Associate Head, and the chair of the Promotion & Tenure committee. For the APT faculty, the Annual Review Committee also includes one of the APT representatives in the P&T committee. Besides this yearly evaluation, the tenured/tenure-track faculty members in the CSE Department go through several formal review processes throughout their careers. For junior faculty who have not previously held a tenure-track appointment, the first formal review is held after their third year. At this point, the faculty member will submit a package similar to that prepared when applying for tenure and go through a similar review process. The intermediate review package is evaluated by the departmental P&T Committee.

This committee will then provide written feedback to the candidate regarding how he or she is progressing. The Department Head will also provide feedback and make a recommendation to the Dean regarding the continued employment of the faculty member. While termination at this point is rare, there have been cases where the faculty member was not progressing adequately and after receiving such feedback chose to resign.

Tenure-track faculty members have their tenure package submission timelines specified in the hiring offer letter. The usual tenure clock has the package submission during the fifth year and the package evaluation during the sixth year, with a decision made towards the end of the sixth

\(^3\) Academic Professional Track rank includes all non-tenure-track titles.
year. For assistant professors, the review includes both tenure and the promotion for associate professor. In cases where a faculty member has been hired with demonstrated experience (e.g., after holding a tenure track position at another university or a senior position in the industry), the timetable for promotion and/or tenure is typically adjusted to account for the previous service. At the timeline specified in the offer letter, a tenure-track faculty member is required to submit a package for tenure. The faculty member may choose to submit a package before the specified timeline.

The process for promotion to professor proceeds similarly as described above for promotion and tenure to associate professor. As mentioned before, in this case, the promotion package is reviewed and voted on only by the P&T members that hold the rank of professor. There is no mandatory timetable. A candidate can prepare a package any time they feel they are qualified.

Table 4.2A shows the recent history of the promotion and tenure process for the CSE Department. Over the last ten years, 17 faculty members were given tenure. During the same 10-year span, 16 faculty members were promoted from the rank of associate professor to the rank of professor. There have been two cases in the last ten years where a faculty member initiated the tenure or promotion process and did not successfully complete it; one in 2008 and another one in 2012. In both cases, the candidates worked directly with their mentors, the department’s P&T committee, and the department head before deciding to withdraw the mandatory package and resign their positions.

Table 4.2A: Results of CSE Department Promotion and Tenure Process

<table>
<thead>
<tr>
<th>Effective Date</th>
<th>Promoted to Associate Professor with Tenure</th>
<th>Tenure Only</th>
<th>Promoted to Professor</th>
<th>Withdrew from Process or Denied</th>
</tr>
</thead>
<tbody>
<tr>
<td>09-01-2007</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>09-01-2008</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>09-01-2009</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>09-01-2010</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>09-01-2011</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>09-01-2012</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>09-01-2013</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>09-01-2014</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>09-01-2015</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>09-01-2016</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>17</strong></td>
<td><strong>0</strong></td>
<td><strong>16</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>
4.3 Non-Tenure Track Faculty

Since 2012, the department has grown considerably in the number of teaching-focused faculty. Besides the traditional Lecturer role, the Academic Professional Track (APT) includes Professors of Practice and Instructional Professors. The Texas A&M University Guidelines for Faculty Titles is available at http://dof.tamu.edu/dof/media/PITO-DOF/Documents/Guidelines/faculty_titles/guidelines_faculty_titles.pdf.

Senior Lecturer and Lecturer are non-tenure track appointments for faculty members who teach but who are not required to consistently make significant contributions in either scholarly research and creative work, or the area of service.

Professor of the Practice, Associate Professor of the Practice, and Assistant Professor of the Practice are non-tenure track appointments. These appointments are usually for faculty members who have had or maintain a primary employment in a profession outside of academia.

Instructional Assistant Professor, Instructional Associate Professor, and Instructional Professor are also non-tenure track appointments. Faculty with these titles are expected to make significant contributions to advancing our educational mission.

The Department went from four APT faculty members (three full-time, one part-time; all Senior Lecturers) in Spring 2013 to fourteen in Spring 2017. Eight of these faculty members are full-time employees: four Professors of the Practice, two Instructional Assistant Professors, and two Senior Lecturers. As part-time faculty in Spring 2017, we had two Senior Lecturers, one Lecturer, and two Visiting Assistant Professors.

Promotion cases for APT faculty go through the departmental P&T committee. The Department Head adds her/his assessment and submits the package to the college’s P&T APT Committee.

4.4 Teaching Load

The default teaching load for tenured or tenure-track faculty is three courses per 9-month academic year (excluding the summer semester). The load can be increased (by at most one course) or decreased (by at most one course) depending on the number of graduate students supported and the number of graduate students advised by the faculty. The teaching load formula (Appendix I) was approved by the faculty in August 2014. The formula utilizes averages over three years for financial support and advising, using different weights for the numbers of PH.D., M.S., B.S., and Postdocs supported or advised.

Tenured or tenure-track faculty may buy out of teaching using research funds. The teaching load guidelines also define the buy-out cost formula based on the average number of students supported over the past three years. A faculty who received a teaching load reduction may buy a second course at the cost of 1.5 months of the faculty member’s salary. For the faculty who
did not receive a release, the cost formula results in a value between 0.5 and 2.5 months of the faculty member’s salary.

Faculty members with unusually heavy administrative loads (associate department head, graduate and undergraduate advisors, etc.) receive release time from some of their teaching. For purposes of determining the teaching load, three- or four-hour credit courses are treated as a single course whereas one-hour seminar courses are treated as half of a course.

Lecturers, Professors of the Practice, and Instructional Professors are expected to teach six courses per 9-month academic year. As more Instructional Professors and Professors of the Practice get involved in sponsored research projects, in the area of computer science education, it may be possible for them to buy out of classes. Teaching-focused faculty also receive course releases to enable them to contribute to time-consuming departmental initiatives.

As a university policy, every member is required to comply with a minimum work load requirement for the Fall and Spring semesters and the Department Head and Associate Department Head are responsible for assigning and monitoring the workloads of the faculty. The Department Head can determine workload adjustments for situations such as acute family care, in accordance with the College’s guidelines (Appendix M).

Table 4.4A shows, separated by rank, the average number of courses taught by our faculty in the calendar year.

Table 4.4A: Average teaching load by rank

<table>
<thead>
<tr>
<th>Year</th>
<th>Professor</th>
<th>Associate Professor</th>
<th>Assistant Professor</th>
<th>APT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1.88</td>
<td>1.85</td>
<td>2.43</td>
<td>7.33</td>
</tr>
<tr>
<td>2013</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
<td>6.0</td>
</tr>
<tr>
<td>2014</td>
<td>2.64</td>
<td>2.47</td>
<td>3.5</td>
<td>4.91</td>
</tr>
<tr>
<td>2015</td>
<td>2.22</td>
<td>2.47</td>
<td>1.20</td>
<td>6.68</td>
</tr>
<tr>
<td>2016</td>
<td>2.02</td>
<td>2.40</td>
<td>1.72</td>
<td>5.41</td>
</tr>
</tbody>
</table>
4.5 Research Areas

Table 4.5A lists the research areas actively being pursued by the department faculty members as of Spring 2016. Appendix E provides an update that includes faculty members joining in Fall 2017 and faculty from other TAMU units that have courtesy appointments with our department.

Table 4.5A: Research Areas and associated faculty as of Spring 2016

<table>
<thead>
<tr>
<th>Research Area</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algorithms and Theory</td>
<td>Amato, Chen, Davis, Jiang, Keyser, Klappenecker, Loguinov, Sze, Welch, Williams</td>
</tr>
<tr>
<td>Artificial Intelligence, Intelligent Systems, Machine Learning, Natural Language Processing</td>
<td>Choe, Gutierrez-Osuna, Hammond, Hu, R. Huang, Ioerger, Kerne, Shell, Song</td>
</tr>
<tr>
<td>Bioinformatics, Computational Biology</td>
<td>Amato, Ioerger, Sze, Williams</td>
</tr>
<tr>
<td>Computational Science</td>
<td>Amato, Davis, Rauchwerger, Sarin, Taylor</td>
</tr>
<tr>
<td>Computer Architecture</td>
<td>Jimenez, Kim, Mahapatra</td>
</tr>
<tr>
<td>Computer Science Education</td>
<td>Da Silva, Hammond, Moore, Ragsdale, Ritchey, Shipman, Taylor</td>
</tr>
<tr>
<td>Computer Vision</td>
<td>Chai, Gooch, Song</td>
</tr>
<tr>
<td>Cyber-Physical Systems</td>
<td>Bettati, Gutierrez-Osuna, Hammond, Jafari, Kerne. Liu, Mahapatra, Stoleru</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>Bettati, Gu, J. Huang, Liu, Ragsdale</td>
</tr>
<tr>
<td>Databases, Data Mining, Information Retrieval Systems</td>
<td>Caverlee, Furuta, Hu, Loguinov, Shipman</td>
</tr>
<tr>
<td>Data Science</td>
<td>Caverlee, Choe, Gutierrez-Osuna, Hu, R. Huang, Ioerger, Kerne, Loguinov</td>
</tr>
<tr>
<td>Digital Humanities</td>
<td>Caverlee, Furuta, Gooch, R. Huang, Kerne, Shipman</td>
</tr>
<tr>
<td>Electronic Design Automation and VLSI</td>
<td>Walker</td>
</tr>
<tr>
<td>Embedded Systems</td>
<td>Jafari, Kerne, Liu, Mahapatra, Mortazavi, Stoleru</td>
</tr>
<tr>
<td>Gaming</td>
<td>Chai, Gooch, Kerne, Schaefer, Sueda</td>
</tr>
<tr>
<td>Research Area</td>
<td>Faculty</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Graphics, Visualization, Computational Fabrication</td>
<td>Chai, Gooch, Kerne, Keyser, Schaefer, Sueda</td>
</tr>
<tr>
<td>Health</td>
<td>Gutierrez-Osuna, Hammond, Hu, Liu, Sze, Sueda</td>
</tr>
<tr>
<td>Human-Computer Interaction</td>
<td>Furuta, Gooch, Hammond, Kerne, Shipman</td>
</tr>
<tr>
<td>Human-Centered Systems</td>
<td>Caverlee, Chai, Furuta, Gutierrez-Osuna, Hammond, R. Huang, Jafari, Kerne, Shipman</td>
</tr>
<tr>
<td>Networks</td>
<td>Gu, Jiang, Loguinov, Stoleru</td>
</tr>
<tr>
<td>Parallel and Distributed Computing</td>
<td>Amato, Da Silva, Davis, J. Huang, Loguinov, Rauchwerger, Sarin, Stoleru, Taylor, Welch, Williams</td>
</tr>
<tr>
<td>Programming Languages, Compilers</td>
<td>J. Huang, Rauchwerger</td>
</tr>
<tr>
<td>Robotics, Human-Robot Interaction</td>
<td>Amato, Murphy, Shell, Song</td>
</tr>
<tr>
<td>Software, Software Engineering</td>
<td>Da Silva, J. Huang, Kerne, Rauchwerger, Shipman, Walker</td>
</tr>
<tr>
<td>Systems</td>
<td>Amato, Bettati, Caverlee, Da Silva, Davis, Gu, J. Huang, Jafari, Jiang, Jimenez, Kerne, Kim, Liu, Loguinov, Mahapatra, Rauchwerger, Sarin, Stoleru, Taylor, Walker</td>
</tr>
</tbody>
</table>

### 4.6 Multidisciplinary Research Groups

Research in the department is organized around faculty-led research groups. These groups may be formally organized as part of research institutes or centers, or operate independently. The terms “institute” and “center” at Texas A&M imply entities established through a heavy-weight process that requires the approval of the Board of Regents. The department is currently associated with four centers: Center for Emergency Informatics (CEI), Center for Remote Health Technologies and Systems (CRHTS), Center for the Study of Digital Libraries (CSDL), and the Texas A&M Cybersecurity Center. There are also several labs in the department that support active collaboration between research groups.
Brain Networks Laboratory
Directed by: Yoonsuck Choe
http://research.cse.tamu.edu/bnl

Faculty: Nancy Amato, John Keyser, Lawrence Rauchwerger

Studying the geometry and connectivity of the brain's architecture is a natural way to explore neural computation, but there are no quantitative, 3D reconstructions of mammalian brain architectures for any species. Ongoing projects in the Brain Networks Laboratory will fill this void and reconstruct an entire mouse cortical network, allowing for global analysis and simulation studies of an actual cortical network. The lab's enabling technology is a unique Brain Tissue Scanner (BTS) of our own invention that achieves the data acquisition rates necessary to make possible for the first time scanning and imaging an entire mammalian brain. The data processed is produced by the BTS to reconstruct the three-dimensional structure of the scanned tissue. The central goal is to map and understand the connectivity and geometry of cortical networks - critical to understanding natural computation.

Center for Emergency Informatics
Directed by: Robin Murphy
http://c-emergencyinformatics.tamu.edu

Our mission is to provide the dedicated, sustained, comprehensive focus needed to leverage advances in unmanned systems, wireless networks, computing, decision-making, simulation and visualization, social networking, and other technologies. A systems approach will advance the field of emergency informatics to save lives, accelerate damage assessment, and reduce economic downtime while developing a competent future work force. The goal of the CEI academic, response agency, and industry partnership is to research, commercialize, and use information technologies to cut response and recovery decision-making times in half for Type I (large) incidents in 5 years and reduce deaths and downtime by an order of magnitude within ten years.

Center for Remote Health Technologies and Systems (CRHTS)
Directed by: Gerry Cote (Department of Biomedical Engineering)
CSE Leader: Ricardo Gutierrez-Osuna
http://remotehealth.tamu.edu/

Faculty: Theodora Chaspari, Xia (Ben) Hu, Bobak Mortazavi

The Center for Remote Health Technologies and Systems (CRHTS) is developing breakthrough remote health technologies, algorithms, and health analytics as
well as using advanced systems engineering to solve the global health grand challenges and enable healthy living. These powerful advances are not only helping to answer the critical needs of patients and providers; they are shifting the healthcare landscape from disease management to disease prevention.

**Center for the Study of Digital Libraries (CSDL)**

Directed by: Richard Furuta and Frank Shipman  
[http://www.csdl.tamu.edu](http://www.csdl.tamu.edu)

Faculty: James Caverlee, Andruid Kerne, Xia (Ben) Hu, Ruihong Huang  
The Center's program of research provides a leadership role in the online development and application of worldwide access to digital library services. Development of this technology provides valuable fundamental research and supports the broader goal of research and education through improved means for collaboration and distance learning. The Center is not limited to one discipline; rather the development of digital libraries may be viewed as a fundamental contribution to research in all disciplines.

**Parasol Laboratory**

Directed by: Nancy Amato and Lawrence Rauchwerger  
[http://parasol.tamu.edu](http://parasol.tamu.edu)

Faculty: Tim Davis, Jeff Huang, Jaakko Jarvi, Hyunyoung Lee, Jennifer Welch  
Parasol laboratory is a focal point for research related to next-generation computing languages and systems and for the development of algorithms and applications that exploit these.

**Texas A&M Cybersecurity Center**

Directed by: Daniel Ragsdale  
[https://cybersecurity.tamu.edu/](https://cybersecurity.tamu.edu/)

Faculty: Riccardo Bettati, Guofei Gu, Steve Liu, Philip Ritchey  
Texas A&M Cybersecurity Center combines some of the most advanced expertise in the nation to address the broad spectrum of issues involved in the expansion and protection of information and communications infrastructure systems.

4.7 Publication Statistics

The publication activity numbers of the CSE Department faculty are shown below in Table 4.7A. Conference publications are classified as “highly selective” when the acceptance rate is less than 30% and “highly visible” when the acceptance rate is between 30% and 60%. The table
also presents the number of editorial positions held by our faculty. The numbers reflect the information provided by faculty members in their annual reports. A majority of the faculty in the department hold editorial positions and serve in professional service roles, which brings additional visibility to the program.

Table 4.7A: Faculty Publication Statistics

<table>
<thead>
<tr>
<th>Academic Year</th>
<th># of Refereed Journal Publications</th>
<th># of Conference Publications (Highly Selective)</th>
<th># of Conference Publications (Highly Visible)</th>
<th># of Editorships or Associate Editorships</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2009</td>
<td>105</td>
<td>100</td>
<td>95</td>
<td>29</td>
</tr>
<tr>
<td>2009-2010</td>
<td>95</td>
<td>76</td>
<td>81</td>
<td>32</td>
</tr>
<tr>
<td>2010-2011</td>
<td>96</td>
<td>74</td>
<td>79</td>
<td>29</td>
</tr>
<tr>
<td>2011-2012</td>
<td>81</td>
<td>87</td>
<td>74</td>
<td>41</td>
</tr>
<tr>
<td>2012-2013</td>
<td>97</td>
<td>104</td>
<td>83</td>
<td>43</td>
</tr>
<tr>
<td>2013-2014</td>
<td>78</td>
<td>83</td>
<td>79</td>
<td>52</td>
</tr>
<tr>
<td>2014-2015</td>
<td>77</td>
<td>89</td>
<td>68</td>
<td>47</td>
</tr>
<tr>
<td>2015-2016</td>
<td>98</td>
<td>74</td>
<td>73</td>
<td>59</td>
</tr>
<tr>
<td>2016-2017</td>
<td>89</td>
<td>81</td>
<td>63</td>
<td>52</td>
</tr>
</tbody>
</table>

Table 4.7B presents data collected from Google Scholar as of July 2017.

Table 4.7B: Google Scholar Citation for FY16 CSE Faculty

<table>
<thead>
<tr>
<th>Faculty Member</th>
<th>Cited #</th>
<th>Faculty Member</th>
<th>Cited #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amato, Nancy</td>
<td>8382</td>
<td>Kerne, Andruid</td>
<td>1496</td>
</tr>
<tr>
<td>Bettati, Riccardo</td>
<td>2885</td>
<td>Keyser, John</td>
<td>2736</td>
</tr>
<tr>
<td>Caverlee, James</td>
<td>4069</td>
<td>Kim, Eun Jung</td>
<td>n/a</td>
</tr>
<tr>
<td>Chai, Jinxiang</td>
<td>4623</td>
<td>Klappenecker, Andreas</td>
<td>1997</td>
</tr>
<tr>
<td>Chen, Jianer</td>
<td>6703</td>
<td>Liu, Steve</td>
<td>n/a</td>
</tr>
<tr>
<td>Choe, Yoonsuck</td>
<td>1511</td>
<td>Loguinov, Dmitri</td>
<td>3588</td>
</tr>
<tr>
<td>Da Silva, Dilma</td>
<td>4491</td>
<td>Mahapatra, Rabi</td>
<td>1872</td>
</tr>
<tr>
<td>Davis, Tim</td>
<td>9734</td>
<td>Murphy, Robin</td>
<td>11211</td>
</tr>
<tr>
<td>Furuta, Richard</td>
<td>5513</td>
<td>Rauchwerger, Lawrence</td>
<td>4011</td>
</tr>
<tr>
<td>Gooch, Bruce</td>
<td>5940</td>
<td>Sarin, Vivek</td>
<td>733</td>
</tr>
<tr>
<td>Gu, Guofei</td>
<td>7762</td>
<td>Schaefer, Scott</td>
<td>3859</td>
</tr>
</tbody>
</table>
An external source for publication numbers is the “Computer Science Rankings” site (http://csrankings.org/). This service is still in beta and the data collected may be incomplete. We include in Appendix N the information about our researchers available on the site as of July 2017. This ranking of top computer science schools is designed to identify institutions and faculty actively engaged in research across a number of areas of computer science. These rankings are based on the number of publications by faculty that have appeared at the most selective conferences in each area of computer science. The service is still in beta. Its methodology is described in their FAQ.

We include this link as an additional source of information regarding the publication profile of the Department of Computer Science Engineering, as it intends to focus on top conference venues. The information on the strength of the conferences targeted by a department may be useful information, but it certainly presents an incomplete representation of our research profile. The ranking ignores impactful work that appears in journal publications not indexed by DBLP. For example, we have faculty with outstanding levels of accomplishment, recognition from multiple professional societies, and high citation counts that do not appear at all in the csrankings.org analysis. With more faculty members pursuing multidisciplinary areas that may deploy journals as the most effective venue for disseminating results, it important to be aware of the limitation of a top-CS-conference approach for capturing publication impact.

4.8 Sources of Funding

Funding for research efforts in the department comes from a variety of sources. Table 4.8A shows a submitted proposal history over the past four years along with the success ratio. This table presents a partial view of the proposal activity in the department, as it reflects information in a submission system for a subset of the funding sources.
Table 4.8B shows the award statistics and distribution of the sources of research funding for the department. Table 4.8B indicates that a significant part of our research funding comes from federal government agencies, which includes sources such as NSF, NIH, DoE and various DoD agencies.

Table 4.8A: Proposal History (*: incomplete due to pending awards)

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Submitted Amount</th>
<th>Submit Count</th>
<th>Award Count</th>
<th>Award Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY13</td>
<td>$32,260,948.79</td>
<td>101</td>
<td>32</td>
<td>33.7%</td>
</tr>
<tr>
<td>FY14</td>
<td>$29,079,212.05</td>
<td>86</td>
<td>23</td>
<td>28.8%</td>
</tr>
<tr>
<td>FY15</td>
<td>$48,308,698.79</td>
<td>97</td>
<td>32</td>
<td>32.99%</td>
</tr>
<tr>
<td>FY16</td>
<td>$100,946,602.00</td>
<td>112</td>
<td>40 (*)</td>
<td>35.71% (*)</td>
</tr>
<tr>
<td>FY17</td>
<td>$86,494,764.00</td>
<td>129</td>
<td>25 (*)</td>
<td>19.38 (*)</td>
</tr>
</tbody>
</table>

Table 4.8B Source of Awards (*: incomplete due to pending awards)

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>FY15</th>
<th>FY16 (*)</th>
<th>FY17 (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Award</td>
<td>Award</td>
<td>Award</td>
</tr>
<tr>
<td></td>
<td>Amount</td>
<td>Count</td>
<td>Amount</td>
</tr>
<tr>
<td>Federal</td>
<td>$5,253,972.79</td>
<td>20</td>
<td>$10,770,323.00</td>
</tr>
<tr>
<td>Foreign</td>
<td>$3,163,172.00</td>
<td>2</td>
<td>$1,011,532.00</td>
</tr>
<tr>
<td>Private</td>
<td>$425,141.00</td>
<td>6</td>
<td>$555,450.00</td>
</tr>
<tr>
<td>State Agency</td>
<td>$63,638.00</td>
<td>4</td>
<td>$2,903,436.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$8,905,923.79</td>
<td>32</td>
<td>$15,240,741.00</td>
</tr>
</tbody>
</table>

4.9 Administrative Organization

Administrators

The Computer Science and Engineering department administration consists of the Department Head, Associate Department Head for Academics, Undergraduate Advisor for Computer Science, Undergraduate Advisor for Computer Engineering, and a Graduate Advisor. In addition, several faculty committees oversee various aspects of the department. Details of
these committee functions and their composition are provided in the Faculty Committees section. (Section 4.10)

**Support Staff**

In 2014, the Texas A&M University System Chancellor John Sharp announced the results of a comprehensive administrative review that was conducted by PricewaterhouseCoopers (PwC). Within that report, it was determined that all colleges and divisions would begin plans to consolidate services such as IT, business, communications and undergraduate advising. All but undergraduate advising have now been centralized at the college level. While staff in these areas report directly to the Dean’s Office in the College of Engineering, they are housed in the department and still maintain a dotted-line structure to the department head.

In addition to the department head and associate department head, there are three full-time staff supervisors overseeing the administrative, accounting and IT service areas. They provide administrative assistance to and in coordination with the administrative faculty. The department employs a total of 23 full-time staff who provide various types of support.
Currently, there are three staff members allocated to our graduate program and a new position is being staffed for August 2017. One staff is allocated to our graduate program and a new one is being hired to start in September 2017. We recognize that additional assistance is needed to better assist our student population. Two positions are currently being created to specifically assist with our undergraduate and graduate programs. One staff member provides direct assistance to our Associate Department Head for Academics, and four provide direct assistance to the department faculty as a whole through various administrative, travel and facility support. Three staff members provide business and accounting support, one provides communications support, and five provide IT support. Six additional staff members assist specific research groups within the department and are funded directly by those research groups.

### 4.10 Faculty Committees

The CSE department continues to grow, placing importance on faculty participation in many aspects of the department. From junior faculty to senior faculty; from defining new course offerings; to recruiting and hiring new faculty. Over the past several years, traditional committees have been modified, and new ones created to tend to the challenges and opportunities presented by our growth.

Two of the committees (the Advisory Committee and the Promotion & Tenure Committee) are determined by faculty vote. For the other committees, the department head defines their composition before the start of the school year based on faculty input and preferences. Below is the list of the 2016-2017 committees in alphabetical order. Appendix B includes their description and composition.

- Academic Professional Track Faculty Search Committee (APT)
- Advisory Committee
- Climate Committee
- Colloquium Committee
- Communications Committee
- Computer Engineering Coordinating Committee
- Endowed Chair Faculty Search Committee
- Faculty Awards Committee
- Graduate Awards Committee
- Graduate Advisory Committee
- Growth Committee
- Master’s Admissions and Recruiting Committee
- Ph.D. Admissions and Recruiting Committee
- Promotion and Tenure Committee (P&T)
- Research Computing Services Committee
- Space Committee
- Tenure-Track Faculty Search Committee
For 2017-2018, three new committees have been added:

- **Computing Fundamentals Taskforce**
  This committee will focus on restructuring the initial courses in our undergraduate curricula (121, 221). The restructuring will help to leverage upcoming changes in the freshmen engineering courses that will result in a much stronger exposure to computer science in the pre-major, general engineer first year.

- **Distance Education Committee**
  This committee is charged with reviewing our distance course offerings and making recommendations for improvements. It will also make recommendations on resources needed to support instructors and students.

- **Peer-Faculty Teaching Feedback Committee**
  This committee is responsible for refining the process for peer faculty teaching feedback and driving the feedback process for three courses during the 2017-2018.

**4.11 Budget Information**

Table 4.11A shows the gold plate budget for the CSE department over the past five fiscal years. Notice that some organizational changes, such as the centralization of business, IT and communications services, caused a reduction in the total available budget and the related staff salary and operational funds were passed back to the college.

Research funding is illustrated for the same period in Table 4.11B. Research funding comes in the form of contracts, grants, and gifts. In Table 4.11B, contract and grant expenditures are listed under Direct Research Expenditures while Gifts are listed separately. In the case of gifts, the broad areas for their use can be specified, but no deliverables are promised. A portion of each contract or grant is withheld by the Texas Engineering Experiment Station (TEES) as overhead. The current overhead rate is 48.5% of the direct costs of the project. Some portion of that overhead is returned to the department and is listed in Table 4.11B as TEES Overhead Return.
Table 4.11A: TAMU Funding for the CSE Department

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty and Staff Salaries</td>
<td>$5,801,700</td>
<td>$5,408,385</td>
<td>$5,414,667</td>
<td>$6,367,493</td>
<td>$6,519,051</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>$1,048,253</td>
<td>$916,658</td>
<td>$560,725</td>
<td>$672,671</td>
<td>$579,223</td>
</tr>
<tr>
<td>GA Salaries</td>
<td>$752,590</td>
<td>$674,959</td>
<td>$819,120</td>
<td>$897,778</td>
<td>$811,530</td>
</tr>
<tr>
<td>TOTAL Operating &amp; Salaries</td>
<td>$7,602,543</td>
<td>$7,000,002</td>
<td>$6,794,512</td>
<td>$7,937,942</td>
<td>$7,909,804</td>
</tr>
</tbody>
</table>

Table 4.11B: External Funding for the CSE Department

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Research Expenditures</td>
<td>$4,470,908</td>
<td>$5,633,849</td>
<td>$4,557,429</td>
<td>$4,856,867</td>
<td>$3,939,324</td>
</tr>
<tr>
<td>TEES Overhead Return</td>
<td>$312,329</td>
<td>$368,526</td>
<td>$374,194</td>
<td>$314,394</td>
<td>$132,997</td>
</tr>
<tr>
<td>Gifts</td>
<td>$86,948</td>
<td>$69,200</td>
<td>$81,050</td>
<td>$133,667</td>
<td>$1,073,100</td>
</tr>
<tr>
<td>TOTAL External Funding</td>
<td>$4,870,185</td>
<td>$6,071,575</td>
<td>$5,012,673</td>
<td>$5,304,928</td>
<td>$5,145,421</td>
</tr>
</tbody>
</table>

**Faculty Salaries**

Table 4.11C shows statistics of faculty salaries broken down by rank. Faculty salaries are set by the Department Head. Each faculty member must submit a yearly activity report to the Department Head, called a Faculty Progress Report (FPR). After reviewing all the FPRs and meeting with each faculty member individually, the Department Head determines how the resources for salary increases provided by the university and college are distributed following a merit-based approach.

Table 4.11C: Monthly Faculty Salaries by Rank as of Spring 2016

<table>
<thead>
<tr>
<th>Monthly Salaries ($)</th>
<th>Professor</th>
<th>Associate Professor</th>
<th>Assistant Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>$25,445</td>
<td>$14,771</td>
<td>$11,125</td>
</tr>
<tr>
<td>Low</td>
<td>$14,633</td>
<td>$12,358</td>
<td>$10,750</td>
</tr>
<tr>
<td>Median</td>
<td>$17,411</td>
<td>$13,415</td>
<td>$10,948</td>
</tr>
<tr>
<td>Average</td>
<td>$17,908</td>
<td>$13,466</td>
<td>$10,944</td>
</tr>
</tbody>
</table>
For contrast, Table 4.11D shows the same information for nine-month salaries and Table 4.11E depicts the information from the 2016 Taulbee Survey released by the Computer Research Association.

**Table 4.11D: Nine-month Faculty Salaries by Rank as of Spring 2016**

<table>
<thead>
<tr>
<th>Nine-month Salaries ($)</th>
<th>Professor</th>
<th>Associate Professor</th>
<th>Assistant Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>$229,005</td>
<td>$132,939</td>
<td>$100,125</td>
</tr>
<tr>
<td>Low</td>
<td>$131,697</td>
<td>$111,222</td>
<td>$96,750</td>
</tr>
<tr>
<td>Median</td>
<td>$156,699</td>
<td>$120,735</td>
<td>$98,532</td>
</tr>
<tr>
<td>Average</td>
<td>$161,172</td>
<td>$121,194</td>
<td>$98,946</td>
</tr>
</tbody>
</table>

**Table 4.11E: 2016 Taulbee Survey - Nine-month salaries, 105 Responses of 138 US CS Public, Percentiles from Department Averages**

<table>
<thead>
<tr>
<th></th>
<th>Full Professor</th>
<th>Associate</th>
<th>Assistant</th>
<th>Non-Tenure Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depts</td>
<td>83</td>
<td>90</td>
<td>93</td>
<td>105</td>
</tr>
<tr>
<td>Indiv</td>
<td>437</td>
<td>388</td>
<td>520</td>
<td>1,408</td>
</tr>
<tr>
<td>10</td>
<td>$1,32,325</td>
<td>$1,19,744</td>
<td>$1,15,233</td>
<td>$1,22,407</td>
</tr>
<tr>
<td>25</td>
<td>$1,45,099</td>
<td>$1,39,371</td>
<td>$1,29,530</td>
<td>$1,16,210</td>
</tr>
<tr>
<td>50</td>
<td>$1,60,800</td>
<td>$1,53,565</td>
<td>$1,44,669</td>
<td>$1,15,365</td>
</tr>
<tr>
<td>75</td>
<td>$1,78,396</td>
<td>$1,70,132</td>
<td>$1,59,354</td>
<td>$1,68,642</td>
</tr>
<tr>
<td>90</td>
<td>$1,89,634</td>
<td>$1,84,901</td>
<td>$1,71,525</td>
<td>$1,77,246</td>
</tr>
</tbody>
</table>
5. Graduate Program

5.1 Degrees Offered

Advanced study in computer science and computer engineering provides students with the skills to design and utilize modern computer systems. The Department encourages both fundamental research in computing and interdisciplinary research. Research projects in diverse areas offer students a wide range of opportunities to gain experience while completing requirements for advanced degrees. Significant computational facilities, networks, and other resources are available to support student research.

The department offers degree programs in both computer science and computer engineering. The following paragraphs give a brief overview of the graduate degrees offered by the CSE department. Full details are provided in the Graduate Handbook, Appendix F.

Graduate studies in the CSE Department can lead to the following degrees:

**Computer Science**
- **Master of Computer Science (MCS)**
  - The Master of Computer Science (MCS) should be thought of as a professional, terminal degree. This degree does not include a thesis, project or final examination. This purely coursework degree requires 30 credit hours. Details of required coursework may be found in the Graduate Handbook, Appendix F.

- **Master of Science in Computer Science (MSCS)**
  - The Master of Science in Computer Science (MSCS) is a research degree in which a thesis and final examination are required. Students completing the MSCS degree program may file a Letter of Intent requesting admission to the Ph.D. program. The degree plan should be completed by the student in consultation with the Chair of the Advisory Committee to ensure the requirements for the degree have been met. A total of 32 credit hours is required. Details of required coursework may be found in the Graduate Handbook, Appendix F.

- **Doctor of Philosophy in Computer Science (Ph.D.CS)**
  - The Ph.D. in Computer Science requires a total of at least 96 credit hours (or at least 64 credit hours if the student has a prior, approved and related master’s degree). At most 32 credit hours from other graduate degree programs (e.g., an MSCS) can be applied to the Ph.D. degree. For a listing of restrictions on the courses that can be used on the degree plan, as well as other common questions/issues can be found in the Graduate Handbook, Appendix F.
Computer Engineering

The CSE department offers the following programs:

- **Master of Engineering in Computer Engineering (MEN)**
  - The Master of Engineering (MEN) should also be thought of as a professional, terminal degree as no thesis, project or final examination is required. As with the MCS, this is a purely coursework degree which requires 30 credit hours. Details of required coursework may be found in the Graduate Handbook, Appendix F.

- **Master of Science in Computer Engineering (MSCE)**
  - The Master of Science in Computer Engineering is also a research degree requiring a thesis and final examination. Students completing the MSCE program may file a Letter of Intent requesting admission to the Ph.D. program. Details of required coursework may be found in the Graduate Handbook, Appendix F.

- **Doctor of Philosophy in Computer Engineering (Ph.D.CE)**
  - The Ph.D. in Computer Engineering requires a total of at least 96 credit hours (or at least 64 credit hours if the student has a prior, approved and related master’s degree). At most 32 credit hours from other graduate degree programs (e.g., an MSCES) can be applied to the Ph.D. degree. For a listing of restrictions on the courses that can be used on the degree plan, as well as other common questions/issues can be found in the Graduate Handbook, Appendix F.

The Department of Electrical and Computer Engineering (ECEN) also offers graduate programs in computer engineering. Our undergraduate Computer Engineering Program is administered jointly by the CSE and ECE departments. We leverage the same structure to get synergy between our graduate course offerings. The Computer Engineering Coordinating Committee (CECC) is responsible for the review and revision of the program educational objectives and program outcomes, curriculum oversight, assessment of student outcomes, and continuous improvement. The department heads of the CSE and ECE departments are members of the CECC committee and are active participants in the discussions. The committee meets on a regular basis. There are CSE faculty members who advise ECEN students and vice-versa, based on courtesy appointments.

All the information in this document refers to the CSE programs only. In Section 5.6 we show statistics on ECEN students taking CSE courses as part of our program.

5.2 Program Requirements

Appendix F provides detailed information on the requirements of our six graduate programs. Below we highlight important milestones of the Ph.D. programs.
Qualifier Exam

All students who started the Ph.D. program in Fall 2010 or later are required to pass the written Ph.D. Qualifying Exam (Qual) by the end of their fourth regular semester (i.e., Spring or Fall). The written exam currently in use is the ETS Major Field Test in Computer Science. The qualifying exam is offered early each semester, including summer, typically in February, June, and October. Students may attempt the exam a maximum of 3 times in the first four offerings once they enter the Ph.D. program. For example, the first four offerings for a student who starts in Fall will be October, February, June, and then October. It is strongly recommended that students take the exam as early as they can. Students should prepare seriously for the exam. The department’s graduate advising office has study materials to help prepare for the exam.

Preliminary Exam

As part of the degree requirements for the Ph.D. in Computer Science or Computer Engineering, students must pass the Preliminary Examination (Prelim) given by the Advisory Committee as described in the graduate catalog. The prelim consists of both written and oral portions. Each committee member administers a written exam during the 3 weeks prior to the common oral examination. The format of the oral exam in flexible and is determined by the Advisory Committee. It is common in CSE for students to present their dissertation proposal at the oral prelim. If this is the case, the student will provide the advisory committee with a draft of the proposal several weeks before the prelim.

The prelim is usually held when the degree plan coursework requirements are completed. The first written exam must be scheduled at least 90 days after an approved degree plan is filed and it must be taken at least 14 weeks before the defense. All eligibility requirements, deadlines, and procedures are available to the student on the department’s webpage and in the department’s graduate handbook.

Dissertation Proposal

The student must submit a Ph.D. dissertation proposal as described in the graduate catalog. The dissertation proposal may be presented at the oral preliminary exam, or at a separate proposal presentation, at the discretion of the Advisory Committee. An electronic copy of the approved proposal must be emailed to the department’s advising office before the Proposal Title Page, already signed by the committee, is submitted to the advising office for signature approval.

If the dissertation research will involve human subjects, animals, infectious biohazards, or recombinant DNA, the student must check with the university’s Research Compliance Division to ensure all compliance requirements have been met.

The department has no further requirements for the proposal beyond that it be approved by the student’s advisory committee and that it meets any university requirements.
**Final Examination**

The student must pass the Final Examination (dissertation defense) given by the Advisory Committee as described in the graduate catalog. A final examination is required, which includes a public presentation of the candidate’s research.

**Dissertation**

A Ph.D. Dissertation as described in the graduate catalog and on the Office of Graduate and Professional Studies (OGAPS) website. The ability to perform independent research must be demonstrated by the dissertation. The dissertation must be the original work of the candidate. While acceptance of the dissertation is based primarily on its scholarly merit, it must also exhibit creditable literary workmanship. (Please see the graduate catalog for further details.) The Department expects the student to submit a research paper to at least one refereed journal or conference prior to the dissertation defense.

5.3 Annual Ph.D. Review

All doctoral students in the department are reviewed annually by the entire faculty. The purpose of the Ph.D. student annual review procedure is to encourage and motivate Ph.D. student research and to provide additional mentoring for graduate study. During the external doctoral program review in 2004, the department was encouraged to institute a department-wide review of Ph.D. students that would provide a department-wide quality control that does not depend on just the advisory committee members. The first Ph.D. student annual review took place in May 2004.

The review procedure consists of the following:

- Annual progress report and other materials completed by the doctoral student
  - At a minimum, the student must comply with all academic rules, regulations, and time lines set forth by the department and university. In addition, the student must demonstrate Satisfactory performance, based on faculty expectations.

- Annual evaluation form completed by the advisor
  - The students’ advisor will review all materials required for the annual evaluation and will provide their evaluation of the students’ performance as either Satisfactory, Needs Improvement, or Unsatisfactory, and will provide comments. Other faculty have the opportunity to provide input on the student as well.

- Review of the students by the entire faculty
  - All Ph.D. students are evaluated by the faculty at the annual faculty retreat, typically held in mid-May. Materials provided by the student and the advisor are reviewed and discussed at the retreat.
• Notification letter to the student and advisor
  o After the faculty retreat in which each student is discussed and reviewed, results are made available in the Ph.D. or Degree Information sections of the OSIS system. Notification that results are available is sent to the student’s departmental email account.

• Improvement Process for those who receive a rating of Needs Improvement or Unsatisfactory
  o Students who are rated as Needs Improvement or Unsatisfactory must complete the following improvement process (IP) within four-weeks of the date of notification.

  o Students will complete the IP with a mentor or their advisor, and the IP includes the following steps:
    ▪ The student develops a performance improvement plan with the mentor/advisor that includes steps and timeline for achieving a Satisfactory rating over the next year.
    ▪ Performance plan will be submitted by the student to OSIS and must be approved by their mentor/advisor.
    ▪ After performance plan is approved, the student will meet with their mentor/advisor and the department head to discuss the plan and make modifications if necessary.
    ▪ The department head, in consultation with the mentor/advisor, will decide when all tasks in the improvement plan are successfully completed.

  o Any student with a rating of Unsatisfactory will in general not be eligible for departmental support until the improvement plan has been successfully completed.

• Dismissal for those who receive two consecutive Unsatisfactory ratings
  o Two consecutive Unsatisfactory ratings from the annual Ph.D. review constitute unsatisfactory progress and lead to the dismissal procedure.
    ▪ The student is made aware that the dismissal procedure has been initiated.
    ▪ The student can submit a written statement and supporting materials arguing against dismissal. All materials must be submitted via OSIS within 4 weeks of original notification.
    ▪ The Graduate Advisory Committee (GAC) will review and consider the case and will make a recommendation within 2-weeks after receiving the materials.
If there is an advisory committee for the student, it may submit written recommendations to the department head with 4-weeks of the original notification to the student.

The department head will make the final decision about the dismissal. Typically, the department head will make the decision within two weeks after receiving the recommendations from the GAC and advisory committee.

If the student is dismissed, they may appeal to the Graduate Appeals Panel per the university rules.

Table 5.3A shows the results of these annual reviews since 2012.

### Table 5.3A: Annual Ph.D. Review Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Students</th>
<th>Satisfactory</th>
<th>Needs Improvement</th>
<th>Unsatisfactory</th>
<th>Not Rated</th>
<th>Improvement Plan</th>
<th>Dismiss</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>135</td>
<td>104</td>
<td>18</td>
<td>9</td>
<td>4</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>2013</td>
<td>130</td>
<td>109</td>
<td>11</td>
<td>7</td>
<td>3</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>135</td>
<td>89</td>
<td>14</td>
<td>9</td>
<td>23</td>
<td>22</td>
<td>1</td>
</tr>
<tr>
<td>2015</td>
<td>131</td>
<td>95</td>
<td>22</td>
<td>7</td>
<td>7</td>
<td>29</td>
<td>1</td>
</tr>
<tr>
<td>2016</td>
<td>138</td>
<td>119</td>
<td>13</td>
<td>2</td>
<td>4</td>
<td>15</td>
<td>0</td>
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</tbody>
</table>

5.4 Graduate Program Rankings

The U.S. News & World Report ranked our computer science graduate program #27 in 2010 and also #27 in 2012. In the last available ranking (2014), our rank was 21 (tied with Stony Brook University, University of Arizona, the University of Colorado at Boulder, University of Utah, and Virginia Tech). Among private and public institutions, our rank as 41.

Both the Department of Computer Science and Engineering and the Department of Electrical and Computer Engineering offer graduate engineering programs. U.S. News & World Report ranked the Texas A&M University’s computer engineering program #14 in 2011 and #11 in 2012. In 2017, the computer engineering program was ranked #10 (tied with Ohio State University and Pennsylvania State University). Among private and public institutions, our rank as 21.

In Appendix N we include the publication-based ranking information available as of July 2017 at csrankings.org.
5.5 Student Profile

As is the case with many engineering programs throughout the country, our graduate program is largely composed of international students. The department is aggressively recruiting domestic students via activities such as the NSF-sponsored REU programs and the Graduate Invitational which invite top prospective students to visit the department and meet with various faculty. In recent years, the department has participated as a sponsor at the annual ACM Richard Tapia Conference on Diversity and the Grace Hopper Celebration of Women in Computing. Our presence at these conferences has increased our visibility with domestic students, in particular, those in diverse populations.

Graduate Admissions

The tables below (5.5A) present admission statistics for our six programs in the last five years, showing that our programs attract a large number of applicants. Our acceptance rate outperforms all the other departments in the College of Engineering by a large margin.

Tables 5.5A: Applications to the CSE graduate programs by year

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<th></th>
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<tbody>
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<td>161</td>
<td>135</td>
<td>146</td>
<td>181</td>
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<tr>
<td>Denied</td>
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<td>110</td>
<td>105</td>
<td>101</td>
<td>141</td>
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<tr>
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<td>51</td>
<td>30</td>
<td>45</td>
<td>40</td>
</tr>
<tr>
<td>Acceptance (%)</td>
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<td>31.7%</td>
<td>22.2%</td>
<td>30.8%</td>
<td>22.1%</td>
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<tr>
<td>Enrolled</td>
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<td>20</td>
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<td>25</td>
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<td>97</td>
<td>91</td>
<td>100</td>
<td>85</td>
<td>109</td>
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<tr>
<td>Denied</td>
<td>85</td>
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<td>81</td>
<td>63</td>
<td>95</td>
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<tr>
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<tr>
<td>Acceptance (%)</td>
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<td>29.7%</td>
<td>19.0%</td>
<td>25.9%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Enrolled</td>
<td>7</td>
<td>14</td>
<td>9</td>
<td>14</td>
<td>8</td>
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<td>-----------</td>
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<td>-----------</td>
</tr>
<tr>
<td><strong>Applied</strong></td>
<td></td>
<td>549</td>
<td>644</td>
<td>988</td>
<td>1057</td>
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<tr>
<td><strong>Denied</strong></td>
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<td>464</td>
<td>537</td>
<td>891</td>
<td>938</td>
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<tr>
<td><strong>Admitted</strong></td>
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<td>85</td>
<td>107</td>
<td>97</td>
<td>119</td>
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<tr>
<td><strong>Acceptance (%)</strong></td>
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<td>15.5%</td>
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<td>43</td>
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</thead>
<tbody>
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<td>236</td>
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<td>455</td>
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<td>41</td>
</tr>
<tr>
<td><strong>Acceptance (%)</strong></td>
<td></td>
<td>17.2%</td>
<td>15.3%</td>
<td>9.7%</td>
<td>7.9%</td>
<td>9.1%</td>
</tr>
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<td><strong>Enrolled</strong></td>
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<td>24</td>
<td>27</td>
<td>21</td>
<td>17</td>
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<td>106</td>
<td>144</td>
<td>222</td>
<td>406</td>
<td>499</td>
</tr>
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<td><strong>Denied</strong></td>
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<td>76</td>
<td>101</td>
<td>193</td>
<td>368</td>
<td>462</td>
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<td>30</td>
<td>43</td>
<td>29</td>
<td>38</td>
<td>37</td>
</tr>
<tr>
<td><strong>Acceptance (%)</strong></td>
<td></td>
<td>28.3%</td>
<td>29.9%</td>
<td>13.1%</td>
<td>9.4%</td>
<td>7.4%</td>
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<tr>
<td><strong>Enrolled</strong></td>
<td></td>
<td>22</td>
<td>37</td>
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<td>24</td>
<td>38</td>
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<td>78</td>
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<tr>
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<td><strong>Acceptance (%)</strong></td>
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<td>33.3%</td>
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<td>7.0%</td>
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<td>10</td>
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**Standardized Test Scores**

The GRE scores are one component of the admissions decisions considered for acceptance into the department. While generally, the GRE score is not a very accurate predictor of student performance, it does warrant value in reviewing during the admissions process. Tables 5.5B and 5.5C show the GRE profile of our first-time graduate students.

### Table 5.5B: Standardized Test Scores of First-Time Graduate Students (NEW GRE Score Results)

<table>
<thead>
<tr>
<th>Major</th>
<th>Semester &amp; Year</th>
<th>Classification Level</th>
<th>Student Headcount</th>
<th>Avg New GRE Total</th>
<th>Avg New GRE Verbal</th>
<th>Avg New GRE Quantitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>CECN</td>
<td>Fall 2012</td>
<td>Doctoral</td>
<td>1</td>
<td>304</td>
<td>140</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
<td>10</td>
<td>316</td>
<td>152</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>Fall 2013</td>
<td>Doctoral</td>
<td>8</td>
<td>311</td>
<td>147</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
<td>25</td>
<td>318</td>
<td>154</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Fall 2014</td>
<td>Doctoral</td>
<td>5</td>
<td>307</td>
<td>147</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
<td>17</td>
<td>319</td>
<td>155</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Fall 2015</td>
<td>Doctoral</td>
<td>11</td>
<td>310</td>
<td>151</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
<td>14</td>
<td>315</td>
<td>151</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Fall 2016</td>
<td>Doctoral</td>
<td>7</td>
<td>312</td>
<td>150</td>
<td>162</td>
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<tr>
<td></td>
<td></td>
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<td>14</td>
<td>321</td>
<td>155</td>
<td>166</td>
</tr>
<tr>
<td></td>
<td>Fall 2012</td>
<td>Doctoral</td>
<td>2</td>
<td>322</td>
<td>160</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
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<td>313</td>
<td>152</td>
<td>161</td>
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<td></td>
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<td></td>
<td>Masters</td>
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<td>316</td>
<td>152</td>
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</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Masters</td>
<td>39</td>
<td>321</td>
<td>155</td>
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<tr>
<td></td>
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<td>321</td>
<td>154</td>
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<tr>
<td></td>
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<td>Doctoral</td>
<td>16</td>
<td>314</td>
<td>152</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
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<td>319</td>
<td>153</td>
<td>166</td>
</tr>
</tbody>
</table>
Table 5.5C Standardized Test Scores of First-Time Graduate Students (OLD GRE Score Results)

<table>
<thead>
<tr>
<th>Major</th>
<th>Semester &amp; Year</th>
<th>Classification Level</th>
<th>Student Headcount</th>
<th>Average Old GRE Total</th>
<th>Average Old GRE Verbal</th>
<th>Average Old GRE Quantitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>CECN</td>
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<td>Doctoral</td>
<td>16</td>
<td>1242</td>
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<td>749</td>
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<td>23</td>
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<td>547</td>
<td>758</td>
</tr>
<tr>
<td></td>
<td>Fall 2012</td>
<td>Doctoral</td>
<td>7</td>
<td>1324</td>
<td>550</td>
<td>774</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
<td>23</td>
<td>1353</td>
<td>570</td>
<td>784</td>
</tr>
<tr>
<td></td>
<td>Fall 2013</td>
<td>Doctoral</td>
<td>6</td>
<td>1235</td>
<td>512</td>
<td>723</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
<td>5</td>
<td>1404</td>
<td>612</td>
<td>792</td>
</tr>
<tr>
<td></td>
<td>Fall 2014</td>
<td>Masters</td>
<td>5</td>
<td>1402</td>
<td>628</td>
<td>774</td>
</tr>
</tbody>
</table>

Financial Support

There are a number of fellowships, scholarships, and assistantships available within the Department of Computer Science and Engineering. Ph.D. students receive the highest priority for Departmental assistantships, fellowships, and scholarships. Most faculty award their research assistantships similarly. Assistantship positions require an average of 20 hours of work per week and assistantships include 9 credit-hours of tuition and fees. Students with assistantships are eligible for University health insurance coverage and a portion of their 4 monthly premium is paid by the employer. Information on health insurance premiums and coverage is available online.

Additional positions are available in other campus departments where students can work as programmers, systems analysts, web developers, and computer operators. Some of these positions are graduate assistantships that qualify for the same benefits (such as in-state tuition) as Departmental assistantships. Arrangements with other departments are made by the student.

The tables below (5.5D) provide information on the number of students with financial support from our department. The College of Engineering also hires our graduate students to support their freshmen engineering courses.
### Tables 5.5D: Graduate Assistant Support by Semester

<table>
<thead>
<tr>
<th>Support</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FA10</td>
<td>SP11</td>
<td>SU11</td>
</tr>
<tr>
<td>GAR</td>
<td>79</td>
<td>97.5</td>
<td>75</td>
</tr>
<tr>
<td>GANT</td>
<td>7</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>GAT</td>
<td>54</td>
<td>51.5</td>
<td>7</td>
</tr>
</tbody>
</table>

GAR – Graduate Assistant Research; GANT – Graduate Assistant Non-Teaching; GAT – Graduate Assistant Teaching

### Internships

It is common for most of our graduate students to spend one or more semesters working at various industry or government labs. These internships offer valuable work experience as well as a source of funding to support their studies. They also offer students a chance to get a good foot in the door towards a potential full-time job when they graduate. Table 5.5E captures only the number of students formally enrolled in the internship training course, therefore does not reflect all the internships being pursued.

### Table 5.5E: Number of Graduate Students on Internships by Semester (for credit only)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Summer</td>
<td>47</td>
<td>60</td>
<td>40</td>
<td>53</td>
<td>46</td>
</tr>
<tr>
<td>Fall</td>
<td>6</td>
<td>15</td>
<td>2</td>
<td>5</td>
<td>N/A</td>
</tr>
</tbody>
</table>


**Graduation Rates**

Table 5.5F presents the numbers of graduates from our programs (by semester and program). Table 5.5G depicts the overall numbers for the department.

Table 5.5F: Number of Graduates by Graduate Program and by Semester

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Semester</th>
<th>Computer Science</th>
<th>Computer Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Master's</td>
<td>Doctoral</td>
</tr>
<tr>
<td>2011-2012</td>
<td>Fall</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>33</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Summer</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>64</td>
<td>21</td>
</tr>
<tr>
<td>2012-2013</td>
<td>Fall</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>24</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Summer</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>41</td>
<td>16</td>
</tr>
<tr>
<td>2013-2014</td>
<td>Fall</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Summer</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>2014-2015</td>
<td>Fall</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>38</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Summer</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>75</td>
<td>5</td>
</tr>
<tr>
<td>2015-2016</td>
<td>Fall</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Summer</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>64</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 5.5G: Number of CSE Ph.D. and MS graduations

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Master's</th>
<th>Doctoral</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-2012</td>
<td>76</td>
<td>26</td>
</tr>
<tr>
<td>2012-2013</td>
<td>51</td>
<td>23</td>
</tr>
<tr>
<td>2013-2014</td>
<td>51</td>
<td>24</td>
</tr>
<tr>
<td>2014-2015</td>
<td>92</td>
<td>7</td>
</tr>
<tr>
<td>2015-2016</td>
<td>70</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>350</td>
<td>108</td>
</tr>
</tbody>
</table>

The very low number of Ph.D. graduations during the 2014-2015 academic year was worrisome. We reacted by paying more attention during the annual Ph.D. review to the progress markers in the program. Students who show good research productivity regarding publications but are behind in satisfying the program milestones are now flagged for in-depth discussion during the
review. The official graduation numbers for 2016-2017 are not available yet, but the numbers are likely to be much higher than 2015-2016.

Table 5.5H below presents information on our graduate population. In terms of Hispanic students, the graduate student rate (6%) in considerably lower than what we have in our undergraduate programs (22%).

<table>
<thead>
<tr>
<th>Year</th>
<th>Female (% of total)</th>
<th>African American (% of total)</th>
<th>Hispanic (% of total)</th>
<th>Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2011</td>
<td>54 (17%)</td>
<td>6 (2%)</td>
<td>10 (3%)</td>
<td>316</td>
</tr>
<tr>
<td>Fall 2012</td>
<td>44 (16%)</td>
<td>4 (1%)</td>
<td>8 (3%)</td>
<td>268</td>
</tr>
<tr>
<td>Fall 2013</td>
<td>59 (19%)</td>
<td>3 (1%)</td>
<td>9 (3%)</td>
<td>312</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>64 (20%)</td>
<td>4 (1%)</td>
<td>14 (4%)</td>
<td>320</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>56 (18%)</td>
<td>5 (2%)</td>
<td>17 (5%)</td>
<td>315</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>53 (17%)</td>
<td>6 (2%)</td>
<td>17 (6%)</td>
<td>308</td>
</tr>
</tbody>
</table>

5.6 Graduate Service to Other Programs

As mentioned in Section 5.1, the Department of Electrical and Computer Engineering (ECEN) also offers computer engineering graduate programs. The CSE computer engineering graduate students are required to take two ECEN courses, and ECEN students also have CSE requirements. As the data in the tables below (5.6A) indicates, ECEN students also take many of their electives from our department. We also serve many students in the electrical engineering program. For clarification, ELEN refers to students in the Electrical Engineering program; CEEN refers to students in the ECEN Computer Engineering program; CECN refers to students in the CSE Computer Engineering program; and CPCS refers to students in the CSE Computer Science program.

Table 5.6A: Seats taken in CSE department graduate courses.

<table>
<thead>
<tr>
<th>Spring 2016</th>
<th>Seats</th>
<th>CSCE</th>
<th>ECEN</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEN</td>
<td>48</td>
<td>371</td>
<td>419</td>
<td></td>
</tr>
<tr>
<td>CPSC</td>
<td>264</td>
<td>10</td>
<td>274</td>
<td></td>
</tr>
<tr>
<td>CEEN</td>
<td>103</td>
<td>180</td>
<td>283</td>
<td></td>
</tr>
<tr>
<td>CECN</td>
<td>74</td>
<td>16</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>489</td>
<td>577</td>
<td>1066</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fall 2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
<td>--------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CSCE</td>
<td>ECEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEN</td>
<td>39</td>
<td>618</td>
<td>657</td>
<td></td>
</tr>
<tr>
<td>CPSC</td>
<td>303</td>
<td>15</td>
<td>318</td>
<td></td>
</tr>
<tr>
<td>CEEN</td>
<td>234</td>
<td>133</td>
<td>367</td>
<td></td>
</tr>
<tr>
<td>CECN</td>
<td>88</td>
<td>17</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>664</strong></td>
<td><strong>783</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Spring 2017</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CSCE</td>
<td>ECEN</td>
<td></td>
</tr>
<tr>
<td>ELEN</td>
<td>56</td>
<td>359</td>
<td>415</td>
</tr>
<tr>
<td>CPSC</td>
<td>265</td>
<td>12</td>
<td>277</td>
</tr>
<tr>
<td>CEEN</td>
<td>157</td>
<td>138</td>
<td>295</td>
</tr>
<tr>
<td>CECN</td>
<td>46</td>
<td>14</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td><strong>524</strong></td>
<td><strong>523</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Fall 2017 – PRELIMINARY NUMBERS</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CSCE</td>
<td>ECEN</td>
<td></td>
</tr>
<tr>
<td>ELEN</td>
<td>7</td>
<td>580</td>
<td>587</td>
</tr>
<tr>
<td>CPSC</td>
<td>402</td>
<td>19</td>
<td>421</td>
</tr>
<tr>
<td>CEEN</td>
<td>191</td>
<td>225</td>
<td>416</td>
</tr>
<tr>
<td>CECN</td>
<td>77</td>
<td>20</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td><strong>677</strong></td>
<td><strong>844</strong></td>
<td></td>
</tr>
</tbody>
</table>
6. Plans and Assessment

6.1 Mission Statement

Our mission is to develop the human and intellectual resources needed to meet the future technological challenges in the field of computing. This charge includes developing computer scientists and computer engineers for positions of leadership in industry, government, and academia. It also means performing basic, applied, and multidisciplinary research as well as coordinating and cooperating with other parts of the Texas A&M System to enhance the effectiveness of educational resources.

We did not update our mission statement since the last review. The department’s and the college’s mission statements continue to be tightly aligned.

6.2 Vision, Goals and Metrics

The overall goal of the Department of Computer Science and Engineering is to elevate our educational and innovation programs further while achieving a high level of recognition for our strengths and contributions.

Our vision is to be a department where faculty members address relevant problems through active multidisciplinary collaborations that generate impactful results while contributing to programs that provide rich educational experiences for a large number of students. Within this vision, our contributions will also produce reliable performance indicators that lead to a highly-ranked graduate program.

The College of Engineering (CoE) is currently finalizing its 2017-2025 strategic plan document. The current draft of the document (currently being reviewed by the faculty at large) specifies three graduate programs goals:

CoE’s Goal #1: Enhance recruitment of top graduate students. The ability to recruit top graduate students is key to advancing research productivity and reputation.

Strategies to recruit the highest quality graduate students include:

- Make early offers to PhD students to improve chances of acceptance.
- Increase availability of internal fellowships to fund the first year of study for PhD students.
- Assist current and prospective PhD students in preparing competitive applications for federal fellowships.
- Engage industries to determine unmet workforce needs to align the graduate curriculum.
• Enhance adaptability to changes in graduate student recruitment channels (e.g., institutions, regions, countries that have provided strong pipelines are likely to change over time).
• Continue efforts to build relationships/pipelines with institutions known to graduate talented undergraduates but lack strong graduate programs.

CoE’s Goal #2: Foster a diverse graduate student population that is reflective of the nationwide demographics.

Strategies to bring about a diverse graduate student population include:

• Provide an environment (in the classroom and lab, as well as outside of the classroom and lab) that embraces the diversity of thought and experiences.
• Expand opportunities for creating communities among graduate students.
• Enhance the outreach and recruiting programs to include diverse undergraduate student populations to increase interest and broaden participation in our graduate programs.

CoE’s Goal #3: Prepare students for thriving research careers in academia and industry.

Strategies to prepare students for thriving research careers include:

• Increase opportunities for students to practice the skills needed for thriving research careers.
• Expand professional development programs to increase awareness about different career paths.
• Increase assistance and guidance for pursuing careers in academia and industry
• Provide the financial support necessary for students to excel in research.
• Expand efforts for internship experiences with leading industry and national laboratory partners.
• Foster an academic culture to promote innovation and entrepreneurship.

Many of the elements in these three goals also appear in the department’s strategic goals.

Our four strategic goals are:

1. Improvement in ranking: among public universities move to the top 15 in computer science and top 5 in computer engineering;

2. Strong focus on multidisciplinary research: increase participation of faculty in multidisciplinary research projects and increase the number of large-scale multidisciplinary projects led by CSE faculty;
3. **Enhance support for faculty success**: decrease teaching load and increase professorship and chairs;

4. **Better serving more students**: as we grow our programs, expand activities that foster a diverse environment of contagious intellectual curiosity and self-driven learning.

**Goal 1: Improvement in Ranking: among public universities move to the top 15 in computer science and top 5 in computer engineering**

The U.S. News & World Report ranked our computer science graduate program #27 in 2010 and also #27 in 2012. In the [last available ranking (2014)](https://academicanalytics.com/), our rank was 21 (tied with Stony Brook University, University of Arizona, the University of Colorado at Boulder, University of Utah, and Virginia Tech).

Both the Department of Computer Science and Engineering and the Department of Electrical and Computer Engineering offer graduate engineering programs. U.S. News & World Report ranked the Texas A&M University’s computer engineering program #14 in 2011 and #11 in 2012. In [2017](https://www.csrankings.org), the computer engineering program was ranked #10 (tied with Ohio State University and Pennsylvania State University).

According to the [information provided by the U.S. News & World 2018 Report](https://www.csrankings.org), computer engineering programs are ranked yearly based on statistical indicators that measure the quality of the school’s faculty, research, and students and on expert’s opinions about the program. Computer science programs are ranked periodically, based solely on academic expert’s opinions. This highlights the importance of improving our reputation with peers, which involves the pursuit of excellence not only in research activities and hiring but also in increasing the visibility of our faculty and our research projects.

**Metric for Goal 1**: track progress on external rankings. The ranking produced by U.S. News & World Report is the key one, but we will also track our progress using information from sources such as [csrankings.org](https://csrankings.org) and [https://academicanalytics.com/](https://academicanalytics.com/)

**Goal 2: Strong focus on multidisciplinary research: increase participation of faculty in multidisciplinary research projects and increase the number of large-scale multidisciplinary projects led by CSE faculty**

The opportunities for applying computational approaches to attack the most relevant societal problems continues to grow. A lot of important work can and need to be done for continuing to advance the computing field, but a multidisciplinary collaborative approach is required for tackling complex problems that cannot be reduced to single-domain views.
The department evolved from a collection of single-PI laboratories to fluid research groups organized around current projects and opportunities. This was an important step, but to achieve a significant increase in the number of large multidisciplinary projects the culture needs to continue to evolve.

An analysis of the research projects proposals since Fall 2014 (FY15) indicates that more involvement in multidisciplinary collaboration. Among the proposals submitted in the 2014-2015 academic year, 45% exhibited some level of multidisciplinary approach. The data from September 2016 to July 2017 shows that 63% of the proposals involved multidisciplinary collaboration. Regarding the size of the proposals, for 2014-2015 12% of the submitted proposals exceeded $900,000 while the data available for 2016-2017 shows 17.3%. Regarding large proposals ($10M and higher), our faculty participated in one such proposal in 2015-2016 and one in 2016-2017 (still pending at the time of submission of this document).

**Metric for Goal 2:** For the 2020-2021 academic year, we aim at achieving a proposal portfolio with 75% of the proposals being multidisciplinary, 50% of the proposals being larger than $1,000,000, and increased participation in large grants.

**Goal 3: Enhance support for faculty success: decrease teaching load and increase professorship and chairs**

Our vision has in its foundation faculty excellence. In the current atmosphere of rapid growth, hiring decisions continue to be of fundamental importance to achieving a department of prominence. It is also important to build an environment of support for faculty that keeps our talent here and enables our faculty members to pursue impactful research agendas.

As the tables in Section 4.4 indicate, the teaching load for our tenured and tenure-track faculty has been decreased (e.g., for Professors, it went from an average of 3.0 courses per faculty in 2013 to 2.02 in 2016). For Associate Professors, the average went from 3.0 to 2.4; for Assistant Professors from 3.0 to 1.72. Our goal is to have both at the average of 2.0 courses per year, and Assistant Professors at 1.0.

Endowed chairs and professorships play an important role in recruiting and retaining outstanding faculty. Starting in 2013, we increased our development activities. We put a lot of effort on connecting with former students to present them with opportunities to contribute to our goals.

As of Spring 2016, the department has two endowed chairs. Five professorships awarded to the college are held by our faculty. Starting this Fall, our development efforts also aim at supporting Department Fellow positions for junior faculty.
**Metric for Goal 3:** Teaching load by rank and number of chairs, professorship, and development fellowships.

**Goal 4:** Better serving more students: as we grow our programs, expand activities that foster a diverse environment of contagious intellectual curiosity and self-driven learning

Over the last six years, we have achieved significant improvement in the educational experience we offer our undergraduate students by allocating attention and resources to our honors program, peer teacher program, and initiatives led by student organization such as hackathons and programming competitions.

Regarding graduate students, over the last four years, we succeeded in maintaining a fruitful collaboration with the graduate student organization (CSEGSA). We worked together to assess the graduate student climate, identify problems that needed to be addressed, and improve communication channels between students, their advisors, and the department.

Our current work with CSEGSA is focused on the portfolio of activities to support student success. We have a number of events that guide graduate students regarding career options and people skills. We have a very active weekly seminar that exposes the students to ideas from a diversity of technical fields. We now aim at new activities focusing on how to communicate technical ideas and results.

As we continue to grow our graduate programs, we aim at improving the diversity of our student population. An important priority is to increase the number of Hispanic students in the graduate program. In our undergraduate program, 22% of students are Hispanic while in the graduate program it is only 6%.

**Metric for Goal 4:** climate surveys, number of and participation ration in student success programs, and diversity numbers

6.3 Future Developments

The College of Engineering has as one of its paths to achieve the “25 by 25” goal (25,000 students by 2025) the creation of new distance Master’s programs. All departments have the charge of assessing which of their graduate program would bring value to our constituents if available through remote delivery.

The Department of Electrical and Computer Engineering has initiated the formal creation of a distance version of their Master of Engineering in Computer Engineering program. This approved program can also be offered by our department, if we decide to do so. A new committee is being created to handle distance education. It will analyze the implications of adding a distance program to our portfolio and facilitate the faculty discussion of this topic. In the summer of 2017, we delivered our first distance education course (CSCE 611, Operating
Systems) targeting our existing graduate students. The Distance Education Committee will make recommendations on which graduate courses should be made available to our students through distance delivery over the summer semester, when many of our students are away at internships.
### Appendix A – Faculty List

Tenured and Tenure-track Faculty as of Fall 2016:

<table>
<thead>
<tr>
<th>Name</th>
<th>Research Interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amato, Nancy</td>
<td>Algorithms and Theory; Bioinformatics; Computational Biology; Computational Science; Parallel and Distributed Computing; Robotics; Human-Robot Interaction; Systems</td>
</tr>
<tr>
<td>Bettati, Riccardo</td>
<td>Cyber-Physical Systems; Cybersecurity; Systems</td>
</tr>
<tr>
<td>Caverlee, James</td>
<td>Databases; Data Mining; Information Retrieval Systems; Data Science; Digital Humanities; Human-Centered Systems; Systems</td>
</tr>
<tr>
<td>Chai, Jinxiang</td>
<td>Computer Vision; Graphics; Visualization; Human-Centered Systems</td>
</tr>
<tr>
<td>Chen, Jianer</td>
<td>Algorithms and Theory; Systems</td>
</tr>
<tr>
<td>Choe, Yoonsuck</td>
<td>Artificial Intelligence; Intelligent Systems; Machine Learning; Data Science</td>
</tr>
<tr>
<td>Da Silva, Dilma</td>
<td>Computer Science Education; Parallel and Distributed Computing; Software; Software Engineering; Systems</td>
</tr>
<tr>
<td>Davis, Tim</td>
<td>Algorithms and Theory; Computational Science; Parallel and Distributed Computing; Systems</td>
</tr>
<tr>
<td>Furuta, Richard</td>
<td>Databases; Data Mining; Information Retrieval Systems; Digital Humanities; Human-Centered Systems; Human-Computer Interaction</td>
</tr>
<tr>
<td>Gooch, Bruce</td>
<td>Computer Vision; Digital Humanities; Graphics; Visualization</td>
</tr>
<tr>
<td>Gu, Guofei</td>
<td>Cybersecurity; Networks; Systems</td>
</tr>
<tr>
<td>Gutierrez-Osuna, Ricardo</td>
<td>Artificial Intelligence; Intelligent Systems; Machine Learning; Cyber-Physical Systems; Data Science; Health; Human-Centered Systems; Systems</td>
</tr>
<tr>
<td>Hammond, Tracy</td>
<td>Artificial Intelligence; Intelligent Systems; Machine Learning; Natural Language Processing; Computer Science Education; Cyber-Physical Systems; Health; Human-Centered Systems; Human-Computer Interaction</td>
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<tr>
<td>Hu, Xia (Ben)</td>
<td>Artificial Intelligence; Machine Learning; Databases; Data Mining; Information Retrieval Systems; Data Science; Health</td>
</tr>
<tr>
<td>Huang, Jeff</td>
<td>Programming Languages; Compilers; Software and Software Engineering; Systems</td>
</tr>
<tr>
<td>Name</td>
<td>Research Interests</td>
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<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------</td>
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<tr>
<td>Huang, Ruihong</td>
<td>Artificial Intelligence; Intelligent Systems; Machine Learning; Natural Language Processing; Data Science; Digital Humanities; Human-Centered Systems</td>
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<tr>
<td>Ioerger, Thomas</td>
<td>Artificial Intelligence; Machine Learning; Bioinformatics; Computational Biology; Data Science</td>
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<tr>
<td>Jafari, Roozbeh</td>
<td>Cyber-Physical Systems; Embedded Systems; Health; Systems</td>
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<tr>
<td>Jiang, Andrew</td>
<td>Algorithms and Theory; Networks; Systems</td>
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<td>Jiménez, Daniel</td>
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<td>Kerne, Andruid</td>
<td>Human-Centered Systems; Human-Computer Interaction; Digital Humanities</td>
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<tr>
<td>Keyser, John</td>
<td>Algorithms and Theory; Graphics; Visualization</td>
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<tr>
<td>Kim, Eun Jung</td>
<td>Computer Architecture</td>
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<td>Klappenecker, Andreas</td>
<td>Algorithms and Theory</td>
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<tr>
<td>Liu, Jyh-Charn</td>
<td>Cyber-Physical Systems; Embedded Systems; Health; Cybersecurity; Systems</td>
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<td>Loguinov, Dmitri</td>
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<td>Mahapatra, Rabi</td>
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<td>Murphy, Robin</td>
<td>Robotics; Human-Robot Interaction</td>
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<td>Rauchwerger,</td>
<td>Computational Science; Parallel and Distributed Computing; Programming Languages; Compilers; Software and Software Engineering; Systems</td>
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<td>Lawrence</td>
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<td>Sarin, Vivek</td>
<td>Computational Science; Systems</td>
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<td>Schaefer, Scott</td>
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<td>Shell, Dylan</td>
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<tr>
<td>Song, Dezhen</td>
<td>Computer Vision; Robotics; Human-Robot Interaction</td>
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</table>
Stoleru, Radu  Networks; Parallel and Distributed Computing; Systems
Sueda, Shinjiro  Computational Fabrication; Graphics; Visualization
Sze, Sing-Hoi  Algorithms and Theory; Bioinformatics; Computational Biology; Health
Taylor, Valerie  Computational Science; Computer Science Education; Parallel and Distributed Computing; Systems
Walker, Duncan  Computer Science Education; Electronic Design Automation and VLSI; Software and Software Engineering; Systems
Welch, Jennifer  Algorithms and Theory; Parallel and Distributed Computing; Systems
Williams, Tiffani  Algorithms and Theory; Bioinformatics; Computational Biology; Parallel and Distributed Computing

Faculty with Courtesy Appointments as of Fall 2016:
Akleman, Ergun  Department of Visualization (College of Architecture) Graphics; Computer Aided Architecture; Visualization
Duffield, Nick  Department of Electrical and Computer Engineering (College of Engineering) Algorithms and Theory; Machine Learning; Data Science; Networks
Goldberg, Daniel  Department of Geography (College of Geosciences) GIS; Geocomputation; CyberGIS; Spatial Databases
Gratz, Paul  Department of Electrical and Computer Engineering (College of Engineering) Security; Distributed Computer Architectures; Processor Memory Systems; On-chip Interconnection Networks
Kum, Hye-Chung  Department of Health Policy and Management (School of Public Health) Population Informatics; Accurate Evidence Based Decisions; Data Science of Using Massive Secondary Datasets
Quek, Francis  Department of Visualization (College of Architecture) Human-Computer Interaction; Computer Vision
Ragan, Eric  Department of Visualization (College of Architecture) Graphics; Visualization; Human-Computer Interaction; Visual Analytics
Rojas, J. Maurice  Department of Mathematics (College of Science) Computational Algebraic Geometry; Complexity Theory; Scientific Computation
Appendix B – Committees

Below is the list of the 2016-2017 committees in alphabetical order. Two of the committees (the Advisory Committee and the Promotion & Tenure Committees) are determined by faculty vote. For the other committees, the department head defines their composition prior to the start of the school year, based on input from faculty members on their preferences.

Academic Professional Track Faculty Search Committee (APT)

The APT Committee helps identify and recommend the best candidates to fill available non-tenure track faculty positions. This committee advertises the available openings, evaluates the credentials of applicants for the open positions, conducts phone and on-campus interviews, and makes recommendations to the faculty and to the Department Head. The members of this committee are appointed by the Department Head.

**Current Academic Professional Track Faculty Search Committee members:** Scott Schaefer, Chair; Rick Furuta, John Keyser, Dylan Shell, and Aakash Tyagi

Advisory Committee

The Advisory Committee (AdCom) discusses main department initiatives and provides recommendations to the Department Head. The CSE faculty elects the members of this committee. The Department Head may invite additional members to improve the coverage of research areas, for example.

**Current AdCom members:** Dilma Da Silva, Chair; Nancy Amato, James Caverlee, Jeff Huang, Philip Ritchey, Dylan Shell, Frank Shipman, Radu Stoleru, Aakash Tyagi, Jennifer Welch, and John Keyser

Climate Committee

The goal of the Climate Committee is to monitor the climate in the department and to suggest actions that could be taken to improve collegiality and maintain a culture of mutual respect among all students, staff, and faculty in the department. The members of this committee are appointed by the Department Head.

**Current Climate Committee members:** Hyunyoung Lee, Chair; Brad Goodman, Steve Liu, Philip Ritchey, Sing-Hoi Sze, Sybil Popham, and Bruce Veals

Colloquium Committee

The Colloquium Committee coordinates seminars in the department including the CSCE 681 graduate seminar, the Department Distinguished Lecturer Series, and other ad hoc lectures. The members of this committee are appointed by the Department Head.
**Colloquium Committee members:** Nancy Amato, Co-Chair and Lawrence Rauchwerger, Co-Chair

**Communications Committee**

The Communications Committee is charged with defining the departmental communications strategy. The members of this committee are appointed by the Department Head.

**Communications Committee members:** Dilma Da Silva, Chair; Nancy Amato, Bruce Gooch, Andrew Jiang, Dan Ragsdale, Kathy Waskom, and Rachel Rose

**Computer Engineering Coordinating Committee**

This committee has membership from CSCE and ECEN to discuss issues related to the computer engineering (CE) degrees (both graduate and undergraduate) that are jointly administered by the departments. The members of this committee are appointed by their respective Department Heads.

**Computer Engineering Coordinating Committee members:** Riccardo Bettati, Co-Chair and Pierce Cantrell, Co-Chair: Miroslav Begovic, Dilma Da Silva, Stavros Kalafatis, Aydin Karsilayan, Scott Schaefer, Alex Sprintson, Hank Walker, Steve Wright, Sam Villareal, Rick Furuta, John Keyser, and Vivek Sarin

**Endowed Chair Faculty Search Committee**

The Endowed Chair Faculty Search Committee helps identify and recommend the best candidates to fill the department’s endowed chair position. The members of this committee are appointed by the Department Head.

**Current Endowed Chair Faculty Search Committee members:** Nancy Amato, Chair; Riccardo Bettati, Daniel Jiménez, Frank Shipman, and Jennifer Welch.

**Faculty Awards Committee**

The Faculty Awards Committee identifies faculty members to be nominated for internal and external awards and facilitates these nominations, working together with the nominated faculty members and staff support. In addition, the aim is to make the handling of awards systematic and to build up an “institutional memory” of expertise related to selecting and applying for awards, of relevant information about faculty, and information about possible awards. The members of this committee are appointed by the Department Head.

**Current Faculty Awards Committee members:** Andrew Jiang, Co-Chair and Tim Davis, Co-Chair; James Caverlee, Guofei Gu, Frank Shipman, Radu Stoleru and John Keyser
**Graduate Awards Committee**

The Graduate Awards Committee works to identify, nominate, and, as appropriate, select graduates for external and internal awards. They also manage departmental travel awards. The members of this committee are appointed by the Department Head.

*Current Graduate Award Committee members*: Jianer Chen, Chair; EJ Kim, Dmitri Loguinov, Rabi Mahapatra, Robin Murphy, John Keyser, and Hank Walker

**Graduate Advisory Committee**

The Graduate Advisory Committee is charged with reviewing graduate curriculum and making recommendations to improve the quality of the program as a whole. This committee defines the best assessment tools to measure the effectiveness of curriculum initiatives. The members of this committee are appointed by the Department Head.

*Current Graduate Advisory Committee members*: Daniel Jiménez, Chair; James Caverlee, Yoonsuck Choe, Guofei Gu, Dylan Shell, Radu Stoleru, and Hank Walker

**Growth Committee**

The College of Engineering is engaged in the 25x25 Program, which means it plans to see the college grow to 25,000 by the year 2025. The Growth Committee makes recommendations to make this growth as smooth as possible. Issues regarding enrollment and needs regarding classrooms and laboratories are carefully analyzed. The members of this committee are appointed by the Department Head.

*Current Growth Committee members*: Tom Ioerger, Chair; Vivek Sarin, John Keyser and Hank Walker

**Master’s Admissions and Recruiting Committee**

The Master’s Admissions and Recruiting Committee is responsible for identifying and recruiting high caliber Master’s students. The committee is also charged with reviewing and recommending acceptance into our programs. The members of this committee are appointed by the Department Head.

*Current Master’s Admissions and Recruiting Committee members*: Rabi Mahapatra, Chair; Jinxiang Chai, Yoonsuck Choe, Dilma Da Silva, Andreas Klappenecker, Dan Ragsdale, and Hank Walker

**Ph.D. Admissions and Recruiting Committee**

The Ph.D. Admissions and Recruiting Committee is responsible for identifying and recruiting high caliber doctoral students. The committee is also charged with reviewing and recommending acceptance into our programs. The members of this committee are appointed by the Department Head.
Current Ph.D. Admissions and Recruiting Committee members: EJ Kim, Chair; Jianer Chen, Bruce Gooch, Guofei Gu, Ben Hu, Jeff Huang, Ruihong Huang, Dmitri Loguinov, Shinjiro Sueda, and Hank Walker

Promotion and Tenure Committee (P&T)

The department’s P&T committee consists of 11 faculty members from the CSE department: Seven hold the rank of professor and are elected; two hold the rank of associate professor and are selected based on an algorithm developed and approved by the CSE faculty at large; and two hold the rank of academic professional track, with one being elected by eligible APT faculty, and the other being appointed by the CSE Department Head. The chair of the P&T committee is selected by the Department Head. Each elected member at the professor rank serves a three-year term, the associate professors and APT faculty serve a one-year term, as does the P&T chair. Those holding the associate professor rank do not participate in the evaluation of associate professor packages. The APT representatives participate only in the promotion processes of APT faculty. This committee also assists with determining the rank offered to new faculty hires and with the appointment and renewal of adjunct and courtesy appointments.

Current P&T Committee members: Frank Shipman, Chair; Members at Professor rank are Jennifer Welch, Nancy Amato, Ricardo Gutierrez, John Keyser, Rick Furuta and Hank Walker; Associate Professor rank members: James Caverlee and Andrew Jiang; APT members: Dan Ragsdale and Teresa Leyk

Research Computing Services Committee

The Research Computing Services Committee (RCSC) is focused on the research-computing infrastructure within the department and makes recommendations on policies and best practices. The members of this committee are appointed by the Department Head.

Current Research Computing Services Committee members: Dmitri Loguinov, Chair; Tim Davis, Brad Goodman, Andrew Jiang, Andruid Kerne, and Radu Stoleru

Space Committee

The Space Committee is charged with making recommendations related to space allocation departmental policies. The members of this committee are appointed by the Department Head.

Current Space Committee members: Nancy Amato, Co-Chair, and Ricardo Gutierrez-Osuna, Co-Chair; Riccardo Bettati, Tim Davis, Dmitri Loguinov, Frank Shipman, and Bruce Veals
Tenure-Track Faculty Search Committee

The Tenure/Tenure-Track Faculty Committee helps identify and recommend the best candidates to fill available tenure/tenure-track faculty positions. This committee advertises the available openings, evaluates the credentials of applicants for the open positions, and makes recommendations to the faculty and to the Department Head. The members of this committee are appointed by the Department Head.

*Current Tenure/Tenure-Track Faculty Committee members:* Jennifer Welch, Chair; Nancy Amato, James Caverlee, Daniel Jiménez, Lawrence Rauchwerger, Dez Song, and Radu Stoleru

Undergraduate Awards Committee

The Undergraduate Awards Committee works to identify, nominate, and, as appropriate, select undergraduates for external and internal awards. The members of this committee are appointed by the Department Head.

*Current Undergraduate Award Committee members:* Andreas Klappenecker, Chair; Teresa Leyk, Michael Moore, Rick Furuta, John Keyser, and Vivek Sarin

Undergraduate Curriculum Committee

The Undergraduate Curriculum Committee (UGCC) deals with issues related to the undergraduate curriculum and degree program in Computer Science (not Computer Engineering). UGCC also addresses ABET accreditation requirements. The members of this committee are appointed by the Department Head.

*Current UGCC Committee members:* Scott Schaefer, Chair; Riccardo Bettati, Yoonsuck Choe, Tim Davis, Tom Ioerger, Michael Moore, Dan Ragsdale, Rick Furuta, John Keyser, and Vivek Sarin

Visualization Joint Committee

The Visualization Joint Committee considers curriculum issues that relate to CSCE and VIZA, just as cross-listed courses, related degree programs, minor in game development, etc. The members of this committee are appointed by their respective Department Head.

*Current Visualization Joint Committee members:* Dilma Da Silva, Co-Chair, and Tim McLaughlin, Co-Chair; Ergun Akleman, Jinxiang Chai, Rick Furuta, John Keyser, Terry Larsen, Ann McNamara, Eric Ragan, and Scott Schaefer
Appendix C – Requirements for Graduate Degrees

Requirements for Master of Computer Science (MCS)

The Master of Computer Science (MCS) should be thought of as a professional, terminal degree. This degree does not include a thesis, project, or final examination.

Advisory Committee
MCS students will have a default advisory committee consisting solely of the Graduate Advisor as chair.

Degree Plan
Requirements for the MCS degree include:

- At least 18 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 18 hours of graded CSCE graduate coursework.
- At most one approved three-credit 400–level CSCE undergraduate course. See Section 4.4. This course does NOT count towards the 18 hours of CSCE graded graduate coursework.
- Up to 6 credit hours of non-CSCE graded graduate coursework (excluding 681, 684, 685, 691).
- 1 credit hour of CSCE 681 (Graduate Seminar).
- Up to 3 credit hours of CSCE 685 (Directed Studies).
- A total of at least 30 credit hours satisfying the above requirements.

The major steps, and deadlines for completing them, required for the MCS degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s graduate program webpages.
Requirements for Master of Science in Computer Science (MSCS)

The Master of Science in Computer Science (MSCS) is a research degree. A thesis and final examination (thesis defense) are required. Students who complete the MSCS may file a Letter of Intent requesting admission to the PhD program.

Advisory Committee
The student must select an Advisory Committee Chair from the Department’s graduate faculty. If a student wishes to have a Chair who does not have an appointment with the Department, then the committee must have two Co-Chairs, including one who is a member of the Department’s graduate faculty. (A committee has either one Chair or two Co-Chairs.)

The Chair and the student work together to select the remainder of the Advisory Committee. The Advisory Committee for the Master of Science in Computer Science (MSCS) consists of at least three members from the Texas A&M graduate faculty (the Chair counts as a member). There must be at least one member from another department and there must be a majority from the Department. Note that all faculty members with full joint appointments in the Department will be considered as Departmental faculty when evaluating the composition of the committee. Faculty who hold courtesy appointments will count as outside members of the committee. The Graduate Advising office can provide information on which faculty hold joint appointments.

The Advisory Committee can have supplemental members who are not members of the Texas A&M graduate faculty (and hence do not count when evaluating the composition of the committee). Supplemental members are usually added because they have some special expertise that is relevant to the student’s research topic. Such members are added by “Special Appointment” requests. Check with the Graduate Advising office for more information. After the student and Chair agree on a tentative Advisory Committee, the student will then meet with each prospective committee member to determine whether this committee assignment is agreeable, and then file a degree plan.

Degree Plan
The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the MSCS degree include:

- At least 18 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 18 hours of graded CSCE graduate coursework.
- At most one approved three-credit 400–level CSCE undergraduate course. See Section 4.4. This course does NOT count towards the 18 hours of CSCE graded graduate coursework.
At most 6 credit hours of non-CSCE graded graduate coursework (excluding 681, 684, 685, 691).
- 1 credit hour of CSCE 681 (Graduate Seminar).
- 4 to 7 credit hours of CSCE 691 (Research).
- Up to 3 credit hours of CSCE 685 (Directed Studies). The combination of 685 and 691 cannot exceed 7 credit hours.
- A total of at least 32 credit hours.
**Requirements for Doctor of Philosophy in Computer Science (Ph.D.CS)**

**Advisory Committee**
The Ph.D. Advisory Committee is the same as the Master of Science in Computer Science (MSCS) degree except that it must have a minimum of four members, a majority from the Department and at least one from another department.

**Degree Plan**
The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the Ph.D.CS degree include:

- At least 30 credit hours of graded graduate coursework (excluding 681, 684, 685, and 691).
- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 30 hours of graded graduate coursework.
- At most 6 credit hours of approved non-CSCE graded graduate coursework (excluding 681, 684, 685, 691). This counts towards the requirement of 30 hours of graded graduate coursework.
- 1 to 2 credit hours of CSCE 681 (Graduate Seminar).
- At least 18 credit hours of CSCE 691 (Research). Normally the number of CSCE 691 hours will be increased to meet the required total number of credit hours.
- A total of at least 96 credit hours (or at least 64 credit hours if the student has a prior, approved and related master’s degree).

The major steps, and deadlines for completing them, required for the Ph.D.CS degree is outlined in Section 4.3. At most 32 credit hours from other graduate degree programs (e.g., an MSCS) can be applied to the PhD degree. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s graduate program webpages.
Requirements for Master of Engineering (MEng)

The Master of Engineering in Computer Engineering (MEng) should be thought of as a professional, terminal degree. This degree does not include a thesis, project, or final examination.

Advisory Committee
MEng students will have a default advisory committee consisting solely of the Graduate Advisor as chair.

Degree Plan
Requirements for the MEng degree include:
- At least 12 credit hours of graded CSCE graduate coursework (excluding CSCE681, 684, 685, 691).
- At least 6 credit hours of graded ECEN graduate coursework that is not cross-listed with CSCE (excluding ECEN 681, 684, 685, 691).
- At least 6 credit hours of graded elective graduate coursework (excluding 681, 684, 685, and 691). This may include CSCE, ECEN, or other approved graduate courses.
- At most one approved three-credit 400–level CSCE or ECEN undergraduate course. See Section 4.4. This course does NOT count towards the 12 hours of CSCE graded graduate coursework.
- 1 credit hour of CSCE 681 (Graduate Seminar).
- Up to 3 credit hours of CSCE 685 (Directed Studies).
- A total of at least 30 credit hours satisfying the above requirements.

The major steps, and deadlines for completing them, required for the MEng degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s graduate program webpages.
Requirements for Master of Science in Computer Engineering (MSCE)

The Master of Science in Computer Engineering (MSCE) is a research degree. A thesis and final examination (thesis defense) are required. Students who complete the MSCE may file a Letter of Intent requesting admission to the PhD program.

Advisory Committee
The MSCE advisory committee is like that of the MSCS degree with the additional requirement that the Chair or a Co-Chair must be a member of the computer engineering faculty.

Degree Plan
The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the MSCE degree include:

- At least 12 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- At least 6 credit hours of graded ECEN graduate coursework that is not cross-listed with CSCE (excluding ECEN 681, 684, 685, 691).
- At least 6 credit hours of graded elective graduate coursework (excluding 681, 684, 685, and 691). This may include CSCE, ECEN, or other approved graduate courses.
- At most one approved three-credit 400–level CSCE or ECEN undergraduate course. See Section 4.4. This course does NOT count towards the 12 hours of CSCE graded graduate coursework.
- 1 credit hour of CSCE 681 (Graduate Seminar).
- 4 to 7 credit hours of CSCE 691 (Research).– Up to 3 credit hours of CSCE 685 (Directed Studies). The combination of 685 and 691 cannot exceed 7 credit hours.
- A total of at least 32 credit hours.

The major steps, and deadlines for completing them, required for the MSCE degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s graduate program webpages.
Requirements for Doctor of Philosophy Computer Engineering (Ph.D.CE)

Advisory Committee
The Ph.D.CE advisory committee is like that of the Ph.D.CS degree with the additional requirement that the Chair or a Co-Chair must be a member of the computer engineering faculty.

Degree Plan
The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the Ph.D.CE degree include:

- At least 30 credit hours of graduated graduate coursework (excluding 681, 684, 685, 691).
- At least 12 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- At least 6 credit hours of graded ECEN graduate coursework that is not cross-listed with CSCE (excluding ECEN 681, 684, 685, 691).
- At least 12 credit hours of graded elective graduate coursework (excluding 681, 684, 685, and 691). This may include CSCE, ECEN, or other approved graduate courses.
- 1 to 2 credit hours of CSCE 681 (Graduate Seminar).
- At least 18 credit hours of CSCE 691 (Research). Normally the number of CSCE 691 hours will be increased to meet the required total number of credit hours.
- A total of at least 96 credit hours (or at least 64 credit hours if the student has a prior, approved and related master’s degree).

The major steps, and deadlines for completing them, required for the Ph.D.CE degree is outlined in Section 4.3. At most 32 credit hours from other graduate degree programs (e.g., an MSCE) can be applied to the PhD degree. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s graduate program webpages.
Appendix D – The Industrial Affiliates Program (IAP)

The department’s Industrial Affiliates Program (IAP) was created in 2004 to improve relationships between the department and industry and to improve the department’s knowledge of industry needs and practices. While maintaining the original mission, the program was restructured in 2013 to better serve our industry partners, department and students and to increase interaction.

The original fall meetings were revamped and became the IAP Recruiting Event and CSE-Only Career Fair. The change better aligned the needs of both recruiters and students and has become very popular and well attended by both IAP members and our students. The two-day event includes resume clinics, mock interviews and networking events to prepare students for the career fairs and following interviews. The timing of the Recruiting Event and CSE-Only Career Fair in conjunction with the college’s Student Engineering Council’s (SEC) career fair allows for greater participation by IAP members and our students alike. Both events have been very successful. The first CSE-Only Career Fair was held in 2013 with approximately 50 students attending. In 2016, the room was at capacity with an estimated 250 students attending.

A portion of IAP membership is dedicated specifically to scholarships as seen in the table below. Scholarship awards typically range from $750 - $1500. The contributions from IAP members also provide financial support for community activities such as the spring banquet and dance and the department-wide fall picnic. In addition to these social activities, the program has been able to provide travel support for students to attend the annual ACM Richard Tapia Celebration of Diversity in Computing Conference and the Grace Hopper Celebration of Women in Computing Conference.

<table>
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<th>Year</th>
<th># of Scholarships Awarded</th>
<th>$ of Scholarships Awarded</th>
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<td>2012-2013</td>
<td>62</td>
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<tr>
<td>2013-2014</td>
<td>63</td>
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<tr>
<td>2014-2015</td>
<td>61</td>
<td>$85,500</td>
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<tr>
<td>2015-2016</td>
<td>93</td>
<td>$93,500</td>
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<tr>
<td>2016-2017</td>
<td>92</td>
<td>$97,500</td>
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</table>
The following is a list of IAP members and their respective levels as of August 2017.

<table>
<thead>
<tr>
<th>Gold Level Members</th>
<th>Silver Level Members</th>
<th>Bronze Level Members</th>
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<tbody>
<tr>
<td>Capital One</td>
<td>American Airlines</td>
<td>NSA</td>
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<tr>
<td>Chevron</td>
<td>Charles Schwab</td>
<td>Sandia National Laboratories</td>
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<td>ConocoPhillips</td>
<td>Credera</td>
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### Appendix E – Research Areas as of Fall 2017

<table>
<thead>
<tr>
<th>Research Area</th>
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<tr>
<td>Algorithms and Theory</td>
<td>Nancy Amato, Jianer Chen, Tim Davis, Juan Garay, Andrew Jiang, John Keyser, Andreas Klappenecker, Sing-Hoi Sze, Jennifer Welch, Tiffani Williams</td>
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<td></td>
<td>Courtesy appointment(s): Nick Duffield, J. Maurice Rojas</td>
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<tr>
<td>Artificial Intelligence, Intelligent Systems, Machine Learning, Natural Language Processing</td>
<td>Theodora Chaspari, Yoonsuck Choe, Ricardo Gutierrez-Osuna, Tracy Hammond, Ben Hu, Ruihong Huang, Thomas Ioerger, Dylan Shell, Atlas Wang</td>
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<td>Courtesy appointment(s): Nick Duffield</td>
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<td>Bioinformatics, Computational Biology</td>
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<td>Computational Science</td>
<td>Nancy Amato, Tim Davis, Lawrence Rauchwerger, Vivek Sarin</td>
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<td>Computer Science Education</td>
<td>Tracy Hammond, J. Michael Moore, Daniel Ragsdale, Philip Ritchey, Frank Shipman, Duncan “Hank” Walker</td>
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<td>Computer Architecture</td>
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<td>Computer Vision</td>
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<td>Courtesy appointment(s): Dan Goldberg</td>
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<td>Cybersecurity</td>
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<td>Courtesy appointment(s): Paul Gratz, J. Maurice Rojas</td>
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<td>Databases, Data Mining, Information Retrieval Systems</td>
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<td>Courtesy appointment(s): Nick Duffield, Dan Goldberg, Hye-Chung Kum</td>
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<td>Research Area</td>
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<td>Digital Humanities</td>
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<td>Ruihong Huang, Andruid Kerne, Frank Shipman</td>
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<td><strong>Faculty</strong></td>
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<td>Electronic Design Automation and VLSI</td>
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<td>Embedded Systems</td>
<td>Roozbeh Jafari, Steve Liu, Rabi Mahapatra, Bobak Mortazavi</td>
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<td>Graphics, Visualization, Computational Fabrication</td>
<td>Jinxiang Chai, Bruce Gooch, John Keyser, Scott Schaefer, Shinjiro Sueda</td>
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<td>Courtesy appointment(s): Ergun Akleman, Eric Ragan</td>
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<td>Health</td>
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<td>Programming Languages, Compilers</td>
<td>Jeff Huang, Lawrence Rauchwerger</td>
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<td>Systems</td>
<td>Nancy Amato, Riccardo Bettati, James Caverlee, Jianer Chen, Dilma Da Silva, Tim Davis, Guofei Gu, Ricardo Gutierrez-Osuna, Jeff Huang, Roozbeh Jafari, Andrew Jiang, Daniel Jiménez, Steve Liu, Dmitri Loguinov, Rabi Mahapatra, Lawrence Rauchwerger, Vivek Sarin, Radu Stoleru, Duncan “Hank” Walker, Jennifer Welch</td>
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<td>Courtesy appointment(s): Paul Gratz</td>
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Graduate Brochure
Department of Computer Science and Engineering
Texas A&M University

Last Updated April 9, 2015

Abstract. This document is a summary description of the graduate programs in the Department of Computer Science and Engineering. Current and prospective graduate students should be familiar with appropriate requirements in the latest version of this document and the current Texas A&M University graduate catalog. Links to other relevant information are included at the end of this document and on the graduate program webpages.

The degree requirements and all other information are subject to change without notice. Students who enroll at Texas A&M University will be allowed to graduate under the degree requirements in effect during their first semester. Every effort will be made to honor such obligations, although reasonable perturbations and substitutions may sometimes be required.

1. GENERAL INFORMATION

1.1. College Station/Bryan

The College Station/Bryan area has a 2010 population of approximately 230,000. Five of the six largest cities in Texas (Houston, Dallas, San Antonio, Ft. Worth, and Austin) are within 175 miles of the area. The Department has significant industrial connections in each of these cities. This is complemented by a growing industrial base in the local area. The area is known for a good quality of life that includes strong public school systems, parks, performing arts, sporting activities, and excellent, affordable housing.

1.2. Texas A&M University

Texas A&M University was established in 1876 as the first public institution of higher education in Texas, and is one of the state’s flagship universities. Texas A&M was the first university in the nation to receive land, sea and space grant designations. It has 2,800 faculty; over 9,000 graduate and professional students; and more than 38,000 undergraduate students on a spacious campus. Recent rankings of Texas A&M:

- Fourth in new National Merit scholars, nationally.
- Sixth in total value of endowments, nationally.
- Eleventh in research funding nationally.

1.3. The College of Engineering

The Dwight Look College of Engineering is one of the nation’s largest and is consistently listed among the country’s top 10 public graduate schools. It has 12 academic departments and is dedicated to providing a quality educational experience for its students. The college’s minority engineering, women’s, and honors programs are focal points in efforts to attract and retain students for engineering and science careers.

1.4. The Department

The computer science programs at Texas A&M began in 1962 and the department was formed in 1983. Today, the Department includes 37 tenured and tenure-track faculty, 5 lecturers, several research faculty, and approximately 350 graduate students and 650 undergraduate majors. The Department offers undergraduate and graduate degrees in Computer Science and, jointly with the Department of Electrical and Computer Engineering, in Computer Engineering.

1.5. Graduate Program

Advanced study in computer science and computer engineering provides students with the skills to design and utilize modern computer systems. The Department encourages both fundamental research in computing and interdisciplinary research. Research projects in diverse areas offer students a wide range of opportunities to gain experience while completing requirements for advanced degrees. Significant computational facilities, networks, and other resources are available to support student research.

Graduate studies in the Department can lead to the following degrees:

- Master of Computer Science (MCS)
- Master of Engineering in Computer Engineering (MEN)
- Master of Science in Computer Science (MSCS)
- Master of Science in Computer Engineering (MSCE)
- Doctor of Philosophy in Computer Science (PhDCS)
- Doctor of Philosophy in Computer Engineering (PhDCE)

The graduate degree programs are described in Section 4.

1.6. Graduate Faculty

A complete list of faculty in the Department that can serve on Advisory Committees for graduate degrees at Texas A&M University is available online along with their research interests. Additional information is available in each faculty member’s personal webpage and lab webpages.

2. ADMISSION

2.1. Application Process and Deadlines

Applications for graduate study should be completed on-line. Application fees, deadlines, required documentation, test scores, and other requirements are explained in the materials associated with either application format.

The application deadline for fall (September) admission is January 1 of that year, for full consideration for all departmental fellowships and assistantships. In order to avoid delays in
admission processing, we strongly recommend you submit your initial application by November 1. Test scores and letters can arrive later; the general application deadline for these is March 1 for fall (September) admission and August 1 for spring (January) admission. All deadlines apply to both international and U.S. applications.

Admission to the Department is very competitive and there are a limited number of openings available each year. Applications are typically not processed until they are complete, so make sure that all materials (e.g. letters, test scores) are submitted soon after the deadline.

There are a number of fellowships, scholarships and assistantships that are awarded by the Department and the University each year to the most competitive applicants. Applications received by January 1 or soon thereafter for fall (September) admission will receive full consideration for all such opportunities. There are relatively few fellowships and assistantships awarded for spring (January) admission.

Read the Texas A&M Admissions application instructions; international students should read the Admissions sections relevant to them. The Department also has a frequently-asked questions and answer list (FAQ).

The following is the step-by-step procedure for applying:

1. Create an application in the ApplyTexas system.
   a. Choose the option Texas A&M University from the dropdown list. (You can also apply to other Texas public universities with this system).
   b. If you are applying to the computer science program, select “Computer Science” as the major. If you are applying to the computer engineering program, select “Computer Engineering as the major.”
   - If you are applying to Computer Engineering, then you also need to select the department, Computer Science and Engineering (CSCE) or Electrical and Computer Engineering (ECEN). (The ApplyTexas web site may still list computer science as CPSC).
   - The degree program is not considered in the admission process, so if you select the wrong program do not be concerned. This can be changed after admission. We will not change it before admission.
   c. You will be required to pay the admission fee. The fee CANNOT be waived. Do not send us emails requesting a fee waiver.
   d. Do NOT enter names of recommenders or statement of purpose (SOP) even if you are prompted to do so. You will do this later. If you did enter your recommenders or SOP in ApplyTexas, this is okay, but we will not look at them.

2. Your application will be forwarded by the ApplyTexas system to Texas A&M Admissions. This may take several days, particularly during holidays or busy times.
   a. TAMU Admissions will email you your university identification number (UIN). (The UIN is sometimes referred to as a student identification number – SID). In the past it has taken as long as three weeks to receive your UIN, but more recently it has come within a few days. You must wait patiently for it before you can proceed to the next step. Do not email the department asking for your UIN.
   b. You use your UIN to create your official email (Neo) account. Your user name for this account is referred to as your NetID. Email regarding admissions is sent to this account. You may have it forwarded to another location.

3. Have your test scores and official transcripts of previous degrees sent to TAMU Admissions; see their website for the precise procedure. Do not send test scores and official transcripts directly to the department. GRE and TOEFL (if needed) test scores must be sent directly from the Educational Testing Service to Texas A&M University (Code 6003, NO department code); the scores must be from test dates that are within five years for the GRE and within two years for the TOEFL at the time of application. You can upload unofficial scores to the department to speed up our application review process, but you cannot be officially admitted without official scores.

4. With your NetID and password, you will be able to access the Applicant Information System (AIS), and edit your application information. Do NOT enter names of recommenders or a statement of purpose into AIS. If you did enter recommenders into AIS, do not enter them into the Department admission system (apply2.cse.tamu.edu), as we do not want your recommenders to get two requests.

5. TAMU Admissions will electronically send your application data to the Department. This may only occur every few weeks if it is long before the application deadline, then daily as the deadline gets closer. TAMU Admissions may not perform data transfers during the roughly two weeks of vacation just prior to January 1. If you submitted your application in late December, do not be concerned about this delay. Applying earlier will avoid this delay.

6. You will receive an email to start using apply2.cse.tamu.edu. This will be the only admission system you use for the remainder of the application process. When you receive this email, do the following:
   a. Enter official email addresses of all your recommenders (i.e. university email address).
   b. Upload your statement of purpose.
   c. Select areas of research interest.
   d. Upload resume and other relevant documents, such as publications.

By submitting your data in apply2.cse.tamu.edu, the Department can start working on your application immediately. Information you submit to applicant.tamu.edu may be delayed in getting to us.

Your recommenders will receive an email with a link to click to upload their letter. Recommendation letters mailed or emailed to us will be discarded. Often we hear that international recommenders did not receive an email from us. This is likely due to mail problems on their end,
such as spam filters. In apply2.cse.tamu.edu you can ask that the recommender email be resent.

(7) Once the recommendations, test scores and transcripts are received by the Department, your application will be complete. Note that AIS may still show your application as incomplete. Use apply2.cse.tamu.edu to determine the status of your application with the Department.

(8) You will be informed about the application decision via email. Decisions for PhD students are typically made by the end of February, while MS student decisions are typically made by the end of March, for fall admissions.

(9) We do not respond to emails asking questions that are answered in this brochure or in the Graduate Advising FAQ web pages.

2.2. Entrance Requirements

Applicants must fulfill the requirements for admission to graduate studies as specified in the graduate catalog and must hold a bachelor’s degree, ideally in computer science, computer engineering, or a related field, or equivalent experience. Undergraduate preparation should include:
- Data structures and analysis of algorithms.
- Operating systems, compilers, and database systems.
- Digital design and computer systems architecture.
- Several high-level programming languages.
- Mathematics including calculus, linear algebra, and discrete mathematics.

Students are responsible for all course prerequisites. While most undergraduate courses cannot be applied toward graduate degrees, graduate students may take them to ensure they have the appropriate preparation. Students are encouraged to discuss their background with the Graduate Advisor if they have questions.

All applicants are required to take the general Graduate Record Examination (GRE). Students who do not have a traditional background are encouraged to take the GRE subject test in computer science.

Applicants whose native language is not English are required to submit proof of English proficiency. Please refer to the Graduate Admissions webpage for requirements (e.g., TOEFL, IELTS). TAMU Admissions determines whether your country’s language is English.

2.3. Evaluation Criteria

All applications are reviewed by the Department’s Graduate Admissions Committee. The criteria used in evaluation of applicants for admission to graduate study in computer science and engineering include:
- academic performance on previous degrees,
- GRE scores and, if applicable, TOEFL scores,
- relevant background,
- letters of recommendation,
- the applicant’s statement of purpose, and
- other relevant information.

The Admissions Committee is primarily interested in determining your potential to perform research.

2.4. Contents of Your Application

Statement of Purpose (SOP): The Department does not have any specific requirements for the one-page SOP. However, the Admissions Committee would like to see a discussion of the following issues: why you want to pursue graduate studies in CSE, why you are interested in Texas A&M, and most importantly, your research interests, your background for working in this area, and a description of your research plan (if any). Your SOP should not recall your earliest remembrances of exposure to a computer or provide a general academic background.

Letters of Recommendation: The preferred source of letters of recommendation is the faculty who advised you in research projects and who taught your most advanced computing courses. We are most interested in assessments of your research potential and scholarly aptitude, and your rank and performance in the courses they taught you. If you cannot obtain enough letters from your current or previous professors, then you may also include letters from employers. However, you should understand that in most cases such a letter will not be given the same weight as letters from your professors.

Resume/Curriculum Vitae: We strongly recommend that you include a brief resume (curriculum vitae) addressing university academics and closely related professional activities. The information in the resume is often more useful than what appears in the official application.

Other Items: If you are applying before graduating from your current degree program, indicate current and planned courses for which grades will not be on your transcripts. If you have peer-reviewed technical publications in international conferences and journals, then you may include them with your application materials.

Things to Avoid: Please do not include information about secondary school performance, testing, or other pre-university studies. Do not submit copies of class projects or publications that did not appear in peer-reviewed international venues. If you feel you have additional material that is very important, then please place it on a webpage and submit the URL. You may include URLs that enable access to descriptions of your university programs but please do not include syllabi. Do not contact Department faculty until you have carefully studied their web site and read their papers, so you can explain in detail why you think there is a good potential research match.

3.  FINANCIAL SUPPORT

There are a number of fellowships, scholarships, and assistantships available within the Department of Computer Science and Engineering. PhD students receive the highest priority for Departmental assistantships, fellowships and scholarships. Most faculty award their research assistantships similarly. Assistantship positions require an average of 20 hours of work per week. Assistantships include 9 credit-hours of tuition and fees. Students with assistantships are eligible for University health insurance coverage and a portion of their
4. DEGREE PROGRAMS

This section describes the graduate degrees offered by the Department in Computer Science (Section 4.1) and in Computer Engineering (Section 4.2). The major steps and deadlines that should be completed for the various degrees are outlined in Section 4.3, and some restrictions and clarifications regarding degree requirements are given in Section 4.4. For additional information, please see the Department’s graduate program webpages.

Graduate students will be advised by the Graduate Advisor until they have formed an Advisory Committee and have an approved degree plan. Advisory Committee details are included with the description of each degree in this section. Appointments with the Graduate Advisor can be made by calling +1-979-845-4087 or sending email to grad-advisor@cse.tamu.edu.

Degree plans are filed on the Office of Graduate Studies Degree Plan Submission System.

4.1. COMPUTER SCIENCE

The Department of Computer Science and Engineering offers the following degrees in Computer Science: a professional master’s degree (MCS), a master’s degree with thesis (MSCS), and a PhD degree (PhDCS).

4.1.1. Master of Computer Science (MCS)

The Master of Computer Science (MCS) should be thought of as a professional, terminal degree. This degree does not include a thesis, project, or final examination.

Advisory Committee: MCS students will have a default advisory committee consisting solely of the Graduate Advisor as chair.

Degree Plan: Requirements for the MCS degree include:

- At least 18 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 18 hours of graded CSCE graduate coursework.
- At most one approved three-credit 400–level CSCE undergraduate course. See Section 4.4. This course does NOT count towards the 18 hours of CSCE graded graduate coursework.
- Up to 6 credit hours of non-CSCE graded graduate coursework (excluding 681, 684, 685, 691).
- 1 credit hour of CSCE 681 (Graduate Seminar).
- Up to 3 credit hours of CSCE 685 (Directed Studies).
- A total of at least 30 credit hours satisfying the above requirements.

The major steps, and deadlines for completing them, required for the MCS degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s graduate program webpages.

4.1.2. Master of Science in Computer Science (MSCS)

The Master of Science in Computer Science (MSCS) is a research degree. A thesis and final examination (thesis defense) are required. Students who complete the MSCS may file a Letter of Intent requesting admission to the PhD program.

Advisory Committee: The student must select an Advisory Committee Chair from the Department’s graduate faculty. If a student wishes to have a Chair who does not have an appointment with the Department, then the committee must have two Co-Chairs, including one who is a member of the Department’s graduate faculty. (A committee has either one Chair or two Co-Chairs.)

The Chair and the student work together to select the remainder of the Advisory Committee. The Advisory Committee for the Master of Science in Computer Science (MSCS) consists of at least three members from the Texas A&M graduate faculty (the Chair counts as a member). There must be at least one member from another department and there must be a majority from the Department. Note that all faculty members with full joint appointments in the Department will be considered as Departmental faculty when evaluating the composition of the committee. Faculty who hold courtesy appointments will count as outside members of the committee. The Graduate Advising office can provide information on which faculty hold joint appointments.

The Advisory Committee can have supplemental members who are not members of the Texas A&M graduate faculty (and hence do not count when evaluating the composition of the
committee). Supplemental members are usually added because they have some special expertise that is relevant to the student’s research topic. Such members are added by “Special Appointment” requests. Check with the Graduate Advising office for more information.

After the student and Chair agree on a tentative Advisory Committee, the student will then meet with each prospective committee member to determine whether this committee assignment is agreeable, and then file a degree plan.

**Degree Plan** The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the MSCS degree include:

- At least 18 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 18 hours of graded CSCE graduate coursework.
- At most one approved three-credit 400-level CSCE undergraduate course. See Section 4.4. This course does NOT count towards the 18 hours of CSCE graded graduate coursework.
- At most 6 credit hours of non-CSCE graded graduate coursework (excluding 681, 684, 685, 691).
- 1 credit hour of CSCE 681 (Graduate Seminar).
- 4 to 7 credit hours of CSCE 691 (Research).
- Up to 3 credit hours of CSCE 685 (Directed Studies). The combination of 685 and 691 cannot exceed 7 credit hours.
- A total of at least 32 credit hours.

The major steps, and deadlines for completing them, required for the MSCS degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s [graduate program webpages](#).

### 4.1.3. PhD in Computer Science (PhDCS)

**Advisory Committee** The PhD Advisory Committee is the same as the Master of Science in Computer Science (MSCS) degree except that it must have a minimum of four members, a majority from the Department and at least one from another department.

**Degree Plan** The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the PhDCS degree include:

- At least 30 credit hours of graded graduate coursework (excluding 681, 684, 685, and 691).
- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 30 hours of graded graduate coursework.
- At most 6 credit hours of approved non-CSCE graded graduate coursework (excluding 681, 684, 685, 691). This counts towards the requirement of 30 hours of graded graduate coursework.
- 1 to 2 credit hours of CSCE 681 (Graduate Seminar).
- At least 18 credit hours of CSCE 691 (Research). Normally the number of CSCE 691 hours will be increased to meet the required total number of credit hours.
- A total of at least 96 credit hours (or at least 64 credit hours if the student has a prior, approved and related master’s degree).

The major steps, and deadlines for completing them, required for the PhDCS degree is outlined in Section 4.3. At most 32 credit hours from other graduate degree programs (e.g., an MSCS) can be applied to the PhD degree. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s [graduate program webpages](#).

### 4.2. COMPUTER ENGINEERING

The Computer Engineering programs provide opportunities for students with interests in computer engineering to focus their studies more directly in this area. Degrees in computer engineering paralleling the computer science degrees are offered: a professional, terminal course-work only masters degree (MEN), a research masters degree (MSCE), and a PhD degree (PhDCE).

The Computer Engineering program is jointly administered by the Department of Computer Science and Engineering (CSCE) and the Department of Electrical and Computer Engineering (ECEN). Each department has slightly different requirements for the various computer engineering degrees and hence students are cautioned to ensure that they are following the guidelines appropriate for their home department. Also, there are faculties in both departments that are designated as computer engineering faculty; see [ce.tamu.edu](http://ce.tamu.edu) for a listing of all Computer Engineering faculty in both departments. Note that the degree requirements listed on [ce.tamu.edu](http://ce.tamu.edu) are for Electrical and Computer Engineering. NOT Computer Science and Engineering.

#### 4.2.1. Master of Engineering (MEN)

The Master of Engineering in Computer Engineering (MEN) should be thought of as a professional, terminal degree. This degree does not include a thesis, project, or final examination.

**Advisory Committee:** MEN students will have a default advisory committee consisting solely of the Graduate Advisor as chair.

**Degree Plan** Requirements for the MEN degree include:

- At least 12 credit hours of graded CSCE graduate coursework (excluding CSCE681, 684, 685, 691).
- At least 6 credit hours of graded ECEN graduate coursework that is not cross-listed with CSCE (excluding ECEN 681, 684, 685, 691).
- At least 6 credit hours of graded elective graduate coursework (excluding 681, 684, 685, and 691). This may include CSCE, ECEN, or other approved graduate courses.
− At most one approved three-credit 400–level CSCE or ECEN undergraduate course. See Section 4.4. This course does NOT count towards the 12 hours of CSCE graded graduate coursework.
− 1 credit hour of CSCE 681 (Graduate Seminar).
− Up to 3 credit hours of CSCE 685 (Directed Studies).
− A total of at least 30 credit hours satisfying the above requirements.

The major steps, and deadlines for completing them, required for the MEN degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s graduate program webpages.

4.2.2. Master of Science in Computer Engineering (MSCE)
The Master of Science in Computer Engineering (MSCE) is a research degree. A thesis and final examination (thesis defense) are required. Students who complete the MSCE may file a Letter of Intent requesting admission to the PhD program.

Advisory Committee The MSCE advisory committee is like that of the MSCS degree with the additional requirement that the Chair or a Co-Chair must be a member of the computer engineering faculty (see Section 7).

Degree Plan The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the MSCE degree include:
− At least 12 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
− At least 6 credit hours of graded ECEN graduate coursework that is not cross-listed with CSCE (excluding ECEN 681, 684, 685, 691).
− At least 6 credit hours of graded elective graduate coursework (excluding 681, 684, 685, and 691). This may include CSCE, ECEN, or other approved graduate courses.
− At most one approved three-credit 400–level CSCE or ECEN undergraduate course. See Section 4.4. This course does NOT count towards the 12 hours of CSCE graded graduate coursework.
− 1 credit hour of CSCE 681 (Graduate Seminar).
− 4 to 7 credit hours of CSCE 685 (Directed Studies). The combination of 685 and 691 cannot exceed 7 credit hours.
− A total of at least 32 credit hours.

The major steps, and deadlines for completing them, required for the PhDCE degree is outlined in Section 4.3. At most 32 credit hours from other graduate degree programs (e.g., an MSCE) can be applied to the PhD degree. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department’s graduate program webpages.

4.3. Requirements and Deadlines for Graduate Degrees
This section outlines the major steps, and deadlines for completing them, that should be completed for the various degrees:
− MCS and MEN (non-thesis masters degrees)
− MSCS and MSCE (thesis masters degrees)
− PhDCS and PhDCE

The Department has additional procedures or requirements that students are responsible for following and which are documented on the Department’s graduate program webpages.

As noted below, many of the steps have associated Office of Graduate Studies (OGS) forms that need to be submitted. These forms are available on the OGS website. In all cases, the student is responsible for filling out the form before bringing it to the Graduate Advising office for Departmental approval. OGS forms are PDF templates, and students must TYPE in all entries before printing out the form (this includes the faculty member names, which appear below the signature lines). Hand-written forms are not accepted. MS and PhD students should also obtain the signatures of their committee members (but not the Department Head) before bringing the forms to the advising office. Do not take these forms to the department head or
associate head. The Graduate Advising staff will submit approved forms to OGS.

4.3.1. MCS and MEN requirements and deadlines
This section lists the major steps that must be completed for the MCS and MEN degrees. Much of this information is taken from the ‘Steps to Fulfill Masters Degree Requirements’ on the Office of Graduate Studies (OGS) website.

- Degree Plan. MCS and MEN students must file an approved degree plan.
  **OGS Forms:** Degree Plan. Degree plans are filed online.
  **Departmental Procedures:** No.
  **Deadline:** By the end of the first semester after the student has completed 9 credit hours (normally their second semester). Students have a registration hold preventing them from registering for later semesters until their degree plan has been approved.

- Final Examination. The oral final exam for the MCS and MEN is waived. Once the student files for graduation and appears on the graduation list, the department automatically submits the Request for Exemption from Final Examination form to OGS. Students must file for graduation by the official deadline (typically the end of the second week of the semester) in order to ensure that the Final Exam exemption is filed on time. **Failure to file for graduation on time will result in failure to graduate that semester.**

4.3.2. MSCS and MSCE
This section lists the major steps that must be completed for the MSCS and MSCE degrees. Much of this information is taken from the ‘Steps to Fulfill Masters Degree Requirements’ on the OGS website. Information about Department procedures is available on the [graduate program webpages](http://example.com/graduate-program).

As noted above, many of the steps have associated OGS forms that need to be submitted. These forms are available on the OGS website. In all cases, the student is responsible for filling out the form and getting the signatures of all committee members (but NOT the Department Head) before bringing the form to the Graduate Advising office for Departmental approval. The Advising staff will submit the forms to the OGS.

- Advisory Committee and Degree Plan. MSCS and MSCE students must form an Advisory Committee and file an approved degree plan.
  **OGS Forms:** Degree Plan. Degree plans are filed online.
  **Departmental Procedures:** No.
  **Deadline:** By the end of the first semester after the student has completed 9 credit hours (normally their second semester), and no later than 120 days prior to submission of the Request for Final Examination (thesis defense) to OGS. Students have a registration hold preventing them from registering for later semesters until their degree plan has been approved.

- Thesis Proposal. The student must submit a Master of Science thesis proposal as described in the graduate catalog.
  **OGS Forms:** Proposal Title Page
  **Departmental Procedures:** Yes, documented on web pages.

4.3.3. Ph.DCS and Ph.DCE
This section lists the major steps that should be completed for the PhD in computer science or in computer engineering. Much of this information is taken from the ‘Steps to Fulfill Doctoral Degree Requirements’ on the OGS website. Information about Department procedures is available on the [graduate program webpages](http://example.com/graduate-program).

As noted below, many of the steps have associated OGS forms that need to be submitted. These forms are available on the OGS website. In all cases, the student is responsible for filling out the form and getting the signatures of all committee members (but NOT the Department Head) before bringing the form to the advising office for Departmental approval. The Graduate Advising staff will submit the forms to the OGS.

- Ph.D. Student Annual Review. All doctoral students in the department are reviewed annually by the entire faculty. The purpose of the Ph.D. student annual review procedure is to encourage and motivate Ph.D. student research, and to provide additional mentoring for graduate study. The student is required to prepare and file certain materials for this review by the announced deadline, typically in mid-April. Details are provided in the [Ph.D. Student Annual Review Procedure](http://example.com/phd-review).

- Advisory Committee and Degree Plan. PhD students must form an Advisory Committee and file an approved degree plan.
Departmental Procedures: No.

Deadline: By the end of the student’s third semester (excluding summer), and at least 90 days prior to the preliminary exam. The precise deadline prior to the preliminary exam is listed on the OGS calendar.

- **Preliminary Exam.** The student must pass the Preliminary Examination given by the Advisory Committee as described in the graduate catalog. The Preliminary Exam consists of written and oral portions. Each committee member administers a written exam during the 3 weeks prior to the common oral examination.

  **OGS Forms:** Preliminary Exam Checklist, Report of the Preliminary Exam
  Departmental Procedures: Yes, documented on web pages.

  **Deadline:** Eligibility requirements and deadlines for scheduling and reporting on PhD Preliminary Exams are documented on the [graduate program webpages](#). Roughly, the Preliminary Exam is typically held at about the time that the degree plan coursework requirements are completed, and it cannot be taken in the same semester that the degree plan is filed or that the student plans to defend.

- **Dissertation Proposal.** The student must submit a PhD dissertation proposal as described in the graduate catalog. The dissertation proposal may be presented at the oral preliminary exam, or at a separate proposal presentation, at the discretion of the Advisory Committee.

  **OGS Forms:** Proposal Title Page
  **Departmental Procedures:** Yes, documented on web pages.

  **Deadline:** Typically the Preliminary Exam is passed before the approved proposal is submitted. The university requires that the proposal be submitted to OGS at least 15 calendar days before the Request for Final Examination is submitted to OGS (or about 4 weeks before the defense). Precise deadlines are listed on the OGS calendar.

- **Final Examination.** The student must pass the Final Examination (dissertation defense) given by the Advisory Committee as described in the graduate catalog. A final examination is required, which includes a public presentation of the candidate’s research.

  **OGS Forms:** Request for Final Examination, Report of Final Exam (sent to Graduate Advising by OGS)
  **Departmental Procedures:** Yes, documented on web pages.

  **Deadlines:** Eligibility requirements for scheduling and reporting on PhD Final Exams (dissertation defenses) are documented in the graduate catalog. The Final Examination cannot be held until all coursework on the degree plan has been completed. The Request for Final Examination must be received by OGS at least 10 working days before the exam. Final exam deadlines are listed on the OGS calendar (usually about 8 weeks before graduation).

- **Dissertation.** A PhD Dissertation as described in the graduate catalog and on the OGS website. The ability to perform independent research must be demonstrated by the dissertation. The dissertation must be the original work of the candidate. While acceptance of the dissertation is based primarily on its scholarly merit, it must also exhibit creditable literary workmanship. (Please see the graduate catalog for further details.) The Department expects the student to submit a research paper to at least one refereed journal or conference prior to the dissertation defense.

  **OGS Forms:** No
  **Departmental Procedures:** Yes, documented on web pages.

  **Deadline:** The approved dissertation cannot be submitted until the Final Examination has been passed and it must be submitted within one year of the Final Examination. Dissertation submission deadlines are listed on the OGS calendar (usually about 6 weeks before graduation). See the [Thesis Clerk website](#) for more details.

4.4. Degree Plan Restriction and Clarifications

There are some restrictions on the courses that can be used on degree plans. Some of the most common issues are noted below. Some of these are Office of Graduate Studies requirements and some are Departmental requirements. Unless otherwise noted, the restrictions apply to all graduate degrees offered by the Department. For additional information and clarification, please see the graduate catalog and the Department’s [graduate program webpages](#).

All Graduate Degrees

- Courses used for one degree cannot be used to reduce the number of credit hours required for another degree, and courses that are apparently the same cannot both be used for credit. An exception is that a previous related master’s degree can be used to reduce the total number of hours required for the PhD degree from 96 to 64. The master’s degree certificate must be received by Admissions prior to filing a 64 credit hour PhD degree plan.

- Graded graduate courses used for a previous degree can be used to reduce the number of graded graduate courses that need to be taken for the current degree. Typically, the student replaces the credit hours that would have been used for courses with CSCE 691 credit hours. For example, if a PhD student took 24 hours of graded graduate coursework...
as part of a MS degree from our department, then they would file a 64 hour PhD degree plan and it would only need to have 6 credit hours (i.e., 2 courses) of graded graduate coursework on it to reach the 30 hours required of a PhD. Similarly, if a student took a graduate computer architecture course at another university, and received a grade of A or B, then this could be used to satisfy the Systems breadth requirement. The Graduate Advisor must approve any courses taken at another university that will be used to meet current degree requirements.

- All normally-graded courses on a degree plan must be taken for a letter grade, rather than S/U grade. Courses such as CSCE 681, 684 and 691, that are normally graded S/U, can be used on a degree plan as S/U. In particular, CSCE 685 must be taken for a letter grade to be used on a degree plan.

- Stacked courses (two courses taught at the same time in the same room) cannot both be taken for credit. For example, CSCE 433 (Complexity) and CSCE 627 are currently stacked. So a student who had CSCE 433 as an undergrad cannot use CSCE 627 on a graduate degree plan.

- In a stacked course pair, a graduate student has to enroll in the graduate version of the course. For example, a graduate student must enroll in CSCE 627 when choosing a course from the stacked course pair CSCE 433/CSCE 627.

- Graduate service courses offered by the department cannot be used on degree plans for graduate credit. These include CSCE 601, 602, 603, 611 and 612. If a graduate service course is stacked with a 400-level course, then the graduate service course can be used in lieu of a 400-level course on a degree plan (for instance, CSCE 611 or CSCE 612 can be used in lieu of a 400-level course).

- Due to their overlap in content, CSCE 625 (Artificial Intelligence) cannot be used on degree plans if the student has previously taken CSCE 420 (Artificial Intelligence); the same applies to courses that are too similar at the 400 and 600 level. Similarly, ECEN 651 and CSCE 614 (Computer Architecture); and ECEN 602 and CSCE 463 (Networking); cannot both be taken for credit.

- CSCE 684 (Professional Internship) does not count towards the total hours required on a degree plan. Any CSCE 684 hours must be in addition to the minimums required on the degree plan. Each internship must be listed as a separate CSCE 684 on the degree plan, for 1 credit. CSCE 691 (Research) or CSCE 685 (Directed Studies) cannot be used for professional internships. No courses can be taken concurrently with CSCE 684.

- At most 12 credit hours of courses taken in post baccalaureate non-degree (G6) status at Texas A&M can be used on the degree plan; this requires approval of the Graduate Advisor.

- The university will not approve degree plans that contain an "excessive" number of credit hours beyond the minimum required for the degree (e.g. 30 for MCS/MEN, 32 for MS, 64/96 for PhD). To meet this "excess" rule, the department will permit one course plus 684 credits beyond the minimum. Students can still take additional courses beyond the degree plan, but these cannot be added to the degree plan.

- ECEN 691 credits cannot be included in degree plans.

Masters Degrees (MCS, MEN, MSCS, MSCE)

- The MCS, MEN, MSCS, and MSCE degrees allow at most one approved three-credit 400–level CSCE undergraduate elective course to be used on the degree plan.

- Required courses for the CS or CE undergraduate degree at TAMU are not permitted for graduate credit; these include 462, 482 and 483.

- Only the following CSCE 400-level courses may be taken for graduate credit: 410, 434, 441, 443, 444, 452, 463, and 465. These courses cannot be used if the student took an equivalent course for their own previous degree(s).

- The MEN and MSCE degree allows at most one approved three-credit 400–level ECEN undergraduate elective course to be used (instead of the 400–level CSCE course, not in addition to).

- Only the following ECEN 400-level courses may be taken for graduate credit: 420, 421, 444, 447, 448, 455, 474, 468, 475 and 478. These courses cannot be used if the student took an equivalent course for their own previous degree(s).

- At most 12 credit hours of transfer credit can be used on a degree plan. Transfer credit must be approved by the Graduate Advisor, and transcripts must be sent to Admissions.

Doctoral Degrees (PhDSc and PhDCE)

- At least 6 credit hours of graded CSCE graduate coursework (excluding 681, 684, 685, and 691) must be taken at Texas A&M University in College Station. Thus, even if a student appears to satisfy all coursework requirements by a previous graduate degree or from transfer credit, they will still be required to take at least two graded graduate CSCE courses at Texas A&M.

5. PROGRAM REQUIREMENTS

Graduate students must fulfill the residence and scholastic requirements for graduate study as specified in the graduate catalog. In addition, the Department has these requirements:

5.1. Grade Point Requirements

Two grade point averages (GPA) are computed for graduate students at Texas A&M University, the GPA of all courses listed on the degree plan and the cumulative GPA. The cumulative GPA includes all graded graduate (600 level) and advanced undergraduate (300 and 400 level) course work completed at Texas A&M that has not been applied towards a prior degree. To be in good academic standing, both the degree plan GPA and the cumulative GPA must be at least 3.000. A student whose grades drop below this level is considered to be scholastically deficient and will be placed on departmental probation. Students that are scholastically deficient may have a registration hold placed on them, and, by university regulations, will not be
allowed to graduate, schedule final exams (defenses),
preliminary exams, etc. Scholastic deficiency may also result in
the loss of fellowships or scholarships.

Each graduate assistant funded by the Department must
maintain a GPA of 3.25 in both the degree plan GPA and in the
cumulative GPA. A graduate assistant whose grades drop below
this level may lose their assistantship. PhD students who are
rated Unsatisfactory in the annual PhD review are not eligible
for departmental assistantships or scholarships.

5.2. Registration Requirements
The University and the Department both have registration
requirements and students must satisfy them both. The number
of hours that a student is required to be registered depends on
the semester (e.g., usually fewer hours are required in the
summer than in fall or spring semesters) and the student’s
individual situation including factors such as whether they have
an assistantship, completion status, and (if applicable) visa
status. These rules are subject to change and should be reviewed
before each registration. Updated information and clarifications
can be found on the graduate program webpages.

6. COURSES
The list of graduate courses offered by the Department of
Computer Science and Engineering (CSCE) is available online.
Additional courses may appear in the University Graduate Catalog, but those are no longer taught. Related courses are also
offered by the Departments of Electrical and Computer
Engineering (ECEN), Mathematics (MATH), and Visualization
(VIZA).

When determining the courses they plan to take for their degree
programs, students need to be aware that not all of these courses
are offered every year. The breadth courses (604, 605, 606, 613,
614, 627, 629 and 655) will normally be offered every year,
except CSCE 605 is offered every other year. The more
specialized graduate courses are offered every two years.
However, there are some courses that are taught even less
frequently than every two years. Few or no CSCE graduate
courses are offered in the summer. There are usually several
CSCE 689 Special Topics courses offered each fall and spring
semester, and students are encouraged to be flexible in their
course planning so that they can take advantage of these
courses. An approximate two-year schedule of graduate course
offerings is available on the graduate program webpages.

All graduate courses meet 2.5 hours per week and are 3 credits,
unless otherwise noted. A listing of the courses annotated with
responsible faculty and a condensed catalog description follow.
All courses assume an undergraduate computer science or
computer engineering background as prerequisite. The instructor
may also waive prerequisites.

7. More Information
Department of Computer Science and Engineering
Texas A&M University
3112 TAMU
College Station, TX USA 77843-3112

Office of Admissions
Texas A&M University
0200 TAMU
College Station, TX USA 77843-0200
tel: +1-979-845-1060; fax: +1-979-458-1018
email: international-admission@tamu.edu
e-mail: graduate-admission@tamu.edu

International Student Services
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1226 TAMU
College Station, TX USA 77843-1226
tel: +1-979-845-1824; fax: +1-979-862-4633
email: iss@tamu.edu

Office of Graduate Studies
Texas A&M University
1113 TAMU
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email: grad-admissions@cse.tamu.edu
url: http://www.cse.tamu.edu/academics/graduate

CSE Graduate Student Association (CSEGSA)
email: csegsa@cse.tamu.edu

Aggie Women in Computer Science (AWICS)
email: awics@cse.tamu.edu

On-line tuition and fee information (Student Business Services)
Appendix G – Graduate Course Descriptions

CSCE 601 Programming with C and Java
Credits 3. 3 Lecture Hours.
Survey of the C and Java programming languages, including principles of procedural and object-oriented languages; multi-disciplinary applications including business, Internet and engineering problems.
Prerequisite: Graduate classification.

CSCE 602 Object-Oriented Programming, Development and Software Engineering
Credits 3. 3 Lecture Hours.
Teaches Object-Oriented Programming in C++; software engineering techniques presented to teach how to build high quality software; semester project gives quasi-real-world experience with issues such as requirements capture and object-orient development.
Prerequisites: CSCE 601 or approval of instructor; graduate classification.

CSCE 603 Database Systems and Applications
Credits 3. 3 Lecture Hours.
Introduction to the concepts and design methodologies of database systems for non-computer science majors; emphasis on E. F. Codd's relational model with hands-on design application. No credit will be given for both CSCE 310 and CSCE 603.
Prerequisites: CSCE 601; graduate classification.

CSCE 604 Programming Languages
Credits 3. 3 Lecture Hours.
Study in the design space of programming languages, covering language processing, formalisms to describe semantics of programming languages, important concepts found in current programming languages, and programming paradigms.
Prerequisite: Graduate classification.

CSCE 605 Compiler Design
Credits 3. 3 Lecture Hours.
Advanced topics in compiler writing; parser generators and compiler-compilers; dynamic storage and scope resolution; data flow analysis and code optimization.
Prerequisite: CSCE 434.

CSCE 606 Software Engineering
Credits 3. 3 Lecture Hours.
Development of advanced concepts in software engineering; software development environments as a mechanism for enhancing productivity and software quality; the classification, evaluation and selection of methodologies for environments; rapid prototyping and reusability concepts; artificial intelligence techniques applied to software engineering.
Prerequisite: CSCE 431 or approval of instructor.
CSCE 608 Database Systems
Credits 3. 3 Lecture Hours.
Database modeling techniques; expressiveness in query languages including knowledge representation; manipulation languages data models; physical data organization; relational database design theory; query processing; transaction management and recovery; distributed data management.
Prerequisite: CSCE 310 or CSCE 603.

CSCE 610 Hypertext/Hypermedia Systems
Credits 3. 3 Lecture Hours.
Comprehensive coverage of Hypertext/Hypermedia; basic concepts and definitions; fundamental components, architectures and models; problems and current solutions; design and implementation issues; and research issues.
Prerequisites: CSCE 310 or CSCE 603; CSCE 313.

CSCE 611 Operating Systems and Applications
Credits 3. 3 Lecture Hours.
Review of computer architecture hardware/software evolution leading to contemporary operating systems; basic operating systems concepts; methods of operating systems design and construction; algorithms for CPU scheduling memory and general resource allocation; process coordination and management; case studies of several operating systems; quality-of-services of operating systems and their impact on applications. No credit will be given for both CSCE 410 and CSCE 611.
Prerequisites: CSCE 313; graduate classification.

CSCE 612 Applied Networks and Distributed Processing
Credits 3. 3 Lecture Hours.
Fundamentals, including network design and protocol analysis, in the context of computer communications; mixes fundamentals with both programming and pragmatic views of engineering issues; it includes network architecture as well as principles of network engineering; focus is on applying principles of layered architecture to analyzing real networks; lab exercises focus on protocol understanding and programming; knowledge of UNIX and C programming helpful, but not required. No credit will be given for both CSCE 463 and CSCE 612.
Prerequisite: Graduate classification.

CSCE 613 Operating Systems
Credits 3. 3 Lecture Hours.
Analysis of algorithms in computer operating systems; sequencing and control algorithms supporting concurrent processes; scheduling algorithms to minimize execution times and mean flow times; algorithms for allocating tasks to processors; allocation of memory (virtual and real); direct access device schedules; auxiliary and buffer storage models.
Prerequisite: CSCE 313 or CSCE 611.
CSCE 614 Computer Architecture
Credits 3. 3 Lecture Hours.
Reviews of von Neumann architecture and its limitations; parallel computer structures and concurrent computation; pipeline computers and vectorization methods; array processors, multiprocessor architectures and programming; dataflow computers.
Prerequisite: CSCE 350/ECEN 350/ECEN 350/CSCE 350.

CSCE 616 Introduction to Hardware Design Verification
Credits 3. 3 Lecture Hours.
Introduction to hardware functional verification; case studies on verification in integrated circuit design; introduction to industry best practices; introduction to logic functional verification.
Prerequisites: CSCE 312 or CSCE 350/ECEN 350, or equivalent in computer architecture; familiarity with C/C++/Verilog/VHDL programming.

CSCE 617 Co-Design of Embedded Systems (CODES)
Credits 3. 3 Lecture Hours.
Co-design methodologies of hardware-software systems; models of computation (MOC), system specification, co-simulation, synthesis, and verification; hardware-software implementation; core-based systems and interfaces, performance analysis and optimization; system on chip, power aware design.
Prerequisites: CSCE 462 or equivalent, CSCE 410 and graduate classification.

CSCE 619 Networks and Distributed Computing
Credits 3. 3 Lecture Hours.
Computer network concepts including network architecture, layering, protocols, packet switching and virtual circuits; performance evaluation and design considerations for local area networks; packet distributed networks; satellite networks.
Prerequisite: CSCE 463 or CSCE 612.

CSCE 620/VIZA 670 Computational Geometry
Credits 3. 3 Lecture Hours.
Design and analysis of algorithms for solving geometrical problems; includes convex hull problems, Voronoi diagrams, range searching and proximity problems.
Prerequisite: CSCE 311.
Cross Listing: VIZA 670/CSCE 620.

CSCE 621 Language, Library, and Program Design Using C++
Credits 3. 3 Lecture Hours.
Exploration of the interactions among language design, library design, and program design in the context of ISO standard C++ and its proposed extensions; Novel features provided by C++ and the design and programming techniques supported.
Prerequisites: Graduate classification or approval of instructor; understanding of C++ and
experience with software development projects helpful; knowledge of at least one programming language in addition to C and C++.

CSCE 622 Generic Programming
Credits 3. 3 Lecture Hours.
The generic programming approach to design and systematic classification of software components, techniques for achieving correctness, efficiency, and generality of algorithms, data structures, and memory management, methods of structuring a library of generic software components for maximum usability are practiced in a significant design and implementation project.
Prerequisite: CSCE 221.

CSCE 624 Sketch Recognition
Credits 3. 3 Lecture Hours.
Analysis, implementation, and comparison of sketch recognition algorithms, including feature-based, vision-based, geometrical, timing-based, and path-based recognition algorithms. Methods for combining these recognition methods for greater accuracy, using known AI techniques, are also examined.
Prerequisite: Graduate classification.

CSCE 625 Artificial Intelligence
Credits 3. 3 Lecture Hours.
Basic concepts and methods of artificial intelligence; Heuristic search procedures for general graphs; game playing strategies; resolution and rule based deduction systems; knowledge representation; reasoning with uncertainty.
Prerequisite: CSCE 221.

CSCE 626 Parallel Algorithm Design and Analysis
Credits 3. 3 Lecture Hours.
Design of algorithms for use on highly parallel machines; area-time complexity of problems and general lower bound theory; application (of these concepts) to artificial intelligence, computer vision and VLSI design automation.
Prerequisite: CSCE 221.

CSCE 627 Theory of Computability
Credits 3. 3 Lecture Hours.
Formal models of computation such as pushdown automata; Turing machines and recursive functions; unsolvability results; complexity of solvable results.
Prerequisite: CSCE 433.
CSCE 628/BICH 628 Computational Biology  
Credits 3. 3 Lecture Hours.  
Introduction to computational biology; formulations of biology problems as computational problems; computational approaches to solve problems in genomics and proteomics.  
Prerequisite: Graduate classification or approval of instructor.  
Cross Listing: BICH 628/CSCE 628.

CSCE 629 Analysis of Algorithms  
Credits 3. 3 Lecture Hours.  
Concrete algorithm design and analysis; abstract models to analyze the complexity of problems; NP-Completeness; approximation and probabilistic algorithms.  
Prerequisite: CSCE 411.

CSCE 630 Speech Processing  
Credits 3. 3 Lecture Hours.  
Speech production and perception (speech apparatus, articulatory/auditory phonetics); mathematical foundations (sampling, filtering, probability, pattern recognition); speech analysis and coding (short-time Fourier analysis, linear prediction, cepstrum); speech recognition (dynamic time warping, hidden Markov models, language models); speech synthesis (front-end, back-end); speech modification (overlap-add, enhancement, voice conversion).  
Prerequisites: ECEN 314 or equivalent or approval of instructor. Basic knowledge of signals and systems, linear algebra, probability and statistics. Programming experience in a high-level language is required.

CSCE 631 Intelligent Agents  
Credits 3. 3 Lecture Hours.  
On the design and implementation of Intelligent Agents and coordination mechanisms among multiple agents, ranging from theoretical principles to practical methods for implementation.  
Prerequisite: CSCE 420 or CSCE 625.

CSCE 633 Machine Learning  
Credits 3. 3 Lecture Hours.  
Machine learning is the study of self-modifying computer systems that can acquire new knowledge and improve their own performance; survey machine learning techniques, which include induction from examples, conceptual clustering, explanation-based learning, exemplar learning and analogy, discovery and genetic algorithms.  
Prerequisite: CSCE 420 or CSCE 625.

CSCE 634 Intelligent User Interfaces  
Credits 3. 3 Lecture Hours.  
Intersection of artificial intelligence and computer-human interaction: emphasis on designing and evaluating systems that learn about and adapt to their users, tasks, and environments.  
Prerequisites: Graduate classification and approval of instructor.
CSCE 635 AI Robotics  
**Credits 3. 3 Lecture Hours. 1 Lab Hour.**  
Introduction and survey of artificial intelligence methods for mobile robots (ground, aerial, or marine) for science and engineering majors; theory and practice of unmanned systems, focusing on biological and cognitive principles which differ from control theory formulations.

CSCE 636 Neural Networks  
**Credits 3. 3 Lecture Hours.**  
Basic concepts in neural computing; functional equivalence and convergence properties of neural network models; associative memory models; associative, competitive and adaptive resonance models of adaptation and learning; selective applications of neural networks to vision, speech, motor control and planning; neural network modeling environments.  
**Prerequisites:** MATH 304 and MATH 308 or approval of instructor.

CSCE 637 Complexity Theory  
**Credits 3. 3 Lecture Hours.**  
Deterministic, non-deterministic, alternating and probabilistic computations; reducibility’s; P, NP and other complexity classes; abstract complexity; time, space and parallel complexity; and relativized computation.  
**Prerequisite:** CSCE 627 or approval of instructor.

CSCE 638 Natural Language Processing: Foundations and Techniques  
**Credits 3. 3 Lecture Hours.**  
Focus on teaching Natural Language Processing (NLP) fundamentals including language models, automatic syntactic processing and semantic understanding; introduction to major NLP applications including information extraction, machine translation, text summarization, dialogue systems and sentiment analysis.  
**Prerequisite:** CSCE 221.

CSCE 639/MEEN 676 Fuzzy Logic and Intelligent Systems  
**Credits 3. 3 Lecture Hours.**  
Introduces the basics of fuzzy logic and its role in developing intelligent systems; topics include fuzzy set theory, fuzzy rule inference, fuzzy logic in control, fuzzy pattern recognition, neural fuzzy systems and fuzzy model identification using genetic algorithms.  
**Prerequisite:** CSCE 625 or approval of instructor.  
**Cross Listing:** MEEN 676/CSCE 639.

CSCE 640 Quantum Algorithms  
**Credits 3. 3 Lecture Hours.**  
Introduction to the design and analysis of quantum algorithms; basic principles of the quantum circuit model; gives a gentle introduction to basic quantum algorithms; reviews recent results in quantum information processing.  
**Prerequisite:** CSCE 629 or approval of instructor.
CSCE 641/VIZA 672 Computer Graphics  
Credits 3.3 Lecture Hours.  
Representations of 3-dimensional objects, including polyhedral objects, curved surfaces, volumetric representations and CSG models; techniques for hidden surface/edge removal and volume rendering; illumination and shading; anti-aliasing; ray tracing; radiosity; animation; practical experience with state-of-the-art graphics hardware and software.  
Prerequisite: CSCE 441.  
Cross Listing: VIZA 672/CSCE 641.

CSCE 643 Seminar in Intelligent Systems and Robotics  
Credits 3.3 Lecture Hours.  
Problems, methods and recent developments in intelligent systems and robotics. May be taken at multiple times for credit as content varies.  
Prerequisite: Approval of instructor.

CSCE 644 Cortical Networks  
Credits 3.3 Lecture Hours.  
The architecture of the mammalian cerebral cortex; its modular organization and its network for distributed and parallel processing; cortical networks in perception and memory; neuronal microstructure and dynamical simulation of cortical networks; the cortical network as a proven paradigm for the design of cognitive machines.  
Prerequisites: CSCE 420 or CSCE 625 and CSCE 636 and graduate classification.

CSCE 645/VIZA 675 Geometric Modeling  
Credits 3.3 Lecture Hours.  
Geometric and solid modeling concepts. Freeform curves and surfaces (splines and Bezier) with their relational, intersectional and global mathematical properties. Parametric representation of solids, topology of closed curved surfaces, boundary concepts and Boolean/Euler operators. Construction and display of curves and surfaces, and solid models.  
Prerequisites: CSCE 441 and CSCE 442 or equivalent.  
Cross Listing: VIZA 675/CSCE 645.

CSCE 646/VIZA 654 The Digital Image  
Credits 4.3 Lecture Hours. 2 Lab Hours.  
Tools and techniques for generation, handling and analysis of two dimensional digital images; image representation and storage; display, media conversion, painting and drawing; warping; color space operations, enhancement, filtering and manipulation.  
Prerequisite: Graduate classification or approval of instructor.  
Cross Listing: VIZA 654/CSCE 646.

CSCE 647/VIZA 656 Image Synthesis  
Credits 4.3 Lecture Hours. 2 Lab Hours.  
Principles of image synthesis from 3-D scene descriptions; includes local and global illumination, shading, shadow determination, hidden surface elimination, texturing, raster graphics
algorithms, transformations and projects.

**Prerequisite:** Approval of instructor.
**Cross Listing:** VIZA 656/CSCE 647.

CSCE 648/VIZA 657 Computer Aided Sculpting

**Credits:** 3. 2 Lecture Hours. 3 Lab Hours.
Mathematical and artistic principles of 3-D modeling and sculpting; includes proportions, skeletal foundation, expression and posture, line of action; curves, surfaces and volumes, interpolation and approximation, parametric and rational parametric polynomials, constructive solid geometry, and implicit representations.

**Prerequisite:** Approval of instructor.
**Cross Listing:** VIZA 657/CSCE 648.

CSCE 649/VIZA 659 Physically-Based Modeling

**Credits:** 3. 2 Lecture Hours. 2 Lab Hours.
Physical simulation as used in choreography, geometric modeling, and the creation of special effects in computer graphics: a variety of problems and techniques explored which may include particle-methods, modeling and simulation of flexible materials, kinematics and constraint systems.

**Prerequisite:** Approval of instructor.
**Cross Listing:** VIZA 659/CSCE 649.

CSCE 652 Software Reverse Engineering

**Credits:** 3. 2 Lecture Hours. 2 Lab Hours.
Introduction to the compilation mechanism to generate executable files and raw binary codes from sources codes; the executable file formats for an operation system to run the binary code; disassembly algorithms and control graph analysis; static and dynamic analyses; case studies on code obfuscation, codebreaking and malware analysis.

**Prerequisites:** CSCE 313 or approval of instructor.

CSCE 653 Computer Methods in Applied Sciences

**Credits:** 3. 3 Lecture Hours.
Classical and modern techniques for the computational solution of problems of the type that traditionally arise in the natural sciences and engineering; introductions to number representation and errors, locating roots of equations, interpolation, numerical integration, linear algebraic systems, spline approximations, initial-value problems for ordinary differential equations and finite-difference methods for partial differential equations.

**Prerequisite:** CSCE 442 or MATH 417; graduate classification.
CSCE 654 Supercomputing
Credits 3.3 Lecture Hours.
Principles of high-performance scientific computing systems, vectorization, programming on supercomputers, numerical methods for supercomputers, performance measuring of supercomputers, multitasking.
Prerequisite: CSCE 614.

CSCE 655 Human-Centered Computing
Credits 3.3 Lecture Hours.
A foundation course in human centered systems and information; understanding and conceptualizing interaction; design and prototyping methodologies; evaluation frameworks; visual design using color, space, layering, and media; information structuring and visualization; animation and games; individual and team programming projects.
Prerequisite: Graduate classification or CSCE 436 or 444 or approval of instructor.

CSCE 656 Computers and New Media
Credits 3.3 Lecture Hours.
This class investigates the potential and realized impact of computers in the design of new media, explores the variety of relationships between authors and readers of interactive materials, and explores the influence of media design and content expressed.
Prerequisite: Graduate classification.

CSCE 657/PETE 657 High Performance Computing for Earth Science and Petroleum Engineering
Credits 3.3 Lecture Hours.
Numerical simulation of problems in Earth Sciences and Petroleum Engineering using high performance computing (HPC); development of a parallel reservoir simulator.
Prerequisite: Graduate classification.
Cross Listing: PETE 657/CSCE 657.

CSCE 658 Randomized Algorithms.
Credits 3.3 Lecture Hours.
Introduction to randomized algorithms; selected tools and techniques from probability theory and game theory are reviewed, with a view towards algorithmic applications; the main focus is a thorough discussion of the main paradigms, techniques, and tools in the design and analysis of randomized algorithms; a detailed analysis of numerous algorithms illustrates the abstract concepts and techniques.
Prerequisite: Graduate classification.

CSCE 659/ECEN 659 Parallel/Distributed Numerical Algorithms and Applications
Credits 3.3 Lecture Hours.
A unified treatment of parallel and distributed numerical algorithms; parallel and distributed computation models, parallel computation of arithmetic expressions; fast algorithms for numerical linear algebra, partial differential equations and nonlinear optimization.
Prerequisites: CSCE 653; MATH 304.
Cross Listing: ECEN 659/CSCE 659.

CSCE 660/MATH 660 Computational Linear Algebra
Credits 3. 3 Lecture Hours.
Techniques in matrix computation: elimination methods, matrix decomposition, generalized inverses, orthogonalization and least-squares, eigenvalue problems and singular value decomposition, iterative methods and error analysis.
Prerequisite: CSCE 442 or equivalent or MATH 417 or equivalent.
Cross Listing: MATH 660/CSCE 660.

CSCE 661 Integrated Systems Design Automation
Credits 3. 3 Lecture Hours.
VLSI design systems and their levels of abstracting; algorithms for general VLSI design and implementation; computer aided design tools and principles; physical and logical models.
Prerequisite: Graduate classification.

CSCE 662 Distributed Processing Systems
Credits 3. 3 Lecture Hours.
Principles and practices of distributed processing; protocols, remote procedure calls; file sharing; reliable system design; load balancing; distributed database systems; protection and security; implementation.
Prerequisite: CSCE 313 and CSCE 463 or CSCE 612.

CSCE 663 Real-Time Systems
Credits 3. 3 Lecture Hours.
Taxonomy of real-time computer systems; scheduling algorithms for static and dynamic real-time tasks; hard real-time communications protocols; programming languages and environments for real-time systems; case studies of real-time operating systems.
Prerequisites: CSCE 313, and CSCE 463 or CSCE 611, or approval of instructor.

CSCE 664 Wireless and Mobile Systems
Credits 3. 3 Lecture Hours.
Wireless and mobile systems; wireless communication fundamentals; wireless medium access control design; transmission scheduling; network and transport protocols over wireless design, simulation and evaluation; wireless capacity; telecommunication systems; vehicular, adhoc, and sensor network systems; wireless security; mobile applications.
Prerequisite: CSCE 463 or CSCE 464 or approval of instructor.

CSCE 665 Advanced Networking and Security
Credits 3. 3 Lecture Hours.
Security aspects of various network protocols including investigation and tool development using "live" machines and networks.
Prerequisites: Graduate classification and approval of instructor.
CSCE 666 Pattern Analysis
Credits 3. 3 Lecture Hours.
Introduction to methods for the analysis, classification and clustering of high dimensional data in Computer Science applications. Course contents include density and parameter estimation, linear feature extraction, feature subset selection, clustering, Bayesian and geometric classifiers, non-linear dimensionality reduction methods from statistical learning theory and spectral graph theory, Hidden Markov models, and ensemble learning.
Prerequisites: MATH 222, MATH 411 (or equivalent) and graduate classification.

CSCE 667 Seminar in Human-Centered Computing
Credits 3. 3 Lecture Hours.
Problems, methods and recent developments in human-centered computing and information. May be repeated for credit as content varies.
Prerequisites: Graduate classification.

CSCE 668 Distributed Algorithms and Systems
Credits 3. 3 Lecture Hours.
Introduction to fundamental algorithmic results in distributed computing systems; leader election, mutual exclusion, consensus, logical time and causality, distributed snapshots, algorithmic fault tolerance, shared memory, clock synchronization.
Prerequisites: CSCE 411 or equivalent or approval of instructor.

CSCE 669 Computational Optimization
Credits 3. 3 Lecture Hours.
Combinatorial theory of polytopes as a tool for the solution of combinatorial optimization problems; applications to max flow, matching and matroids; geometric interpretation of the results indicating the profound role that polyhedral combinatorics play in the design and complexity of approximation algorithms.
Prerequisite: CSCE 629.

CSCE 670 Information Storage and Retrieval
Credits 3. 3 Lecture Hours.
Representation, storage, and access to very large multimedia document collections; fundamental data structures and algorithms of information storage and retrieval systems; techniques to design and evaluate complete retrieval systems, including cover of algorithms for indexing, compressing, and querying very large collections.
Prerequisites: CSCE 310 or CSCE 603 or approval of instructor; graduate classification.

CSCE 671 Computer-Human Interaction
Credits 3. 3 Lecture Hours.
Comprehensive coverage of Computer-human Interaction (CHI) including history, importance, design theories and future direction; modeling computer users and interfaces, empirical
techniques for task analysis and interface design, and styles of interaction.

Prerequisite: Graduate classification.

CSCE 672 Computer Supported Collaborative Work
Credits 3. 3 Lecture Hours.
Covers design, implementation and use of technical systems that support people working cooperatively; draws from the research area of Computer Supported Cooperative Work (CSCW) and includes current theoretical, practical, technical and social issues in CSCW and future directions of the field.
Prerequisite: CSCE 671 or CSCE 610 or approval of instructor.

CSCE 675 Digital Libraries
Credits 3. 3 Lecture Hours.
Surveys current research and practice in Digital Libraries, which seek to provide intellectual access to large-scale, distributed digital information repositories; current readings from the research literature which covers the breadth of this interdisciplinary area of study.
Prerequisite: Graduate classification in computer science.

CSCE 680/ECEN 680 Testing and Diagnosis of Digital Systems
Credits 3. 3 Lecture Hours.
The theory and techniques of testing VLSI-based circuits and systems, and design for testability.
Prerequisites: CSCE 321 or ECEN 350/CSCE 350 or equivalent; ECEN 220 or ECEN 248 or equivalent.
Cross Listing: ECEN 680/CSCE 680.

CSCE 681 Seminar
Credit 1. 1 Lecture Hour.
Reports and discussion of current research and of selected published technical articles. May not be taken for credit more than once in master's degree program nor twice in PhD program.

CSCE 684 Professional Internship
Credits 1 to 16. 1 to 16 Other Hours.
Training under the supervision of practicing computer professionals in settings appropriate to the student's professional objectives, away from the Texas A&M University campus.
Prerequisites: Approval of department head and one semester of graduate work completed.

CSCE 685 Directed Studies
Credits 1 to 12. 1 to 12 Other Hours.
Research problems of limited scope designed primarily to develop research technique.

CSCE 689 Special Topics in...
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.
Selected topics in an identified area of computer science. May be repeated for credit.
Prerequisite: Approval of instructor.
CSCE 691 Research
Credits 1 to 23. 1 to 23 Other Hours.
Research for thesis or dissertation.
## Appendix H – CSE Guests and Visitors

### Fall 2016 – Spring 2017

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<tr>
<th>CSE Guest</th>
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<th>CSE Faculty Host</th>
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<tr>
<td>Nick Gans</td>
<td>University of Texas at Dallas</td>
<td>Roozbeh Jafari</td>
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<td>Matthew Gombolay</td>
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<td>Diana Ramberansingh</td>
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<td>Francis Quek</td>
<td>Texas A&amp;M University – Department of Visualization</td>
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<td>Etienne Vouga</td>
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## Fall 2014 – Spring 2015

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<td>Lawrence Rauchwerger</td>
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<td>Columbia University</td>
<td>Evdokia Nikolova</td>
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<td>Tom Ball</td>
<td>Microsoft Research</td>
<td>Gaby Dos Reis/Bjarne Stroustrup</td>
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<td>University of North Texas</td>
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<td>IBM T.J. Watson Research Center</td>
<td>Nancy Amato &amp; Lawrence Rauchwerger</td>
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<td>Rice University</td>
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<td>Bruce Porter</td>
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<td>University of New Mexico</td>
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Appendix I – Teaching Load Algorithm

Guidelines for Teaching Load Calculation
Department of Computer Science and Engineering
(adopted by faculty on 8/22/14)

1. The default teaching load for tenured and tenure-track faculty will be 3 courses per academic year. The teaching load algorithm described below describes how the load may be increased (by at most one course) or decreased (by at most one course) to obtain a teaching load of between 2 and 4 courses per academic year for each tenured or tenure-track faculty member.

2. Two values will be calculated for each faculty member for each 12 month calendar year:
   - The **number of students advised by the faculty member**:
     i. A graduate student will be considered “advised” if the student has filed an official degree plan listing the faculty member as chair.
     ii. An undergraduate student will be considered “advised” if the student has signed up for research (491) credit with the faculty member, if the faculty member is paying the student, or if the student is assigned to do research with the faculty member as a part of an official undergraduate research program (e.g., ACE Scholars, USRG, REU, DREU)
   - The **number of students advised by the faculty member supported on external funds**:
     i. A Ph.D. student will be considered supported if they receive a stipend at or above the department standard stipend that is paid by external funds. Note that tuition and required fees are considered part of the “department standard” for Ph.D. students.
     ii. An MS student will be considered supported if they receive a stipend at or above the department standard stipend that is paid by external funds.
     iii. An undergraduate student will be considered supported if the student receives a stipend payment for their research that is paid by external funds.
     iv. A postdoc will be considered supported if they receive a stipend paid by external funds that is at least 2.5 times the department standard stipend for Ph.D. students.
   - **Notes and Definitions**:
     - *Advising Credit*: If a student is advised by more than one faculty member, then a memo partitioning the “advising credit” should be completed and signed by all advisors; each advisor should be allocated between 0-1 units of advising credit and the total of all credits for a particular student should be 1.0.
     - *External & Internal Funds*: Students will be considered to be supported by external funds if their salary is paid from an external research project
(e.g., NSF, NIH, DOE, ...) on which the advising CSE faculty member is a PI, Co-PI, or Senior Person or if they are supported by a non-TAMU fellowship/scholarship (e.g., NSF Graduate Fellowship). Examples of non-external (aka internal) support include a GANT or GAT from any Texas A&M department, Startup funds, PI incentive funds, or a GAR funded by a project on which their advisor is not PI, Co-PI or senior person.

- **Time Span Credit**: A student advised or supported for any part of a semester will be considered advised/supported for the entire semester. The semesters in a calendar year will be Spring (4.5/12 year), Summer (3/12 year), and Fall (4.5/12 year). An exception to this rule is that an undergraduate supervised in a full-time 10-week summer research program will count as a full year undergraduate student for the purposes of these calculations.

- **Calculation of Metrics**: Data will be obtained from the most recent FPR. Faculty will have the opportunity to review the calculation of the number of students they advised and which were supported on external funds during the previous calendar year and they will certify it with the annual review in the spring of each year.

3. The teaching load for the next academic year will be calculated each spring semester.
   - It will be based on the following three numbers
     - i. A = average number of students advised per year over past 3 calendar years
     - ii. B = average number of students advised in the previous calendar year
     - iii. C = average number of students supported per year over past 3 calendar years.
   - Students will be weighted according to the degree they are pursuing:
     - i. Ph.D.: 1.0
     - ii. M.S.: 0.7
     - iii. B.S.: 0.34
     - iv. Postdoc: 1.0
   - Faculty will receive an increase of one course in teaching if both the following are true:
     - i. The number of students advised over the past 3 years (A) is less than or equal to 1.0, AND
     - ii. The number of students advised in the past year (B) is less than 2.0
   - The cost to buy out of a course will be:
     - i. 1.5 months of the faculty member’s salary TIMES (5-C)/3
     - ii. A faculty member whose cost to buy out is 0 or less (i.e. C>=5) has a one-course reduction in teaching load.
     - iii. A faculty member may buy out of a second course at a cost of 1.5 months of the faculty member’s salary.
     - iv. A faculty member may not buy out of a third course.
Appendix J – News articles published since August 2012

The list is ordered from the newest to the oldest.

**Crafting reliable emergency communications networks**

When disaster strikes, it is important for first responders to have reliable, unhindered access to a controlled network, allowing them to receive and deliver critical information while ensuring effective emergency response. Unfortunately this is currently not the case. Due to power outages and cell …

**Murphy speaks at 2017 IEEE women in engineering conference**

Dr. Robin Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University, was invited to give an inspirational talk at the Institute of Electrical and Electronics Engineers (IEEE) Women in Engineering International Leadership Conference (WIE ILC) in San …

**Beyond the challenge: XPrize students detail summer experience**

Many students partake in summer internships, study abroad trips or various other experiential learning opportunities offered by the Texas A&M University College of Engineering. An interdisciplinary team of students have combined nearly all of the categories of opportunities into one experience: …

**Computer science and engineering students place first in SnifFEST 2017**

A group of undergraduate students from the Department of Computer Science and Engineering at Texas A&M University placed first in the SnifFEST student competition at the 17th International Symposium on Olfaction and Electronic Nose (ISOEN) at McGill University in Montreal, Canada, on May 28-31. …

**Ragsdale elected to Faculty Senate 40 years after serving as student senator**

Dr. Daniel Ragsdale, professor of practice in the Department of Computer Science and Engineering at Texas A&M University, was recently elected to the university's Faculty Senate where he will represent the Texas A&M College of Engineering. This comes 40 years after being elected student sena…
Taylor receives NSF grant for Research Experiences for Teachers site

Dr. Valerie Taylor, senior associate dean for academic affairs and the Royce E. Wisenbaker Professor in the Department of Computer Science and Engineering at Texas A&M University, was awarded a National Science Foundation (NSF) grant for her efforts in establishing a new Research Experiences for…

Computer engineering students extend use of commercial hands-free controlled devices

Two student groups in the Department of Computer Science and Engineering at Texas A&M University proposed two very different, but equally inventive, projects for their microcomputer systems course this spring. The first group, comprised of computer engineering seniors Sebastian Escalante, Migue…

Gooch, computer science students collaborate on autonomous terrain project

Two undergraduate students in the Department of Computer Science and Engineering at Texas A&M University recently collaborated on a project to develop an autonomous terrain mapping system for Texas A&M AgriLife Extension Service agents. This opportunity grew out of a project that Dr. Bruce …

Gu, collaborators receive grant for ground-breaking cybersecurity project

Dr. Guofei Gu, associate professor in the Department of Computer Science and Engineering at Texas A&M University, led a team of researchers from five universities on a collaborative project involving groundbreaking security management that has been awarded a $3 million grant. The grant is jointl…

How flattening our dimension can bring better graphics into the fold

In order to create 3-D models in the field of computer graphics, thin sheets of material are layered together to create a single object. Dr. Scott Schaefer, professor in the Department of Computer Science and Engineering at Texas A&M University, is focused on peeling back those layers in order t…
Students create wearable device to thwart potential attackers

A student group in the Department of Computer Science and Engineering at Texas A&M University created a device to thwart potential attackers as a project in their microcomputer systems course, taught by Dr. Jyh-Charn (Steve) Liu, professor in the department. Studies have shown that across the c…

Computer science senior named chief justice of SGA Judicial Court

Dhananjay Khanna, a senior in the Department of Computer Science and Engineering at Texas A&M University, has been named chief justice of the Texas A&M Student Government Association (SGA) Judicial Court. Similar to the Supreme Court of the United States, the SGA is appointed one chief justi…

Computer science and engineering research is May cover story in Communications of the ACM

Research led by Dr. Frank Shipman and Dr. Catherine Marshall in the Department of Computer Science and Engineering at Texas A&M University was highlighted on the May cover of Communications of the ACM, which is the flagship publication of the Association for Computing Machinery. As more and mor…

Engineering students sweep Raymond Ideas Challenge competition

Three engineering student teams took the top spots in the 2017 Raymond Ideas Challenge competition hosted by the Center for New Ventures and Entrepreneurship at the Mays Business School at Texas A&M University. The Raymond Ideas Challenge is an annual competition that challenges students to exp…

Murphy develops another marsupial-inspired robot

Dr. Robin Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University and director of the Texas A&M Engineering Experiment Station’s Center for Robot-Assisted Search and Rescue, saw a need for a safer, more efficient way to use quadcopter unmanned…

Fifth Smart Grid Workshop focuses on using smart grids for big data
The focus of the fifth annual Smart Grid Workshop on the Texas A&M University campus was using smart grids for big data. The workshop was organized by the Texas A&M Engineering Experiment Station’s (TEES) Smart Grid Center after receiving a $1 million grant from the National Science Foundation.

Texas A&M to host NSF GENI workshop

Texas A&M University will be hosting the National Science Foundation’s (NSF) Global Environment for Network Innovations (GENI) regional workshop and camp, May 22-26. GENI provides a virtual laboratory for networking and distributed systems research and education. It is well-suited for exploring…

Texas A&M launches inaugural Grand Challenge Scholars Program

The Grand Challenge Scholars Program (GCSP) at Texas A&M University is a selective three-year program offered to sophomore students with the intent to attract, retain and graduate future leaders who are equipped to solve engineering grand challenges facing our society today and in the future. Wh…

Computer science and engineering doctoral student places second at Student Research Week 2017

Traci Sarmiento, a Ph.D. candidate in the Department of Computer Science and Engineering at Texas A&M University, earned second place in the graduate oral presentation category during Student Research Week (SRW) 2017. Sarmiento’s presentation, “Flying Animal Inspired Autonomous Flight with a Sm…

Aggie Coding Club cultivates creativity and professional networking

The Aggie Coding Club (ACC) in the Department of Computer Science and Engineering at Texas A&M University is a student organization bringing together like-minded individuals to create a center for pursuing software based projects as well as networking with companies and individuals. Founded in …

Texas A&M Selected for GM and SAE International AutoDrive Competition
General Motors (GM) and SAE International announced Wednesday that Texas A&M University has been selected as one of eight North American universities to compete in the AutoDrive Challenge over the next three years. GM will provide each team with a Chevrolet Bolt EV as the vehicle platform. Stra…

**Computer engineering student presents at 2017 AsiaBSDCon**

Sam Gwydir, senior in the Computer Science and Engineering Department at Texas A&M University, presented at the 2017 AsiaBSDCon on his knowledge of FreeBSD, a UNIX-like operating system similar to Mac OS X, or GNU/Linux. AsiaBSDCon2017 was held March 9-12 in Tokyo, Japan at the Tokyo University …

**Murphy serves on robotics panel at SXSW 2017**

Dr. Robin Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University, served on the Beyond BB-8: When Robots Start Acting Human panel at the South by Southwest (SXSW) Festival in Austin, Texas. One of Dr. Murphy’s robots, a lifeguard assistant robot …

**Computer science students create drone to assist first responders**

Unmanned vehicles could soon help provide first responders more context of unknown surroundings in crisis situations, thanks to Dimas Gonzales and Alejandro Suazo, two undergraduate students in the Department of Computer Science and Engineering at Texas A&M University. Dr. Jyh-Charn Lui, profes…

**Aggies Invent students tackle the problems of the future**

At the most recent Aggies Invent, students solved the problems of the future, focusing on infrastructure and architecture. Students were challenged to incorporate the latest technology, 3-D printing, drones and robotics as they competed to create the most innovative and compelling solution for build…

**Robonaut: perception in space**

In order to remain safe, robots are commonly used to reach what human hands cannot. Often a robot is used to uncover victims from rubble or bring them safely to shore. These helpful hands can even reach a world far beyond our own – outer space. Dr. Dezhen Song, a professor in the Department of Comp…
Texas A&M College of Engineering fares well in latest U.S. News graduate rankings

Texas A&M Engineering’s graduate program was again ranked 11th overall nationally in the latest U.S. News & World Report survey, “America’s Best Graduate Schools 2018.” The college also ranked seventh among public institutions. Individual programs ranked were: aerospace engineering, 7 (4 pu…

Computer science former student named Intel Fellow

Dr. Ravishankar Iyer, a former student in the Department of Computer Science and Engineering at Texas A&M University, was recently named an Intel Fellow. Intel Fellow is one of the highest levels of achievement one can attain within the company. This prestigious distinction is given to less tha…

Hu receives NSF grant for research on novel algorithms for large-scale attributed networks

Dr. Xia “Ben” Hu, assistant professor in the Department of Computer Science and Engineering at Texas A&M University, received a National Science Foundation (NSF) grant for his novel research, which centers around the development of network embedding algorithms for analyzing large-scale and compl…

Jiménez serves as program chair of HPCA 2017

Dr. Daniel A. Jiménez, professor in the Department of Computer Science and Engineering at Texas A&M University, was elected program chair of the 2017 Institute of Electrical and Electronics Engineers (IEEE) Symposium on High Performance Computer Architecture (HPCA). HPCA offers attendees the op…

Rauchwerger serves as program chair of 2017 Principles and Practice of Parallel Programming Conference

Dr. Lawrence Rauchwerger, Eppright Professor in the Department of Computer Science and Engineering at Texas A&M University, served as program chair of the organizing committee for the 2017 Association for Computing Machinery (ACM) Special Interest Group on Programming Languages (SIGPLAN) Symp…
Amato receives IEEE RAS Distinguished Service Award

Dr. Nancy M. Amato, Unocal and Regents Professor in the Department of Computer Science and Engineering at Texas A&M University, has been honored with the Institute of Electrical and Electronics Engineers (IEEE) Robotics and Automation Society (RAS) Distinguished Service Award. The IEEE RAS Dist…

Six computer science and engineering faculty members receive College of Engineering Faculty Awards

Each year, M. Katherine Banks, vice chancellor and dean of engineering at Texas A&M University, recognizes faculty members who have received fellowships for their impact on their department and the college as a whole. The Department of Computer Science and Engineering had six faculty members r…

From Disasters to Space: Murphy speaks to NASA on human-robot interaction for extreme environments

Dr. Robin Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University, presented a plenary talk to the Annual Plenary Conference for NASA Human Research Program Investigators Workshop (HRPI) in Galveston, Texas. A day earlier, Murphy gave a video-stre…

Seeing songs

When you think of art, mathematical algorithms may not be the first thing that comes to mind. Dr. Tim Davis set out to show the world that mathematics can, in fact, be beautiful. He is merging the two disciplines by crafting algorithms that convert songs into something you can actually see. Davis, …

Securing change: the fight to protect our online space

One thing we can all agree on is social media has drastically altered the way we interact with each other and the world around us. This societal shift has brought to light the need for awareness of the risks that surround it. As quickly as the landscape of social interaction changes, new threats eme…
From lecture hall to big screen: Gooch featured in documentary series

Dr. Bruce Gooch, associate professor in the Department of Computer Science and Engineering at Texas A&M University, was recently asked to participate in a Pearson Education documentary series. The series showcases professors and those who have inspired them to pursue their dreams. Gooch current…

Taylor named Fellow of Association for Computing Machinery

Dr. Valerie E. Taylor, senior associate dean for academic affairs and the Royce E. Wisenbaker Professor in the Department of Computer Science and Engineering at Texas A&M University, has been named a Fellow of the Association for Computing Machinery (ACM). Taylor was honored for leadership in b…

Amato invited speaker at 2016 Ethel Ashworth-Tsutsui Memorial Lecture, grad students receive awards

Dr. Nancy Amato, Regents Professor and Unocal Professor in the Department of Computer Science and Engineering at Texas A&M University, was the invited speaker at the 2016 Ethel Ashworth-Tsutsui Memorial Lecture which was sponsored by the College of Science Educational Outreach and Women’s Progra…

Rauchwerger chairs PACT 2016

Dr. Lawrence Rauchwerger, Eppright Professor in the Department of Computer Science and Engineering at Texas A&M University, served as program co-chair of the ACM/IEEE 25th International Conference on Parallel Architectures and Compilation Techniques (PACT). The conference was held Sept. 11-15 i…

Texas A&M Engineering entrepreneurs among Aggie 100

The 100 fastest-growing Aggie-owned or Aggie-led businesses in the world were recognized Nov. 11 at the 12th Annual Aggie 100 program, and 37 of the 100 companies recognized are owned or led by graduates of the Texas A&M University College of Engineering. The Aggie 100 is sponsored by the Cente…
Computer science and engineering students attend 2016 Grace Hopper Conference

Each year, the Department of Computer Science and Engineering at Texas A&M University participates in the Anita Borg Institute’s Grace Hopper Celebration of Women in Computing (GHC). This year, over 50 undergraduate and graduate students from computer science and engineering attended the event, …

One man’s unforeseen impact on technology

From Google Maps to planetary cartography, Dr. Tim Davis’ work on algorithms and software impacts our lives every single day. This research has such a vast impact on our technology-driven world, that you have likely seen the results of his work without even realizing it. Davis, a professor in the D…

Computer science and engineering students advance to regional programming competition

Students from the Department of Computer Science and Engineering at Texas A&M University competed in a local programming competition that was hosted by the Texas A&M Computing Society. The event is used to select the teams that will represent Texas A&M at the upcoming Association for Com…

Caverlee, Hu receive DARPA grant to fill in the gaps of spatial-temporal datasets

The Defense Sciences Office at the Defense Advanced Research Projects Agency (DARPA) has awarded Dr. James Caverlee and Dr. Xia “Ben” Hu a Next Generation Social Science (NGS2) grant to complete their collaborative research project, HELIOS, named after the Greek god with the ability to see the invis…

Taylor, Wu receive NSF grant to improve energy efficiency of scientific applications on large-scale computing systems

Dr. Xingfu Wu and Dr. Valerie Taylor from the Department of Computer Science and Engineering at Texas A&M University, have received a grant from the National Science Foundation (NSF) to conduct research that aims to improve energy efficiency of scientific applications on large-scale high-perform…
Computer science and engineering participates in 2016 ACM Tapia conference

Each year, the Department of Computer Science and Engineering at Texas A&M University participates in the ACM Richard Tapia Celebration of Diversity in Computing Conference. This year, the three-day conference was held in Austin, Texas, from Sept. 14-16. The Tapia 2016 conference theme, “Divers…)

Texas A&M Engineering ranked 8th in newest “U.S. News & World Report” undergraduate rankings

Texas A&M Engineering ranked eighth among engineering schools at public institutions offering a doctorate, according to the latest U.S. News & World Report rankings of the country’s undergraduate universities and programs. The college of engineering is ranked 16th overall in engineering pro…

Gu, Liu reach new heights in cybersecurity research

Dr. Guofei Gu and Dr. Jyh-Charn Liu in the Department of Computer Science and Engineering at Texas A&M University are developing game-changing defense approaches to beat cyber attackers in two very different, but important, aspects of cybersecurity. Proactive Cyber Defense Gu, associate profes…

Taele elected first computer science and engineering student president of Graduate and Professional Student Council

Paul Taele, Ph.D. student in the Department of Computer Science and Engineering at Texas A&M University, was recently elected to serve as the 47th president of the Graduate and Professional Student Council (GPSC) for the 2016-2017 academic year. Previously, Taele served as the communications off…

Smart Grid Center awarded grant from Department of Energy to detect timing signal intrusions on nation’s power grid

...
The Texas A&M Engineering Experiment Station’s (TEES) Smart Grid Center has received a new grant from the Department of Energy (DOE) that will further the center’s mission to strengthen and protect the nation’s power grid. The grant is one of 12 given to projects across the United States as pa…

**Texas A&M College of Engineering ranked No. 2 by Best College Values**

Texas A&M University’s College of Engineering is No. 2 on Best College Values’ ranking of the 50 Top Value Master’s in Engineering. The University of California, Berkeley was the only program to rank higher than Texas A&M. Georgia Institute of Technology (third), The University of Texas at …

**Welch works to optimize data storage**

Most of us have seen the “Not Enough Storage” message on our smart phone or tablet. Cloud computing services provide a way to alleviate this overwhelming need for space by letting programs store their data on remote servers instead of locally. Cloud computing is just one example of distributed stor…

**Amato, computer science faculty chair 2016 Robotics: Science and Systems Conference**

Dr. Nancy M. Amato, director of engineering honors and co-director of the computer science and engineering track of engineering honors at Texas A&M University, was selected program chair of the 2016 Robotics: Science and Systems Conference (RSS) held in June at the University of Michigan. As pr…

**Williams receives AFS College-Level Teaching Award**

Dr. Tiffani Williams, associate professor in the Department of Computer Science and Engineering at Texas A&M University, was awarded the 2016 Association of Former Students (AFS) Distinguished Achievement Award in Teaching — College Level. Since 1982, the AFS teaching award has been presented …

**Computer science study abroad fosters learning outside of the classroom**
Study abroad programs allow students the unique opportunity to not only learn about a new culture, but be immersed in one. The Department of Computer Science and Engineering at Texas A&M University offers a study abroad trip to India led by Dr. Rabi Mahapatra, professor and head of graduate admi…

**Computer science faculty mentor high school students**

Over 30 high school students worked alongside faculty members from the Department of Computer Science and Engineering at Texas A&M University during the ENGAGE Summer Camp held on campus. Faculty members who mentored the students included: Instructional Assistant Professor Dr. Philip Ritchey, …

**Research proves the improbable can be made possible**

Microprocessors are at the heart of devices such as computers, smartphones and iPads. In the Texas Architecture and Compiler Optimization (TACO) lab at Texas A&M University, Dr. Daniel Jiménez, professor in the Department of Computer Science and Engineering, has revolutionized the way research o…

**Honors student explores uncharted computing territory**

Andrew Nemec, a recent graduate from the Department of Computer Science and Engineering at Texas A&M University, held several prestigious distinctions during his undergraduate career including participation in Engineering Honors, Honors in Science, Honors in Mathematics, Honors Fellows and Under…

**Computer science and engineering student tops competition for research award**

David LaCroix, computer engineering honors graduate in the Department of Computer Science and Engineering at Texas A&M University, was recently awarded the Outstanding Thesis Award for the Science, Technology, Engineering & Mathematics division of the LAUNCH: Undergraduate Research awards. …

**Texas A&M named National Center for Academic Excellence for Cyber Defense**
The National Security Agency (NSA) and the Department of Homeland Security (DHS) recently designated Texas A&M University as a National Center of Academic Excellence, both in education and in research. This well-regarded designation places Texas A&M among a select group of only 30 universities...

**Students bring ideas to life**

Several students in the Department of Computer Science and Engineering at Texas A&M University are utilizing the skills learned in class to create unique and innovative projects being used in ways beyond the classroom. Seniors Andrew Kirfman, Chris Martin and Michael Brand created the Improba...

**Engineering students win award with Dream it. Code it. Win it.**

Jeffrey Zhao and Sahil Dhanju, engineering students at Texas A&M University, were part of a team that took home a national coding prize from the “Dream it. Code it. Win it.” competition. Zhao, a sophomore mechanical engineering student and University Innovation Fellow and Sahil Dhanju, a comput...

**Banks recognizes Faculty and Staff Award winners**

M. Katherine Banks, vice chancellor and dean of engineering and director of the Texas A&M Engineering Experiment Station (TEES), recognized Faculty and Staff Award winners during the 2016 Faculty and Staff Awards banquet. Banks presented Faculty Awards, Staff Excellence Awards, a New Employee A...

**Engineering Program recognizes and honors chair and professorship appointments**

The Texas A&M Engineering Program recently invested 12 new chair and professorship appointments for the 2016-2017 academic year, in addition to recognizing current chair holders and professorships. Engineering faculty who were awarded the new designation of a chair or professorship were pres...

**Texas A&M Cybersecurity Club sheds light on digital security**
The Department of Computer Science and Engineering at Texas A&M University recently launched a new student organization, specifically geared toward students who have an interest in the vital field of cybersecurity. The Texas A&M Cybersecurity Club’s mission is to promote an increased unders…

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**Amato receives Distinguished Educator Award from University of Illinois**

Dr. Nancy M. Amato, Unocal Professor and Regents Professor in the Department of Computer Science and Engineering at Texas A&M University, was honored with the 2015 Distinguished Educator Award from the University of Illinois, where she received her Ph.D. in computer science. This award is prese…

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**Computer science and engineering students distinguished among peers during Student Research Week**

Eight computer science and engineering students received recognition for their research during Texas A&M University’s 2016 Student Research Week (SRW). Zachary Varnadore placed first in the undergraduate math, statistics, computer science division for his poster, which was based on a portion of…

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**Duffield appointed IET Fellow**

Dr. Nick Duffield, professor in the Department of Electrical and Computer Engineering at Texas A&M University, was appointed a Fellow of the Institution of Engineering and Technology (IET). The IET, which is based in the United Kingdom, is one of the world’s largest engineering institutions wit…

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**Robotic lifeguard aids in first response around the world**

A robot assistant lifeguard called EMILY is making waves by helping migrants cross the Mediterranean Sea safely. In the wake of unrest, over 500 refugees have drowned attempting to cross the Mediterranean from Turkey to Greece. Members from the Texas A&M Engineering Experiment Station’s (TEES) C…

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**Professor Emeritus Glen Williams (1938-2016)**

Dr. Glen Williams passed away on Sunday, April 3. He was 77 years old. Williams received his bachelor’s, master’s and Ph.D. in civil engineering from Texas A&M University. He had many
contributions to Texas A&M University, one of which was co-founding the computer science program. His teach…

Computer science and engineering professors present research at Texas Optimization Day

Three professors in the Department of Computer Science and Engineering at Texas A&M University presented aspects of their research at Texas Optimization Day, held recently at the Annenberg Presidential Conference Center. Dr. Jianer Chen, presented his talk, “Dealing with 4-Variables by Resoluti…

Scholars discuss cutting-edge research at 2016 robotics workshop

The 2016 Texas A&M Robotics Workshop, held recently, hosted an array of distinguished speakers from institutions around the world, whose research is rooted in robotics. The 12 researchers who presented at the workshop are area chairs for the 2016 Robotics Science and Systems Conference (RSS), w…

Hu’s research focuses on understanding and predicting user behavior by mining social media events

Dr. Xia Hu, assistant professor in the Department of Computer Science and Engineering at Texas A&M University, is collaborating with Arizona State University and Yahoo! to understand user behavior on social media platforms by developing novel data mining algorithms. These predictions are not ba…

Texas A&M Cybersecurity Center tackles security challenges in a rapidly changing world

With more devices connected to the internet, homes have become smarter. It’s possible for a refrigerator to send shopping reminders, and to control the lights or thermostat while away from home. But as the things around us become smarter, there is a growing need to ensure that they also become safer.

Levchin engages students during visit to Texas A&M
Max Levchin, co-founder of PayPal and CEO of Affirm, recently visited the Department of Computer Science and Engineering at Texas A&M University. Levchin met with departmental student organization leaders and shared experiences from his undergraduate career and other bumps and triumphs along the…

2016 computer science and engineering Spring Banquet and Awards Ceremony

The Department of Computer Science and Engineering at Texas A&M University recently held its annual Spring Banquet and Awards Ceremony in the Bethancourt Ballroom located at the Memorial Student Center on campus. The event provides a way for the department to recognize those who work diligently …

Texas A&M Engineering ranked 7th among public universities in latest graduate survey

Texas A&M Engineering’s graduate program ranked 11th overall and seventh among public institutions in the latest U.S. News & World Report survey, “America’s Best Graduate Schools 2017.” The current overall ranking is an improvement of one spot from last year’s rankings. Individual programs …

Murphy gives AAAS topical lecture

Dr. Robin Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University, gave one of the nine invited topical lectures at the American Association for the Advancement of Science (AAAS) meeting in Washington D.C. AAAS, the organization that publishes th…

Nelligan receives honorable mention for CRA Outstanding Undergraduate Researcher Awards

Trevor Nelligan, a junior in the Department of Computer Science and Engineering at Texas A&M University, was named honorable mention in the 2016 Computing Research Association’s (CRA) Outstanding Undergraduate Researcher Awards. Nelligan received the honor for his work in the Sketch Recognition …
Second Big Data workshop fosters connections across disciplines at Texas A&M University

The second annual Big Data workshop was held recently at Texas A&M University to foster connections across disciplines that intersect this area and help people to continue to identify opportunities for collaboration. The workshop was comprised of 27 short talks from speakers from across the univ…

Murphy named No. 14 in Top 30 Most Innovative Women Professors Alive

Dr. Robin Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University, has been named one of the 30 Most Innovative Women Professors Alive Today by The Best Master’s Degrees, a website that provides reviews and rankings to help narrow down the field w…

Computer science and engineering students complete all four tiers of 2015 NSA Codebreaker Challenge

Two Texas A&M University students in the Department of Computer Science and Engineering, Ryan Vrecenar and Zach Varnadore, completed all four tiers of the third annual National Security Agency 2015 Codebreaker challenge – an impressive feat very few have accomplished. More than 2,000 students f…

Hu joins Department of Computer Science and Engineering

Dr. Xia (Ben) Hu, a member of the Texas A& M Engineering Experiment Station’s (TEES) Center for Remote Health Technologies, has joined the Department of Computer Science and Engineering at Texas A&M University as an assistant professor. His research focuses on data mining and social computi…

Jafari joins computer science and engineering faculty

Dr. Roozbeh Jafari, associate professor in biomedical engineering, computer science and engineering and electrical engineering (courtesy appointment), joined the Department of Computer Science and Engineering at Texas A&M University in August 2015. Jafari is the director of the Embedded Signal …

Former computer science and engineering student awarded Denise Denton Emerging Leader ABIE Award
Dr. Lydia Tapia, former student from the Department of Computer Science and Engineering at Texas A&M University, was awarded the Denise Denton Emerging Leader ABIE Award at the 2015 Grace Hopper Conference in Houston. The Denise Denton Emerging Leader ABIE Award is presented by the Anita Borg Institute for Women in Technology in partnership with the National Science Foundation (NSF) as a way to recognize and promote the leadership potential of early-career women in computing.

**Computer science and engineering well represented at Grace Hopper Conference**

The Department of Computer Science and Engineering at Texas A&M University was well represented at the 2015 Grace Hopper Celebration of Women in Computing Conference (GHC) in Houston. The conference, hosted by the Anita Borg Institute for Women in Technology in partnership with the Association for Computing Machinery (ACM), brings together women in computing to inspire, inform, and engage.

**Huang receives prestigious NSF CAREER Award**

Dr. Jeff Huang, assistant professor in the Department of Computer Science and Engineering at Texas A&M University, has received a five-year National Science Foundation (NSF) Faculty Early Career Development (CAREER) award for his research in debugging concurrency related software defects. The NSF CAREER award is a highly competitive award that promotes excellence in research and education in scientific and engineering disciplines.

**Cranes establish chair in Department of Computer Science and Engineering**

Lynn and Bill Crane have established the Lynn ’84 and Bill Crane ’83 Chair within the Department of Computer Science and Engineering at Texas A&M University. The Cranes' gift to establish the chair will be matched by the Texas A&M University President’s Office. The Cranes' gift, which will...

**Davis named IEEE Fellow**

Dr. Tim Davis, professor in the Department of Computer Science and Engineering at Texas A&M University, has been named a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) for his contributions to sparse matrix algorithms and software. IEEE Fellow is the highest grade of membership in IEEE.

**Amato receives Regents Professor Award**

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Dr. Nancy M. Amato was named a recipient of The Texas A&M University System’s Regents Professor Award. Amato is the Unocal Professor in the Department of Computer Science and Engineering, senior director of Engineering Honors Programs, co-coordinator of the computer science and engineering trac…

First cohort of students admitted to Zachry Leadership Program

The first cohort of students admitted into the Zachry Leadership Program was honored with a reception Nov. 9 at Kyle Field. All 32 students were in attendance, along with M. Katherine Banks, vice chancellor and dean of Texas A&M Engineering, John Zachry, Zachry Group Chairman & CEO, as well …

TAMUHack holds second annual hackathon on campus

TAMUHack, student organization in the Department of Computer Science and Engineering at Texas A&M University held its second annual hackathon on campus in October. The student organization began in 2014 with the mission to put on the largest programming and hardware event on campus. During th…

Student internship project developed by Microsoft

Cassandra Bub, undergraduate student in the Department of Computer Science and Engineering at Texas A&M University, created a guitar tuner and metronome that was developed by Microsoft. Bub and her fellow interns developed the two programs while interning for Microsoft after her freshman year a…

Amato named one of the 25 women in robotics everyone should know

Dr. Nancy Amato, Unocal professor in the Department of Computer Science and Engineering at Texas A&M University, was named to Robohub’s list of “25 Women in Robotics You Need to Know About.” Now in its third year, Robohub publishes the list annually to recognize women in robotics. Amato was se…

Daugherity named Alumnus of the Year by Oklahoma Christian University

Dr. Walter C. Daugherity, senior lecturer in the Department of Computer Science and Engineering at Texas A&M University, will be honored as the Mathematics and Computer Science Alumnus of the Year by Oklahoma Christian University. Daugherity was selected by Oklahoma Christian’s Department of M…
Murphy named Agent of Change by TIME

Dr. Robin Murphy, Raytheon professor in the Department of Computer Science and Engineering at Texas A&M University, was named an Agent of Change by TIME. TIME honors those who are the inventors, builders, experimenters and imaginers of future technology as Agents of Change. Researchers who use …

Tyagi awarded instructional grant

Dr. Aakash Tyagi has been awarded an instructional grant to develop a one-of-a-kind course in the Department of Computer Science and Engineering at Texas A&M University. Tyagi, a professor of practice, was awarded $5,000 to complete his project “Bringing Chip Design Verification to Academia.” …

Look College honors outstanding seniors

The Dwight Look College of Engineering at Texas A&M University honored seven students with its Craig C. Brown Outstanding Senior Engineering Award during a banquet Oct. 1 at the Memorial Student Center on the Texas A&M campus. Seniors Tyler Buffington, J. Hunter Drozd, Tyler A. Romero, Pete…

Engineering students represent Texas A&M at grand summit in Beijing, China

It’s not every day undergraduate students are surrounded by world-renowned leaders in engineering fields, but three Texas A&M University engineering students had that opportunity at the Global Grand Challenges Summit in Beijing, China. Jointly sponsored by the U.S. National Academy of Engineeri…

Bell selected chair of Computer Science and Engineering Advisory Council

The Department of Computer Science and Engineering at Texas A&M University has selected Melanie Bell as chair of the Computer Science and Engineering Advisory Council. “I’m excited to lead the advisory council this year,” Bell said. “Giving back to Texas A&M is something that has always bee…

Former student heads new Amazon office
Terry Leeper, a former student of the Department of Computer Science and Engineering at Texas A&M University, was selected to lead the new Amazon corporate office in Austin, Texas. The office currently employs more than 165 full-time people with plans for expansion in the near future. In addition...

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**Ragsdale inducted into the ESPN Fan Hall of Fame**

Dr. Daniel Ragsdale, professor of practice in the Department of Computer Science and Engineering at Texas A&M University, was recently inducted into the ESPN Fan Hall of Fame. As a retired colonel from the U.S. Army, Ragsdale was selected because of his notable passion and energy at Army athlet...

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**Industrial Affiliates Program hosts successful fall recruiting event**

The Industrial Affiliates Program (IAP) in the Department of Computer Science and Engineering (CSE) at Texas A&M University recently held a career fair and poster competition at the fall recruiting event. More than 300 CSE students attended to learn about the 21 IAP members and engage with the ...

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**Amato, computer science faculty instrumental in international conference**

Dr. Nancy Amato, Unocal professor in the Department of Computer Science and Engineering at Texas A&M University, served as the program committee chair for the 2015 International Conference on Robotics and Automation (ICRA) held in Seattle. Four additional computer science and engineering repres...

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**Computer science and engineering announces Peer Teacher Central renovation**

Peer Teacher Central (PTC) within the Department of Computer Science and Engineering at Texas A&M University has been renovated and is ready for student use. The renovation includes glass walls to enclose PTC as well as new computers and furnishings. The open space design allows for collaborati...

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**Duffield elected to the Board of Directors of the ACM’s Sigmetrics**

Dr. Nick Duffield, professor in the Department of Electrical and Computer Engineering at Texas A&M University, was elected to the Board of Directors of the Association for Computing Machinery’s (ACM) Sigmetrics. Sigmetrics is the special interest group of ACM that is concerned with computer sys...
Murphy and robots featured on TED Talk

Dr. Robin Murphy, Raytheon professor in the Department of Computer Science and Engineering at Texas A&M University, delivered a TED talk to the 2015 TEDWomen conference. Murphy’s talk focused around her research in robotics and disaster informatics. As the director of the Texas A&M Engineer…

Parasol researchers win at supercomputing conference

Graduate students Mani Zandifar and Alireza Majidi and professors Nancy Amato and Lawrence Rauchwerger were recognized for their research paper at the 2015 International Conference on Supercomputing. Their paper, “Composing Algorithmic Skeletons to Express High-Performance Scientific Applications,”…

CSE high school researchers awarded at poster symposium

Brandon Martinez and Eli Zamora received second place for their research poster at the Summer Undergraduate Research Symposium held at Texas A&M University. Their poster, titled “Toward Guiding Semi-Autonomous Vehicles” was about their research in motion planning. They worked with researchers…

Computer science and engineering hosts robot petting zoo

Dr. Robin Murphy, Raytheon Professor, and her graduate students hosted a robot petting zoo for over 100 high school students in the Department of Computer Science and Engineering at Texas A&M University. The students came from across Texas to participate in the Women in Engineering IDEAS summer…

Texas A&M Engineering rises to global top 10

Texas A&M Engineering was ranked as one of the top 10 engineering programs worldwide by the Academic Ranking of World Universities compiled by Shanghai Jiao Tong University. “Global rankings such as this are important because they put an international spotlight on the excellence of our faculty …
Texas A&M receives $3 million NSF grant to train graduate students

Texas A&M University has received a five-year, $3 million grant from the National Science Foundation for graduate training and research. Texas A&M is one of only 10 institutions recognized nationwide with the award, out of approximately 200 proposals that were received by the NSF for the cur…

REU students win research awards at Summer Institute

Three computer science and engineering REU students were recognized for their research posters at the 2015 Summer Institute on Flooding hosted by the Center for Emergency Informatics. Julia Proft, Matt Hegarty and Abygail McMilan were recognized for having the best research posters out of 10 partic…

Two CSE labs awarded Microsoft Surface Hub Research grants

Two labs in the Department of Computer Science and Engineering at Texas A&M University will be awarded competitive Microsoft Surface Hub Research grants. The Sketch Recognition Lab and Interface Ecology Lab are two of only 10 awardees selected in the worldwide competition. Both labs will receiv…

Zachry Leadership Program offers profound insight beyond the books

“During my 87 years, I have witnessed a whole succession of technological revolutions. But none of them has done away with the need for character in the individual or the ability to think.”-- Bernard Mannes Baruch (1870-1965) Head of the U.S. delegation to the United Nations Atomic Energy Commission…

Halliburton donates $5 million to Texas A&M to support global study abroad program

Halliburton has given a gift of $5 million to the Dwight Look College of Engineering at Texas A&M University to establish the Halliburton Engineering Global Program, which will provide students with international experiences so that they are better prepared to work and succeed in a changing glob…

Zhang and Gu awarded best paper at premier international conference
Graduate student Jialong Zhang and Associate Professor Guofei Gu of the Department of Computer Science and Engineering at Texas A&M University received the Best Paper Award at the 35th IEEE International Conference on Distributed Computing Systems (ICDCS). The research paper, “Systematic Mining…”

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**CSE hosts Research Experience for Undergraduates**

Students from across the country are spending their summer conducting scientific research with faculty in the Department of Computer Science and Engineering at Texas A&M University. The Research Experience for Undergraduates program (REU), funded by the National Science Foundation, is a nation…

**The Department of Computer Science and Engineering mourns Distinguished Former Student**

Monty Mueller, a distinguished former student of the Department of Computer Science and Engineering and an avid supporter of the department, will be greatly missed by students, faculty, and staff at Texas A&M University. Mueller, who graduated in 1984, was recognized this spring as a Distinguis…

**Lori Cardenas Memorial Scholarship created**

The Lori Cardenas Memorial Scholarship has been established to honor the memory of the longtime employee of Texas A&M University. Cardenas, who began working for the university in 1989, passed away March 31, 2015. The majority of Cardenas’ career was spent in what is now the Engineering Academ…

**Murphy to be featured on CNN**

Dr. Robin Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University, and her robotic unmanned aerial vehicles will be featured on CNN in a special about the 10th anniversary of Hurricane Katrina that is scheduled to air in late August. Murphy, dire…

**Texas A&M announces formation of the Texas A&M-Chevron Engineering Academies**

Texas A&M University has announced the formation of the Texas A&M-Chevron Engineering Academies at four two-year colleges across the state of Texas. This innovative co-enrollment partnership
ECE student receives the 2015 Brown Foundation- Earl Rudder Memorial Outstanding Student Award

Michael Bass, an undergraduate student in the Department of Electrical and Computer Engineering at Texas A&M University, received the 2015 Brown Foundation- Earl Rudder Memorial Outstanding Student Award. Through a gift from the Brown Foundation of Houston, the Brown Foundation- Earl Rudder Outst...

Murphy gives keynote at RoboUniverse tradeshow

Texas A&M University Computer Science and Engineering Raytheon Professor Dr. Robin Murphy was a keynote speaker for the RoboUniverse Conference and Expo. The conference was held May 11-13, 2015 in New York City. Her talk was titled, "Disaster Robotics: Lessons Learned from 15 Years of Deploymen...

More than 700 undergraduates participate in Texas A&M Engineering Project Showcase

Aggie engineering innovation was the theme of the day at the third annual Texas A&M Engineering Project Showcase, hosted by the Dwight Look College of Engineering. Students gathered May 1 in Reed Arena to demonstrate and display their projects, which highlighted how engineers can create solution...

Zachry Leadership Program offers engineering students opportunity to develop leadership skills

Leadership is one of the core values of Texas A&M University and instilling the value in students is accomplished in various ways. The Dwight Look College of Engineering and Zachry Group are teaming together to give engineering students a notable opportunity to further develop their leadership …

Congratulations to the SRW 2015 CSE student winners
Nineteen students from the Sketch Recognition Lab, directed by CSE Associate Professor Dr. Tracy Anne Hammond, in the Department of Computer Science and Engineering received ten awards for their research comprised of a myriad of projects from digitizing sketch-based neuropsychology tests to putting …

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**Daugherity elected to Texas A&M Faculty Senate Executive Committee**

At its May 11 meeting the Texas A&M University Faculty Senate elected Dr. Walter Daugherity, senior lecturer in the Department of Computer Science and Engineering, to the Faculty Senate Executive Committee for the 2015-2016 academic year. Previously Daugherity served as the Speaker of the Texas …

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**Huang selected for Heidelberg Forum**

Texas A&M University Computer Science and Engineering Assistant Professor Dr. Jeff Huang has been selected by the Scientific Committee of the Heidelberg Laureate Forum Foundation (HLFF) to participate in the 3rd Heidelberg Laureate Forum. Only the 200 most qualified young researchers are granted…

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**Banks recognizes Faculty and Staff Award winners**

Dr. M. Katherine Banks, vice chancellor and dean of engineering and director of the Texas A&M Engineering Experiment Station (TEES), recognized Faculty and Staff Award winners during the 2015 Faculty and Staff Awards banquet. Banks presented Faculty Awards, Staff Excellence Awards, a New Employ…

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**CSE highlights former student Will Hurd '00**

Texas A&M University Computer Science and Engineering former student, Will Hurd, has been elected to the United States Congress. Hurd, originally from San Antonio, received his bachelor’s degree from Texas A&M in 2000. During his time here he served as Student Body President and President o…

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**2015 CSE Spring Banquet and Awards Ceremony**

The 2015 Texas A&M Computer Science and Engineering Spring Banquet and Awards Ceremony was a very memorable one for the department. It was held on campus at the Bethancourt Ballroom in the
Memorial Student Center and hosted CSE faculty, staff, current students and distinguished former students. …

**Engineering Program recognizes and honors chair and professorship appointments**

The Texas A&M Engineering Program recently invested 20 new chair and professorship appointments for the 2015-2016 academic year, in addition to recognizing current chair holders and professorships. The event was held April 19 at the Annenberg Presidential Conference Center. Dr. M. Katherine Ban…

**Sketch Recognition Lab students win ACM IUI Best Poster Award**

Three members of the Sketch Recognition Lab in the Department of Computer Science and Engineering at Texas A&M University attended the Association for Computing Machinery (ACM) Conference on Intelligent User Interfaces (IUI) in Atlanta, Georgia where they were awarded the 2015 IUI Best Poster Aw…

**Interface Ecology Lab featured at ACM CHI 2015**

The Interface Ecology Lab, directed by Associate Professor Andruid Kerne of the Department of Computer Science and Engineering at Texas A&M University, is exhibiting the Art.CH 2015 gallery with innovative forms of curation in the ACM CHI 2015 Conference in Seoul, South Korea this month. Art.CH…

**ACM honors Murphy for work in humanitarian disaster response**

Dr. Robin Roberson Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University, is the recipient of the prestigious Eugene L. Lawler Award for Humanitarian Contributions within Computer Science and Informatics. Murphy was recognized for her "pioneerin…

**Dwight Look College of Engineering honors outstanding alumni**

The Dwight Look College of Engineering at Texas A&M University honored eight alumni during the 2015 Outstanding Alumni Awards Banquet. Receiving the Outstanding Alumni Honor Award were David
Ragsdale joins computer science and engineering as professor of practice

Dr. Daniel Ragsdale ’80, has joined the Department of Computer Science and Engineering's faculty at Texas A&M University as a professor of practice. He comes to the department from the Defense Advanced Research Projects Agency (DARPA) where he has served as program manager since 2011. During his…

Three engineering faculty members receive AFS Distinguished Achievement Awards

Three engineering faculty members are among 24 faculty and staff members who have been selected to receive the 2015 Texas A&M University Association of Former Students Distinguished Achievement Award. Dr. John C. Keyser from the Department of Computer Science and Engineering was selected for t…

CSE attends 2015 Richard Tapia Conference

The 2015 Richard Tapia Conference, “Diversity at Scale”, was held Feb. 18-21 in Boston. About 800 people participated in the 2015 Celebration of Diversity. Faculty and two staff members from the Department of Computer Science and Engineering at Texas A&M University were in attendance and hosted…

CSE students break codes in reverse engineering course

Reverse engineering is at the heart of numerous applications, such as vulnerability exploit, malware analysis, compatible product development, low level system design and debugging, and legacy software maintenance. It is a particularly critical skill for vulnerability analysis and protection of digi…

Computer Science and Engineering highlights former student Monty Mueller '84
Monty Mueller was a highly successful management consultant and partner with Accenture from 1984 to 2003. In 2007, he was named vice president and regional director of Phoenix House Foundation, Inc. where he was responsible for the management of a wide range of substance abuse prevention and treatment.

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**Shell awarded NSF CAREER grant to research multi-robot systems**

Dr. Dylan Shell, assistant professor in the Department of Computer Science and Engineering (CSE) at Texas A&M University, received a CAREER grant from the NSF Information & Intelligent Systems' Robust Intelligence Program to investigate the limitations of traditional ways of programming group.

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**Murphy named one of Top 25 Doers, Dreamers and Drivers for 2015**

Dr. Robin R. Murphy, Raytheon Professor in the Dwight Look College of Engineering's Department of Computer Science and Engineering at Texas A&M University and director of the Texas A&M Engineering Experiment Station's (TEES) Center for Robot-Assisted Search and Rescue (CRASAR) and the Center.

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**Murphy invited speaker at UN conference in Japan**

Dr. Robin R. Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University, gave an invited talk to the Public Forum of the United Nations World Disaster Risk Reduction Conference in Sendai, Japan. Murphy’s talk, “Current State and Achievement of Dis…

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**Texas A&M Engineering ranked 12th in latest graduate survey**

Texas A&M Engineering’s graduate program ranked 12th overall and seventh among public institutions in the latest U.S. News & World Report survey, “America’s Best Graduate Schools 2016.” Individual programs ranked were: Aerospace Engineering, 8 (5 public); Agricultural Engineering 2 (2); Bio…

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**Computer Science and Engineering focuses on former student Ravi Iyer ’99**

Dr. Ravi Iyer is the senior principal engineer, CTO, and director in New Business Initiatives (NBI) at Intel Corporation. He directs a team of 15-plus senior technologists incubating technologies and emerging new business opportunities in NBI. Iyer attended Texas A&M University for his bachelor…
Big Data workshop organized to foster connections across disciplines at Texas A&M

A workshop on big data was recently organized at Texas A&M University to foster connections across disciplines that intersect this area and help people to identify opportunities for collaboration. There are many researchers across Texas A&M whose current or emerging research falls under the…

Computer Science and Engineering faculty and students participate in AAAI-2015 and IAAI-15

Faculty and students from the Department of Computer Science and Engineering (CSE) at Texas A&M University recently participated in the top joint conference in the world for artificial intelligence research. The AAAI Twenty-Ninth Conference on Artificial Intelligence (AAAI-2015) co-located with …

Huang presented Google Faculty Research Award

Dr. Jeff Huang, assistant professor in the Department of Computer Science and Engineering at Texas A&M University, was chosen by the Google Faculty Research Awards Program as a recipient of financial support for his proposal, “Scalable and Practical Debugging Techniques for Large Concurrent Soft…

Jiménez in HPCA Hall of Fame

Dr. Daniel A. Jiménez, associate professor in the Department of Computer Science and Engineering at Texas A&M University, has been included in the High Performance Computer Architecture (HPCA) Hall of Fame for having seven papers in the IEEE International Symposium on High Performance Computer Architecture…

Stroustrup receives 2015 Computer History Museum Award

Texas A&M Engineering Experiment Station (TEES) Distinguished Research Professor Dr. Bjarne Stroustrup was named a 2015 Fellow by the Computer History Museum for his invention of the C++ programming language. As stated in his award recognition, “C++ revolutionized the software industry by enabl…
Furuta receives distinguished Charles W. Crawford Service Award

The Dwight Look College of Engineering at Texas A&M University is honoring Dr. Richard Furuta with the Charles W. Crawford Service Award*. He is among three College of Engineering faculty members receiving the award this year for his significant contributions to the college during the past five …

College of Engineering Teaching, Service and Contribution Awards recipients announced

Dr. M. Katherine Banks, vice chancellor and dean of engineering, recently announced the recipients for the 2014-15 College of Engineering Teaching, Service and Contribution Awards. Five individuals received the teaching awards, three received the service awards and four received the contribution aw…

Shell, Amato co-organize NSF-sponsored workshop

Texas A&M University Computer Science and Engineering Assistant Professor Dr. Dylan Shell and Unocal Professor Dr. Nancy M. Amato co-organized the Workshop on Research Issues at the Boundary of AI and Robotics alongside Dr. Sven Koenig of the University of Southern California. The workshop was s…

Murphy's book chosen as an honorable mention in 2015 PROSE Awards

Dr. Robin R. Murphy’s book, "Disaster Robotics," earned honorable mention in the Engineering & Technology category of the 2015 American Publishers Awards for Professional and Scholarly Excellence (PROSE Awards). Murphy is the Raytheon Professor in the Department of Computer Science and Engineer…

Look College to participate in Aggieland Saturday

The Dwight Look College of Engineering will participate in Texas A&M University’s annual premiere recruiting event, Aggieland Saturday, on Feb. 14 from 9 a.m. to 3 p.m. The open house will include resource tables from each of the undergraduate programs in the Look College for prospective studen…
Hammond's GeoTrooper featured on Discovery Channel Canada's Daily Planet

GeoTrooper, a project created by Dr. Tracy Hammond that addresses the complex difficulties of navigation and assembly for paratroopers on the drop zone, is featured in a video released through Discovery Channel Canada’s Daily Planet. Hammond is an associate professor in the Department of Computer …

Welch named ACM SIGACT News column editor

Dr. Jennifer L. Welch, Regents Professor and Chevron Professor II in the Department of Computer Science and Engineering at Texas A&M University, is the editor of the ACM SIGACT News distributed computing column. Welch succeeds Professor Idit Keidar of the Israel Institute of Technology who held …

Rauchwerger receives TEES Senior Faculty Fellow Award

Eppright Professor Lawrence Rauchwerger was selected as a Texas A&M Engineering Experiment Station (TEES) Senior Faculty Fellow. Faculty selected as TEES Fellows for a third year receive the Senior Faculty designation. The principal purpose of the senior award is to recognize long-term outstandi…

Shipman awarded TEES Center Fellow

Dr. Frank Shipman, professor in the Department of Computer Science and Engineering at Texas A&M University, has been selected as a 2015 Texas A&M Engineering Experiment Station (TEES) Center Fellow. This award recognizes outstanding individual initiative and performance in support of the TEE…

Faculty and students from CSE to attend 2015 Tapia Conference

The 2015 Richard Tapia Conference will be held on Feb. 18-21 in Boston. This year’s conference theme is Diversity at Scale. Dr. Dilma Da Silva, head of the Department of Computer Science and Engineering at Texas A&M University, and Dr. Jack Dongarra, research professor and TIAS Fellow, are amo…
Stroustrup wins 2015 Dahl-Nygaard Senior Prize

Dr. Bjarne Stroustrup, a TEES Distinguished Research Professor in the Department of Computer Science and Engineering at Texas A&M University, won the 2015 AITO Dahl-Nygaard Senior Prize for the design, implementation and evolution of the C++ programming language. This prize is considered the mos…

New class of TIAS Faculty Fellows includes four in engineering

Seven nationally and internationally prominent scholars, including four who will be part of the Dwight Look College of Engineering, will be inducted Friday (Jan. 30) as Faculty Fellows of the Texas A&M University Institute for Advanced Study (TIAS). The scholars come from other top U.S. univers…

Lindsey named CRA Outstanding Undergraduate Male Researcher Award finalist

Computer science graduate Aaron Lindsey was selected as a finalist for the 2015 Computing Research Association's (CRA) Outstanding Undergraduate Male Researcher Award. Lindsey is one of four finalists from Ph.D.-granting institutions in North America. The CRA Outstanding Undergraduate Researcher awa…

2015 SEC Career Fair slated for Tuesday and Wednesday

The Student Engineers’ Council (SEC) at Texas A&M University is hosting its 2015 Spring Career Fair on Tuesday and Wednesday (Jan. 27 and 28) at Reed Arena. The fair, which runs from 9 a.m. to 4 p.m. each day, is the premier recruiting event for the Dwight Look College of Engineering. The care…

KidGab on mission to end cyber bullying

The children’s social networking website KidGab was created by Texas A&M University computer science and engineering Ph.D. student, Stephanie Valentine, who works in the Sketch Recognition Lab led by Dr. Tracy Hammond, associate professor in the Department of Computer Science and Engineering. …

Davis recognized as ACM Fellow
Dr. Timothy Alden Davis, a professor in the Department of Computer Science and Engineering at Texas A&M University, has been named an Association for Computing Machinery (ACM) Fellow. Founded in 1947, ACM is the world's largest association of computing professionals. It serves its membership and…

Computer science and engineering holiday happenings

Cheery faces and warm and fuzzy feelings animate the Department of Computer Science and Engineering (CSE) administration office on the third floor of the H.R. Bright Building (HRBB) on the Texas A&M University campus as the room fills with presents for Brazos Valley children. A Salvation Army An…

Texas A&M Robotics Symposium features all-female speaker lineup

The 2015 Texas A&M Robotics Symposium will be held in College Station on Jan. 21-22 in room 2005 of the Emerging Technologies Building. It will host talks by 18 world-renowned thought leaders in robotics and automation. The symposium will start with a keynote address by Dr. Ruzena Bajcsy from…

CSE students swim their way to first place at game jam

During the weekend of Nov. 7-9, the Learning Interactive Visualization Experience Lab (LIVE) in the College of Architecture's Department of Visualization hosted a game jam on campus in collaboration with TAMU ACM SIGGRAPH, TAGD, Texas A&M University, Kansas State University, IAC, and others. A ga…

ACM honors computer science and engineering faculty as Distinguished Scientists

Dr. Jianer Chen, Dr. Dmitri Loguinov, Dr. Lawrence Rauchwerger and Dr. Duncan Moore "Hank" Walker were named as 2014 Distinguished Scientists by the Association for Computing Machinery. Forty-nine scientists, engineers and educators from universities, international corporations, and research institu…

Reveille VIII makes memorable visit to CSE class
On Dec. 8, computer science and engineering Professor Dr. Tim Davis got the surprise of his life. On a take-home quiz given to his sophomore class, “Discrete Structures for Computing,” the previous Friday, Davis noted that the students may not receive outside help. Just for fun, he added one excepti…

AWICS hosts 5th annual Trick-or-Research

The Aggie Women in Computer Science (AWICS) recently hosted its 5th annual Trick-or-Research, an event designed to introduce undergraduates and first-year graduate students to some of the research in the Department of Computer Science and Engineering at Texas A&M University. More than 100 stude…

Computer science and engineering well-represented at SC14

Several faculty and students from the Department of Computer Science and Engineering at Texas A&M University participated in the 2014 International Conference for High Performance Computing, Networking, Storage and Analysis (SC) held in New Orleans, Nov. 16-21. SC, the largest and most diverse c…

Rauchwerger paper selected for ACM 25th anniversary volume

Dr. Lawrence Rauchwerger's "Adaptive Reduction Parallelization Techniques" is one of 35 papers selected to be included in the ACM International Conference on Supercomputing 25th Anniversary Volume. The volume celebrates the silver jubilee of the premier conference on high performance computers and c…

CSE welcomes Marshall as new adjunct professor

The Department of Computer Science and Engineering at Texas A&M University is excited to announce the newest addition to its adjunct faculty, Dr. Catherine C. Marshall. Until the lab's closing in September, her most recent endeavor was principal researcher at Microsoft Research Silicon Valley. …

Amato elected to CRA board and co-chairs CRA-W

Dr. Nancy M. Amato, Unocal Professor in the Department of Computer Science and Engineering and senior director of honors programs in the Dwight Look College of Engineering, has taken on two
important leadership roles with the Computing Research Association (CRA). In July, Amato began a three-yea…

**Nuclear and computer science faculty lead NNSA center of excellence**

The Center for Exascale Radiation Transport (CERT) at Texas A&M University is one of six centers of excellence funded by the National Nuclear Security Administration (NNSA) under the Predictive Science Academic Alliance Program (PSAAP-II). CERT, led by Texas A&M with participation from the U…

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**Taylor featured in Notable Women in Computing playing card deck**

Dr. Valerie Taylor, senior associate dean for academic affairs and Royce E. Wisenbaker Professor in the Department of Computer Science and Engineering, is featured in the recently funded Kickstarter project, Notable Women in Computing playing card deck. The project was started to spread the history …

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**CRASAR holds robotics workshop aimed at medical disasters**

The Texas A&M Engineering Experiment Station’s Center for Robotic-Assisted Search and Rescue (CRASAR), with funding from the Center for Emergency Informatics and the Texas A&M Engineering Extension Service’s (TEEX) Product Development Center, recently held two days of robotics workshops sp…

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**Look College holds groundbreaking for EEC**

The Dwight Look College of Engineering at Texas A&M University held a groundbreaking ceremony Nov. 14 for the Engineering Education Complex (EEC), a $168 million facility to support the college's 25 by 25 initiative. Speakers at the event included: Former student, Astronaut Michael E. Fossum ’…

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**Walker, Zhang, and Gao awarded Best Poster Paper at ITC 2014**

Tengteng Zhang, Yukun (Dexter) Gao and Dr. Duncan M. (Hank) Walker received the inaugural Best Poster Paper Award from the 45th IEEE International Test Conference (ITC) held in Seattle, Washington, on Oct. 21-23. The poster was entitled "Pattern Generation for Understanding Timing Sensitivity to Pow…

New teaching method gaining momentum in CSE Department

There are many teaching innovations that are being implemented in universities to improve instruction. Many faculty within the Department of Computer Science and Engineering at Texas A&M University are actively bringing these practices to their classrooms. One new method of teaching is called “f…

Murphy invited speaker on robotics at NASEC 2014

Dr. Robin R. Murphy and six Texas A&M University undergraduate engineering students participated in the 2014 U.S. Naval Academy Science and Engineering Conference held November 2-4 in Annapolis, Maryland. The conference brought together policy makers and science advisers with university faculty …

CSE advisory council plans for the future

Twenty-seven external advisory council members gathered for the bi-annual meeting to discuss the future initiatives of the Department of Computer Science and Engineering. Council members represented numerous industry leading companies and agencies, including astronaut Steve Swanson ’98. During the …

Schaefer keynote speaker at SPM 2014

Dr. Scott Schaefer, associate professor in the Department of Computer Science and Engineering at Texas A&M University, was an invited keynote speaker at the Symposium on Solid and Physical Modeling (SPM 2014) held October 26 - 28 at the Chinese University of Hong Kong. The symposium focused on m…

CSE students participate in ACM Programming Contest

The ACM International Collegiate Programming Contest (ICPC), sponsored by IBM, is the premiere global programming competition conducted by and for the world’s universities. ICPC was first held at Texas A&M University in 1970, where the Alpha Chapter of the Upsilon Phi Epsilon Computer Science Ho…

Too busy working to work on your computer science or engineering career?
The Department of Computer Science and Engineering at Texas A&M University gets many requests from companies — who may or may not be members of our Industrial Affiliate Program — interested in hiring our students. This interest led us to contact Former Student Career Services (FSCS) for informat…

TAMUHack hosts successful first hackathon

TAMUHack, a new student run organization in the Department of Computer Science and Engineering at Texas A&M University, hosted its very first hackathon Oct. 24-25. The event, which was named after the organization, included almost 400 students from all over the country, including many who had ne…

CSE continues to bring strong presence at Grace Hopper Conference

The Texas A&M University Department of Computer Science and Engineering sent 21 students, including four male students, to the 2014 Grace Hopper Celebration of Women in Computing Conference (GHC). GHC is the largest conference for women in computing in the world. This year the conference to…

Texas A&M disaster expert identifies nine ways robots can protect Ebola workers

Dr. Robin R. Murphy, Raytheon Professor in the Department of Computer Science and Engineering and director of the Center for Robot Assisted Search and Rescue (CRASAR) has identified nine ways robots can protect Ebola workers. Murphy also cautions that military and civilian robots often do not direct…

Taylor addresses GUIRR meeting in D.C.

Dr. Valerie E. Taylor spoke about the recent partnership between The Texas A&M University System and IBM at the Government-University-Industry Research Roundtable meeting on October 15, 2014 at the National Academy of Sciences in Washington, D.C. "The Big Data Revolution: What Does It Mean for …

Look College to hold tailgate, farewell to Zachry building

The first all-Aggie Engineering Tailgate is slated for Nov. 15, three hours prior to the kickoff of the Texas A&M vs. Missouri football game. The tailgate, which will feature food, giveaways and a carnival, will be held on the lawn north of the Zachry Engineering Center (indoors if it rains) on …
Welch invited tutorial presenter at DISC 2014

Dr. Jennifer L. Welch presented a tutorial on "Link Reversal Algorithms" as part of the 28th International Symposium on Distributed Computing (DISC) held Oct. 12-15 in Austin, Texas. Welch is the Chevron Professor II and Regents Professor in the Department of Computer Science and Engineering at Texa…

CSE student serves as Student Engineers Council secretary

Computer Science and Engineering student, Joanne Bruno, is the Student Engineers’ Council executive secretary at Texas A&M University. The Student Engineers’ Council (SEC) is the representative body for all students in the Dwight Look College of Engineering. SEC consists of more than 100 members…

CSE hosts tailgate before Texas A&M vs. Ole Miss game

A little rainy weather could not dampen the Aggie spirits at the CSE Tailgate, which preceded the Texas A&M vs. Ole Miss game this past Saturday. Current and former students, advisory council members, faculty and staff all enjoyed barbecue and fellowship in Spence Park before the 2014 Maroon Out…

CSE announces exceptional new faculty

The Department of Computer Science and Engineering at Texas A&M University is on the start of a growth period as part of the Dwight Look College of Engineering's 25 by 25 initiative. As part of this plan, we have added five tenure track faculty and two teaching-focused faculty, including our fir…

Aerospace and Computer Science faculty working on NSF funded exascale project

Five faculty members from the Dwight Look College of Engineering at Texas A&M University are working on a National Science Foundation (NSF) funded project researching asynchronous PDE algorithms for turbulent flows at exascale. Dr. Diego Donzis, assistant professor in aerospace engineering is th…
NVIDIA adds Davis' SuiteSparse package to its short-list of high-performance libraries

Dr. Tim Davis, professor of computer science and engineering at Texas A&M University, developed SuiteSparse, a software package that supports GPU-based CUDA acceleration. SuiteSparse was recently added to a very short list of software libraries maintained by NVIDIA. SuiteSparse is a suite of sp...

Annual CSE fall picnic celebrates new semester

On Sept. 27, almost 250 computer science and engineering students, faculty, staff and families gathered at Bachmann (Southwood) Pavilion to enjoy a highly successful evening of fun, food and friends. The annual CSE Fall Picnic provides a fun, laid-back environment for fellowship between CSE faculty …

CSE students take first at national hackathons

Ten Texas A&M University Computer Science and Engineering students, who are also part of TAMUHack, made their mark last month while participating in the GeauxHack and PennApps X: Health events. TAMUHack is a new student run organization in the Department of Computer Science and Engineering …

Dylan Shell co-organized robotics workshop at IROS 2014

Dr. Dylan Shell, assistant professor of computer science and engineering at Texas A&M University, was a co-organizer of "The Future of Multiple Robot Research and its Multiple Identities." The workshop was held at the 2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS…

Hammond speaker at Evolution of the Warfighter event in Washington D.C.

Dr. Tracy Anne Hammond, associate professor in the Department of Computer Science and Engineering, was one of four speakers at Evolution of the Warfighter, Technology Version, an event designed to showcase the relationship between government funded research and general innovations. About 150 congres…

Da Silva appointed Ford Motor Company Design Professor II
Dr. M. Katherine Banks, vice chancellor and dean of engineering, has appointed Dr. Dilma Da Silva holder of the Ford Motor Company Design Professorship II in engineering. The endowed professorship is effective Oct. 1. Da Silva is the head of the Department of Computer Science and Engineering at Tex…

Hammond receives NSF grant to create software sketching tools

Dr. Tracy A. Hammond, associate professor in the Department of Computer Science and Engineering at Texas A&M University, received a grant from the NSF Division of Information & Intelligent Systems' Cyberlearning and Future Learning Technologies office to investigate how spatial reasoning and…

Computer science and engineering researchers win Best Paper Award

Harshvardhan and Adam Fidel, and Dr. Lawrence Rauchwerger and Dr. Nancy Amato were presented with the Best Paper Award at PACT 2014 (Parallel Architectures and Compilation Techniques). Their paper “KLA: A New Algorithmic Paradigm for Parallel Graph Computations” was judged by an independent awards…

Dr. Jack Dongarra first TIAS Faculty Fellow in Department of Computer Science and Engineering

The Texas A&M University Institute for Advanced Study (TIAS) has named Dr. Jack J. Dongarra as a TIAS 2014-2015 Faculty Fellow. Dongarra will work with faculty and students in the Dwight Look College of Engineering's Department of Computer Science and Engineering. A universally recognized schol…

First CSE tailgate of the season smashing success

The Department of Computer Science and Engineering hosted the first Tailgate Party of the year on Sept. 6 before the Texas A&M vs. Lamar football game. Over 150 people attended including staff, faculty, and current and former students of the department. “This was my first tailgate event and I w…

CSE Industrial Affiliates Fall Recruiting Event

The Department of Computer Science and Engineering at Texas A&M University recently held its second annual Industrial Affiliates Program Recruiting Event, which was an enormous success. The two-day event, held on Sept. 8, and 9, consisted of résumé clinics where students were able to receive imm…
Caverlee invited distinguished speaker at University of North Texas

Dr. James Caverlee, associate professor in the Department of Computer Science and Engineering at Texas A&M University, was invited to give the first fall 2014 Distinguished Speaker Seminar hosted by the Department of Computer Science and Engineering at the University of North Texas. Caverlee's p…

Texas A&M University Coalition for Healthy Active Living: a multidisciplinary approach to health

Technology that creatively and intelligently understands and responds to human behavior and the environment can improve health. That is the reason Dr. Tracy Anne Hammond, associate professor and Charles H. Barclay Jr. '45 College of Engineering Faculty Fellow in the Department of Computer Science an…

Alamudun receives award for best graduate research at ORNL

Folami Alamudun, a Ph.D. student in the Department of Computer Science and Engineering at Texas A&M University, received the award for best graduate research presentation during his internship at Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee. Alamudun, who is also a member of the…

Steve Swanson returns to Earth from ISS

Steven R. Swanson, a former student of the Department of Computer Science and Engineering, recently returned to Earth after six months aboard the International Space Station (ISS). Swanson was the commander of Expedition 40, which conducted about 170 experiments. "We did lots of science," Swanson s…

CSE graduate student boot camp and orientation

The Department of Computer Science and Engineering has welcomed 89 incoming Ph.D. and masters students this fall semester. To kick off the semester, CSE had several orientation activities for the incoming students such as a formal Graduate Student Orientation and the inaugural Graduate Student Boot …
Dr. Tiffani Williams advances women in computing

Dr. Tiffani L. Williams, associate professor in the Department of Computer Science and Engineering at Texas A&M University, is a general co-chair for this year's Grace Hopper Conference and has also been selected as a Texas A&M ADVANCE Scholar. The Grace Hopper Celebration of Women in Compu…

Texas A&M Engineering ranked 8th in latest undergraduate rankings

Texas A&M Engineering ranked eighth among engineering schools at public institutions offering a doctorate, according to the latest U.S. News & World Report rankings of the country’s undergraduate universities and programs. The Dwight Look College of Engineering maintained its ranking of 15t…

Dr. Valerie Taylor leads CMD-IT

Dr. Valerie Taylor, senior associate dean for academic affairs and Royce E. Wisenbaker Professor in the Department of Computer Science and Engineering, is the executive director of the Center for Minorities and People with Disabilities in Information Technology (CMD-IT). CMD-IT is dedicated to help…

CSE Ph.D student won ACM student research competition at PACT 2014 (1)

Harshvardhan, Texas A&M University computer science and engineering Ph.D. student, was awarded the first place gold medal in the ACM Student Research Competition (SRC) at PACT 2014 (Parallel Architectures and Compilation Techniques). His poster: “Processing Big Data Graphs on Memory-Restricted …

CSE to benefit from TEES MoU with Tech Mahindra Ltd.

On August 29, 2014 in the Department of Computer Science and Engineering at Texas A&M University, a Joint Innovation Center for Computer Science in Houston came closer to being realized with the signing of a Memorandum of Understanding (MoU) between the Texas A&M Engineering Experiment Stati…

NSF grant awarded to Eun Jung Kim for on-chip network research
Dr. Eun Jung Kim, associate professor in the Department of Computer Science and Engineering, was awarded a National Science Foundation (NSF) grant to develop a framework for high-performance and energy-efficient on-chip network mechanisms in synergy with Multicore Accelerator. Kim is the principal i…

CSE welcomes back Dr. J. Michael Moore '07

The Department of Computer Science and Engineering at Texas A&M University welcomes back Dr. J. Michael Moore '07 as a lecturer this fall. He held this position in the CSE department in 2008 after working as a postdoctoral research associate upon receiving his doctoral degree in computer science…

Dr. John Keyser receives 2014 AFS College Level Teaching Award

Dr. John Keyser, professor and associate head for academics in the Department of Computer Science and Engineering at Texas A&M University, has been honored with the 2014 Association of Former Students College Level Teaching Award. He was also presented with this award in 2007. Each fall, The Ass…

Dr. Valerie Taylor to serve as co-Pi on NSF I-Corps node

Dr. Valerie Taylor, senior associate dean for academic affairs and the Royce E. Wisenbaker professor in the Department of Computer Science and Engineering, is a co-PI on a National Science Foundation (NSF) project establishing an I-Corps Node focused on promoting innovation in the Southwest region o…

CSE welcomes new Adjunct Faculty

The Department of Computer Science and Engineering at Texas A&M University is excited to announce two additions to its faculty; Dr. Gabriel (Gabby) Silberman, executive director of technology strategy and university alliances in Dell Research, is serving as adjunct professor and Dr. Amy Gooch, r…

Professor Emeritus Udo Pooch (1943 - 2014)

Dr. Udo Pooch passed away on Sunday, August 24. He was 71 years old. Dr. Pooch began his teaching career in the Department of Computer Science and Engineering at Texas A&M University in 1969 after earning his doctoral degree in theoretical physics from the University of Notre Dame that same yea…
Dezhen Song awarded NSF grant to study new robotic system

Dr. Dezhen Song received a three-year National Science Foundation (NSF) grant to develop a new robotic system, algorithms and control schemes for sustainable civil infrastructures. The project, "Collaborative Research: Minimally Invasive Robotic Non-Destructive Evaluation and Rehabilitation for Brid…

Caverlee presented with Google Faculty Research Award

Dr. James Caverlee, associate professor of computer science and engineering at Texas A&M University, was chosen by the Google Faculty Research Awards Program as a recipient of financial support for his proposal in the social media category, "Modeling and Inferring Local Expertise." This research…

CSE has bumper year in scholarships

The number of endowed scholarships in the Department of Computer Science and Engineering at Texas A&M University has doubled in the past year thanks to the generosity of members of its Advisory Council and other former students, faculty and friends of the department. These endowed scholarships a…

CSE Department improvements

The Department of Computer Science and Engineering at Texas A&M University has added some exciting improvements to the department. There is a new back porch space behind the Harvey R. “Bum” Bright building, student collaboration spaces throughout H.R.B.B., Peer Teacher Central is being remodele…

Summer camps expose high school students to engineering

The Dwight Look College of Engineering at Texas A&M University hosted 143 prospective students on campus during two camps held in July. Seventy-five rising juniors and seniors participated in the Women Explore Engineering (WEE) camp and an additional 68 students from 12 Texas high schools parti…

CSE A.M. Turing Award recognition posters
The Department of Computer Science and Engineering at Texas A&M University has honored scientists presented with the A.M. Turing Award by hanging posters in the Harvey R. “Bum” Bright building, Teague, and Reed-McDonald. The A.M. Turing Award is sometimes referred to as the "Nobel Prize" of Com...

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**CSE revs up recruiting with new golf cart**

The Department of Computer Science and Engineering at Texas A&M University took delivery in June on a 2011 Presidential Club Car (aka Golf Cart/SMV - Slow Moving Vehicle) from Rick's Golf Cars in College Station. The Golf Cart/SMV was presented to the department by its Advisory Council members E...

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**Scholarship established in memory of Col. Edmond R. McCarthy**

An endowed scholarship in memory of Colonel Edmond R. McCarthy ’66, USAF (Ret.) has been established for full-time students in good standing pursuing an undergraduate degree in the Department of Computer Science and Engineering at Texas A&M University. It will give talented students an educatio...

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**Dr. Nancy Amato delivers invited talk at RSS 2014**

Dr. Nancy M. Amato, Unocal Professor in the Department of Computer Science and Engineering, was invited to speak at the Robotics: Science and Systems Conference hosted by the University of California, Berkeley last month. Amato's talk was titled "Using Motion Planning to Study Protein Motions." In …

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**Former CSE Student Carlos Monroy participates in Heidelberg Laureate Forum**

Dr. Carlos Monroy ’10, data scientist at Rice University's Center for Digital Learning and Scholarship, has been selected to participate in the 2nd Heidelberg Laureate Forum (HLF) to be held Sept. 21-26, 2014 at the University of Heidelberg in Germany. Winners of the esteemed Abel Prize, Fields Meda…

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**Banks announces administrative appointments**
Dr. M. Katherine Banks, vice chancellor and dean of engineering, has appointed Dr. John Hurtado as the senior director for multidisciplinary engineering programs, and Dr. Nancy Amato as the senior director for engineering honors programs. Both appointments are effective Sept. 1. Amato is the holder…

Dr. Dilma Da Silva named head of Department of Computer Science and Engineering

Dr. M. Katherine Banks, vice chancellor and dean of engineering, has appointed Dr. Dilma Da Silva the head of the Department of Computer Science and Engineering at Texas A&M University. The appointment is effective Aug. 25. Da Silva currently serves as a principal engineer and manager at Qualco…

Leepers endow computer science scholarship

Jana and Terry Leeper endowed the Jana and Terry Leeper '86 Scholarship in computer science and computer engineering. Their scholarship, established with the Texas A&M Foundation, is focused on assisting incoming freshmen pursuing degrees in the Department of Computer Science and Engineering (CS…

Six CSE students headed to PennApps X

This past week, six Texas A&M University Computer Science and Engineering students, Coulton Vento, Eleni Mijalis, Bob Timm, Jose Manriquez, Christopher Nolan and Rafael Moreno were accepted to participate in the prestigious hackathon at the University of Pennsylvania called PennApps. The student…

Thomson Reuters names ECE faculty member among the world’s most influential scientific minds

Dr. Edward Dougherty in the Department of Electrical and Computer Engineering at Texas A&M University was named to Thomson Reuters’ list of “The World’s Most Influential Scientific Minds: 2014.” Dougherty, the Robert M. Kennedy ’26 Chair Professor in the department, was honored in the Computer S…

Dr. James Caverlee featured speaker at ACM SIGIR 2014 Workshop
Associate Professor James Caverlee was a keynote speaker at the 37th International ACM Conference on Research and Development in Information Retrieval (SIGIR 2014) held in Gold Coast, Queensland, Australia, from July 6 - 11. Caverlee along with Microsoft Distinguished Scientist Susan Dumais and Mile…

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**Swanson part of live downlink from ISS**

Steve Swanson, a former student in the Department of Computer Science and Engineering, was part of a special Live downlink held Thursday by the Science, Space and Technology Committee with astronauts aboard the International Space Station (ISS). The downlink was part of the 45th anniversary of the A…

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**CSE hosts high school researchers**

This summer, there are five high school rising seniors who are participating in a ten week summer research internship with the Department of Computer Science and Engineering at Texas A&M. The summer interns include Jonathon Colbert, who is a student at A&M Consolidated High School and also …

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**CSE introduces new faculty member Dr. Ruihong Huang**

The Department of Computer Science and Engineering at Texas A&M University welcomes Dr. Ruihong Huang who will join the CSE faculty as an assistant professor in Fall 2015. This coming year she will be a postdoc with Dr. Dan Jurafsky, professor of linguistics and professor of computer science at …

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**Dr. Aakash Tyagi is CSE's first professor of practice**

The professor of the practice program was established by the Dwight Look College of Engineering at Texas A&M University as part of its 25 by 25 initiative, a transformational program to increase access for qualified students to pursue engineering education at Texas A&M University. The progra…

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**Dr. Jeff Huang joins CSE faculty**

The Department of Computer Science and Engineering welcomes Assistant Professor Jeff Huang who will join its faculty this fall. Huang comes to us from the Department of Computer Science at the
University of Illinois at Urbana-Champaign where he was a postdoctoral research associate working with Dr. …

CSE Maymester In India

This past May, Dr. Rabi Mahapatra, professor of computer science and engineering, took 13 students to India for a two-week study abroad. The program began in Bangalore where the students were able to visit eight IT companies such as Software Technology Park India (STPI), Tata Consultancy Services (T…

CSE Undergrad presents paper at DH2014

Ryan Olivieri, a computer engineering junior in the Department of Computer Science and Engineering at Texas A&M University, presented a paper at Digital Humanities 2014, the leading international conference on digital humanities, held this year in Lausanne, Switzerland on July 7-12. The paper, "…

CSE REU CANIETI Students

The Department of Computer Science at Texas A&M University is hosting 16 of 50 CANIETI students from Mexico to be a part of the Research for Undergraduates (REU) Program. CANIETI is the Mexican National Chamber of Electronics, Telecommunication, and Information Technology and has been in place f…

CSE Back Porch Ice Cream Social

On Thursday, July 10, the Department of Computer Science and Engineering at Texas A&M University hosted the CSE Ice Cream Social in order to showcase the new back porch of the Harvey R. “Bum” Bright building. Marble Slab Creamery catered the event and dozens of students, faculty and staff attend…

CSE peer teacher central

The Department of Computer Science and Engineering Peer Teacher Program connects students who have a passion for helping others succeed and students who are driven and excited about learning. The peer teachers in the program are knowledgeable undergraduate students that have been selected as mentors…
Texas A&M vs. Lamar CSE Tailgate

Come join us for two 2014 CSE tailgate parties for the Texas A&M vs. Lamar game and the Texas A&M vs. Ole Miss game. Texas A&M vs. Lamar, September 6 On Saturday, September 6, the CSE department will host a day of fun beginning with open CSE Lab tours in the Harvey R. “Bum” Bright buil…

CSE goals advanced by Advisory Council

The Department of Computer Science and Engineering at Texas A&M University has established an outstanding group to serve as its Advisory Council. Membership on the council is by invitation of the department head and based on leadership, accomplishments, and interest. The current council is made …

Renowned professor of computer science joining CSE faculty

Dr. Timothy Alden Davis, a world leader in algorithmic research for sparse matrix computations, will be joining the faculty of the Department of Computer Science and Engineering at Texas A&M University in the fall. Davis will be teaching courses in sparse matrix algorithms and numerical analysis…

CSE REU Summer 2014 Program

Summer 2014 marks the 11th year that the Department of Computer Science and Engineering at Texas A&M University is offering a summer Research Experiences for Undergraduates (REU) program. The program spans 10 weeks and involves undergraduate students from Texas A&M as well as students from o…

CSEGSA Summer Kickoff Picnic

The Computer Science and Engineering Graduate Student Association (CSEGSA) recently hosted the CSEGSA Summer Kickoff Picnic for the Texas A&M Computer Science and Engineering Research Experiences for Undergraduates (REU) Summer 2014 Program. The picnic was the first social event for the summer a…

New Student Collaboration Spaces
The Department of Computer Science and Engineering has created a number of spaces throughout the Harvey R. “Bum” Bright Building that will promote collaboration and learning among students and faculty. There are student collaboration spaces on the third, fourth and fifth floors of the Bright buildi…

**CSE welcomes Dr. Bruce Gooch to its faculty**

This fall Dr. Bruce Gooch will begin his Texas A&M University career in the Department of Computer Science and Engineering as an associate professor in digital humanities. Gooch is well known for motivating undergraduate and graduate students in the development of their computer graphic and crit…

**Computer Science and Engineering student wins first place at Apple's Worldwide Development Conference**

Computer Science and Engineering student Coulton Vento, a Startup Aggieland student Entrepreneur-in-Residence and self-taught iOS and web developer, recently won the top student prize at Apple's Worldwide Developer Conference (WWDC) in California. Vento was invited to the WWDC for the first time in…

**Hammond, Prasad and Taele participate in ACM SIGCHI 2014**

Dr. Tracy A. Hammond, associate professor and director of the Sketch Recognition Lab in the Department of Computer Science and Engineering at Texas A&M University, Dr. Manoj Prasad, and Doctoral Candidate Paul Taele participated in CHI 2014. The ACM Special Interest Group on Computer-Human Inter…

**Smithsonian features Brittany Duncan's robotics research**

Doctoral Candidate Brittany A. Duncan recently had an article published about her robotics research in the June 2014 issue of the Smithsonian online. Richard Conniff, a long-time Smithsonian contributor, authored "Why Are People So Comfortable With Small Drones?" in which he cites the AirRobot quadc…

**Rauchwerger appointed holder of Eppright Professorship**
Dr. M. Katherine Banks, vice chancellor and dean of engineering, has appointed Dr. Lawrence Rauchwerger holder of the Eppright Professorship in Engineering in the Dwight Look College of Engineering. The endowed professorship was effective June 1. Rauchwerger is a professor in the Department of Comp…

Three awarded Engineering Genesis Award for Multidisciplinary Research

The inaugural Engineering Genesis Award for Multidisciplinary Research was presented to three Texas A&M Engineering Experiment Station (TEES) researchers and their research teams during the TEES Inaugural Advisory Board meeting held May 29. The award, which is presented to TEES researchers who …

Banks recognizes Staff Award winners

Dr. M. Katherine Banks, vice chancellor and dean of engineering and director of the Texas A&M Engineering Experiment Station (TEES), recognized Staff Award winners during the 2014 Faculty and Staff Awards banquet. Banks presented seven Staff Excellence Awards, a New Employee Award, a Key Contri…

Dr. Tracy Hammond demonstrates smart vest in Gävle

During a recent visit to Gävle, Sweden, Texas A&M Associate Professor Dr. Tracy Anne Hammond met with representatives of industry and academia to cultivate interest in her team's smart vest research project as well as other ongoing investigations. Gävle is establishing itself as Europe's geogra…

Three CSE staff honored at inaugural Engineering Staff Retreat

Department of Computer Science and Engineering staff, Sybil Popham, Theresa Roberts, and Bruce Veals, received Staff Excellence Awards at the Texas A&M Engineering Faculty and Staff Awards Banquet on May 1, 2014. At the inaugural Texas A&M Engineering Annual Staff Retreat held at the Memoria…

CSE students win recognition at Engineering Project Showcase
At the Texas A&M University Engineering Project Showcase, held on April 25 in Reed Arena on campus, more than 150 student engineering teams composed of over 600 undergraduates exhibited their projects from Senior Capstone Design courses. Tied for first place and representing the Department of Co…

Judith Dietz and Al White '86 Scholarship established in Department of Computer Science and Engineering

Al White and Judith Dietz of Austin have established the Judith Dietz and Al White ‘86 Scholarship with the Texas A&M Foundation. The endowment will create one or more scholarships for incoming Corps of Cadets students who have a financial need and are pursuing degrees in computer science or co…

Tomans endow computer science and engineering scholarship

Troy and Pamela Toman of San Antonio recently endowed the Pamela and Troy Toman ’88 Scholarship in Computer Science and Engineering. Their scholarship is focused on assisting an incoming freshman student from Bexar County who is pursuing a degree in the Department of Computer Science and Engineering…

Donna and Steven Leist endow scholarship for computer science students

Donna and Steven D. Leist of Pantego, Texas recently established the Donna '92 and Steven D. Leist '93 Scholarship for the Department of Computer Science and Engineering at Texas A&M University. Steven Leist is a President's Endowed scholarship recipient and wanted to award a high achieving stu…

More than 600 undergraduates participate in Texas A&M Engineering Project Showcase

electrical

A.M.Turing Award Winner Judea Pearl presents talk May 9

Dr. Judea Pearl will present The Science of Cause and Effect on Friday, May 9, 2014 at 10:20 a.m. in room 169 of the Blocker Building on the Texas A&M campus. This CSE Distinguished Lecturer Seminar is cohosted by the Department of Computer Science and Engineering, Conflict and Development, Agr…
Computer Science and Engineering Spring Banquet and Awards Ceremony

The Department of Computer Science and Engineering held its Annual Spring Banquet and Awards Ceremony on Thursday, April 24, 2014 at the Memorial Student Center. This was the largest spring banquet to date and it was a phenomenal success. Several differences set the 2014 Spring Banquet apart from p…

NACME Scholars named

Fifteen students from the Dwight Look College of Engineering at Texas A&M University were named recipients of the National Action Council for Minorities in Engineering (NACME) scholarship. The students were honored during a reception on April 11. NACME aims to increase the proportion of African…

Zachary Cannon is the 2014 Community Student Employee of the Year

Zachary Cannon, a computer science senior in the Department of Computer Science and Engineering at Texas A&M University, received the 2014 Community Student Employee of the Year Award at the Student Employee of the Year Ceremony held on April 16 in The Robert M. Gates Student Ballroom at the Tex…

Two Lectures on May 2 presented by Yale N. Patt

Yale N. Patt will give two lectures hosted by the Department of Computer Science and Engineering on Friday, May 2, 2014. The first at 11:00 a.m. and the second at 4:00 p.m., both on the Texas A&M campus in room 2005 of the Emerging Technologies Building. Dr. Patt holds the Ernest Cockrell, Jr. C…

Aaron Lindsey receives 2014 CRA Undergraduate Research Honorable Mention

Congratulations to third year computer science student Aaron Lindsey on receiving Honorable Mention in the Computing Research Association's (CRA) Outstanding Undergraduate Researcher Award (Male) 2014! Aaron is recognized for his research team's project, "Improving Decoy Sets for Protein Folding Si…
CSE students present MECHANIX project

Raniero Lara-Garduño, a computer engineering Ph.D. student, and Larry Powell, a senior in computer science, both students in the Department of Computer Science and Engineering (CSE), were 2nd place winners in two graduate student categories at Student Research Week 2014. They presented their poster,…

Engineering Project Showcase slated for April 25

Approximately 600 students will participate in one of the largest nation-wide events of its kind — the second-annual Texas A&M University Engineering Project Showcase — on April 25 from noon to 4 p.m. in Reed Arena. The event, presented by Engineering Academic and Student Affairs, is free and o…

A new tool for Twitter

Twitter is a highly used and very popular social media platform. However, when switching back and forth between several tabs and windows, it’s very easy to lose track of what you initially set out to explore. Associate Professor Andruid Kerne with the Interface Ecology Lab in the Department of Comp…

Summer Institute on Flooding

The 2014 and 2015 Summer Institutes on Flooding brings together domain experts from invited federal, state, municipal, and NGO stakeholder agencies with academics and industry in a highly interactive visioneering format with talks, demonstrations, and walkthroughs at Disaster City. Register Now:  S…

Aggies on their way to UCLA Facebook Hackathon

Four Aggies, three of whom took first place at the Facebook Texas Regional Hackathon last month, will compete again at LA Hacks on April 11-13. This 36-hour long hackathon is being held at UCLA, where the team, Eleni Mijalis, Bob Timm, Walter Pospick and Rafael Moreno, will compete against 1,500 oth…

Engineering honors outstanding alumni

The Dwight Look College of Engineering at Texas A&M University honored six alumni April 3 during the Outstanding Alumni Awards Banquet. Receiving the Outstanding Alumni Honor Award were
William A. Coskey ’75, chairman, CEO and president of ENGlobal Corporation; Mark A Fischer ’72, chairman, CEO…

**Spiral takes 2nd at 2014 SRW**

Student Research Week 2014 was held March 24—28 at Texas A&M University. Department of Computer Science and Engineering senior capstone design students Ruiz Akpan, Stephen Chen, and Stephen Ten Eyck took second place in the poster competition's Mathematics/Statistics/Computer Science category wi…

**IST Director Randall P. Shumaker presents Human-Robot Collaboration**

Randall P. Shumaker, Director of the Institute for Simulation and Training (IST) at the University of Central Florida, will present his talk entitled,"Human-Robot Collaboration," as part of the Emergency Informatics Distinguished Lecture Series. The lecture will be held on Friday, April 11, 2014 at …

**Students honored by HP's Women’s Innovation Council**

Bethany Mayer, senior vice president and general manager of HP Networking, Szu-Wei Wang, Szu-Hsuan Lin and Mu-Fen Hsieh HP partnered with Texas A&M University and Geeks Without Bounds, an accelerator for humanitarian projects, to host a code-a-thon with the challenge to create an application …

**Profs. Rauchwerger and Gutierrez-Osuna receive 2014 Faculty Fellow Awards**

Two Department of Computer Science and Engineering faculty members were among the recipients of the 2013-2014 Texas A&M College of Engineering Teaching, Service, and Contribution Awards. Dr. Lawrence Rauchwerger was recognized for his overall contribution in teaching, scholarly activities, and p…

**Andreas Klappenecker Honored with Teaching Award from the Association of Former Students**

Each year the Texas A&M Association of Former Students nominates worthy candidates who are distinguished among their peers in the areas of teaching, research, student relations, administration, staff, graduate mentoring; and for extension, outreach, continuing education, and professional develop…
Former Student Steven Swanson boards International Space Station

CSE Former Student Steve Swanson has successfully boarded the International Space Station and is ready to begin his six month stay roughly 250 miles above the Earth’s surface. The docking of the Soyuz spacecraft that transported Swanson and two cosmonauts to the station was delayed due to non-life t…

Distinguished Lecturer Steven M. Drucker to speak at CSE

Steven M. Drucker, a Principal Researcher and manager of the VUE group in VIBE at Microsoft Research, will be the Department of Computer Science and Engineering's first distinguished lecturer for the spring semester. Dr. Drucker will present, "Dealing with your Digital Stuff: Managing Digital Collec…

Engineering names Faculty Fellow recipients

Dr. M. Katherine Banks, vice chancellor and dean of engineering, has announced the recipients of the 2013-2014 College of Engineering Faculty Fellow Awards. Recipients of this year's awards are William and Montine P. Head FellowsDr. Edward White, Aerospace EngineeringDr. Peng Li, Electrical and Co…

Taylor moderates panel at 2014 TAPIA Conference

Dr. Valerie Taylor, senior associate dean of academic affairs, participated as the moderator for the Microsoft-Sponsored Fireside Chat, “Discussing the Hard-hitting Problems,” at the 2014 Richard Tapia Celebration of Diversity in Computing Conference in Seattle. The chat discussed issues being addr…

Six engineering faculty members receive AFS Distinguished Achievement Awards

Six engineering faculty members are among 24 faculty and staff who have been selected to receive the 2014 Texas A&M University Association of Former Students Distinguished Achievement Award. The 2014 recipients from the Dwight Look College of Engineering are: FOR TEACHING Dr. Arul Jayaraman,…
Aggies win at Facebook Hackathon

Update (3/28): News article featured in The Battalion can be found here. Aggies Robert (Bob) Timm, computer science junior, Eleni Mijalis, biology sophomore, and Rafael (Rafa) Moreno, computer science sophomore, took first place at the Facebook Texas Regional Hackathon held February 28 - March 1, 2…

WIPTTE 2014 starts March 12

The Workshop on the Impact of Pen and Touch Technology in Education (WIPTTE), coordinated by the Sketch Recognition Lab and the Department of Computer Science and Engineering (CSE) at Texas A&M University, will be hosted on the Texas A&M Campus March 12-15, 2014. The Workshop is open to any…

CSE at Aggieland Saturday 2014

Aggieland Saturday is Texas A&M University’s annual open house where current students and staff of the University get a chance to introduce to prospective students and their families what Texas A&M is all about. Prospective students have the opportunity to tour the dorms, visit libraries and…

Team organized by ECE graduate student named a finalist in ONF competition (1)

Recently a team organized by a graduate student in the Department of Electrical and Computer Engineering at Texas A&M University was named a finalist in a competition organized by the Open Networking Foundation (ONF), a non-profit organization dedicated to accelerating the adoption of open Softw…

Murphy to moderate panel at 2014 South by Southwest festival

Dr. Robin Murphy, Raytheon Professor in the Department of Computer Science and Engineering and director of the Center for Robot Assisted Search and Rescue (CRASAR), will moderate a panel at the 2014 South by Southwest festival in Austin. The panel, “Drones: Policy, Privacy & Public Safety,” is…

Dr. Guofei Gu gets Google Research Award
Dr. Guofei Gu, assistant professor of computer science and engineering at Texas A&M University, was chosen by the Google Faculty Research Awards Program as a recipient of financial support for his proposal, "Exploring Network Security Innovations in the New Paradigm of Software-Defined Networkin…

Amato named A. Nico Habermann Award winner

Dr. Nancy M. Amato, the Unocal Professor and interim head of the Department of Computer Science and Engineering, was named the 2014 recipient of the Computing Research Association’s (CRA) A. Nico Habermann Award. Amato was recognized for being a highly effective leader of programs that engage women…

NBC News interviews Robin Murphy on robot stagecraft

In "Broadway Bots: Robots Take Lead Roles in Drama, Standup," by Nidhi Subbaraman, contributing writer at NBC News Digital, Ms. Subbaraman reports on the thespian arts currently in play at Tokyo's Robot Restaurant and in the Texas A&M University 2009 production of Shakespeare's "A Midsummer's Ni…

CSE attends Tapia Conference

The 2014 ACM Richard Tapia Celebration of Diversity in Computing Conference was held in Seattle, Washington, on February 5—8. The Tapia Conferences brings undergraduate and graduate students, faculty, researchers, and professionals in computing from all backgrounds and ethnicities together. This yea…

Aggie engineering team named winner of BP contest

BP named Team Maroon Fish the winner of the Texas A&M University Ultimate Field Trip (UFT) Competition Campus Finals, a contest that asked college students in technical fields from leading U.S. universities to solve real-world energy challenges. The team of three engineering students from Texas…

Robin R. Murphy's "Disaster Robotics" available February 2014
Disaster Robotics, MIT Press, by Dr. Robin Murphy, Raytheon Professor of Computer Science and Engineering at Texas A&M University and director of the Center for Robot-Assisted Search and Rescue and founder of Roboticists Without Borders is now available. The book documents 34 disasters where...
received his Ph.D. in Computer Science from the Department of Computer Science and Engineering at Te…

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**Jory Denny volunteers for holiday robotics**

Jory Denny, a Ph.D. student in the Department of Computer Science and Engineering at Texas A&M University, spent a part of the university's December/January 2014 transition as a volunteer at Winter Camp 2013, a camp for the Boy Scouts of America's (BSA) Sam Houston Area Council. Jory taught the …

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**Dr. Tracy Hammond and Manoj Prasad interviewed by KBTX-TV News**

On the morning of Wednesday, December 11, 2013 local CBS affiliate KBTX-TV News visited the Department of Computer Science and Engineering's Sketch Recognition Lab (SRL) to learn more about the lab's latest state-of-the-art research projects. News reporter David Norris spent some time with Associate…

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**Upsilon Pi Epsilon Welcomes New Officers**

First started in 1967, Upsilon Pi Epsilon is the first and only international honor society for the computing and information disciplines. It was established at Texas A&M University by Dr. Dan Drew, professor emeritus and former division head of computer science. Dr. Drew was the principal advis…

**Texas A&M faculty named TEES fellows**

Thirteen faculty members in the Dwight Look College of Engineering at Texas A&M University have been recognized by the Texas A&M Engineering Experiment Station (TEES) as TEES Fellows. The TEES Fellow designation recognizes established faculty members with a history of continuous performance…

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**NASA Valkyrie humanoid robot walks thanks to Texas A&M mechanical engineering research**

The advanced humanoid robot, Valkyrie, unveiled by NASA Johnson Space Center (JSC) walks, thanks to Texas A&M University’s Dr. Aaron Ames and his research team as part of the larger NASA Valkyrie team. Ames, assistant professor in the Department of Mechanical Engineering, and his research team
Dr. Thomas Ioerger collaborating on NIH funded project

Labs at Weill Cornell Medical College, University of Massachusetts Medical School, and Texas A&M University will be collaborating on an NIH funded project with an overall budget of $13M. The five year project, "Decoding the roles of critical genes of unknown function in M. tuberculosis," is led by…

Faculty and staff honored for years of service

Pictured left to right: Dr. M. Katherine Banks, vice chancellor and dean of engineering, with Jean-Louis Briaud, Teresa Wright, Linda Huff and Robert Nevels. Faculty and staff in the Dwight Look College of Engineering and the Texas A&M Engineering Experiment Station (TEES) were recognized Dec…

John Keyser honored with teaching award from Theta Tau Professional Engineering Fraternity

Each semester Theta Tau Professional Engineering Fraternity - Xi Gamma Chapter nominates many worthy candidates who are distinguished from amongst their peers for exemplary status in three different categories including "Most Innovative Research," "Most Informative Lecturer," and "Most Engaging Lect…

Stroustrup elected to Electronic Design Hall of Fame

Dr. Bjarne Stroustrup was elected to the Electronic Design 2013 Hall of Fame. The editors of Electronic Design* base their selection of each year's new inductees on contribution, industry impact, lasting achievement, and reader input. Dr. Stroustrup is the designer and original implementer of C++ an…

Amato, Balbuena named AAAS fellows

Dr. Nancy M. Amato and Dr. Perla Beatriz Balbuena are among the seven Texas A&M University faculty members recognized as 2013 Fellows of the American Association for the Advancement of Science (AAAS) in recognition of their scientifically or socially distinguished efforts to advance science or i…
Texas A&M hosts Eng-Life Workshop

Researchers from The Texas A&M University System participated in the Eng-Life Workshop Nov. 15 in the Emerging Technologies Building on campus. The workshop, "At The Interface of Engineering and Life Sciences," was hosted by the Department of Electrical and Computer Engineering, the Dwight…

Dr. Dezhen Song Awarded NSF Grant

Dr. Dezhen Song was awarded an NSF grant for searching for transient targets in physical space. His research project is entitled, "Robotic Search of Transient Objects." The grant is funded through the NSF Division of Information & Intelligent Systems for three years beginning Fall 2013. Dr. Song…

Workshop on the Impact of Pen and Touch Technology in Education drives the trend of future education


AWICS is a BIG Success at GHC 2013

This year's theme for the 2013 Grace Hopper Celebration of Women in Computing (GHC) was "Think Big: Drive Forward." CSE's (Department of Computer Science and Engineering) Aggie Women in Computer Science (AWICS) joined with over 4,800 people from 54 different countries and over one hundred univer…

Texas A&M Engineering entrepreneurs among Aggie 100

The 100 fastest-growing Aggie-owned or Aggie-led businesses in the world were recognized today (Oct. 25) at the 9th Annual Aggie 100 program, sponsored by the Center for New Ventures and Entrepreneurship in the Mays Business School at Texas A&M University. The Aggie 100 focuses on growth as an i…
**Currans create technology scholarship**

Laura C. ’87 and Christopher B. Curran ’87 have established the North Texas IT Leadership Endowed Scholarship. The scholarship will be awarded to full-time students pursuing undergraduate degrees in computer science or management information systems from Texas A&M University. Preference will be…

**Engineering students named University Innovation Fellows**

Two undergraduate engineering students have been selected for the University Innovation (UI) Fellows program of the National Center for Engineering Pathways to Innovation, funded by the National Science Foundation (NSF). Dean Tate, a junior electronics engineering technology major, and Graham Leslie…

**Robin Murphy named one of the 25 women in robotics everyone should know**

Dr. Robin R. Murphy, Raytheon Professor in the Department of Computer Science and Engineering and director of the Center for Robot Assisted Search and Rescue (CRASAR), was named one of the 25 women in robotics that everyone should know about by Robohub. The list, which was compiled in celebration o…

**Taylor delivers keynote address at largest technical computing conference for women**

Dr. Valerie Taylor, senior associate dean for academic affairs in the Dwight Look College of Engineering at Texas A&M University, presented a keynote speech at the annual Grace Hopper Celebration of Women in Computing conference in Minneapolis Oct. 4. The Grace Hopper Celebration was co-foun…

**DeJesus and Ioerger win Best Paper Award**

Michael A. DeJesus, a Ph.D. student in computer science at Texas A&M University, and Thomas R. Ioerger, associate professor of computer science and engineering at Texas A&M, won the Best Paper Award at the fourth annual ACM Conference on Bioinformatics, Computational Biology and Biomedical I…
Brittany Duncan represents TEES at Congressional Unmanned Systems Caucus' Science and Technology Fair

Brittany Duncan, a Ph.D. student in the Department of Computer Science and Engineering at Texas A&M University, was featured in the press release for the Congressional Unmanned Systems Caucus' Science and Technology Fair in Washington, D.C., Sept. 19. Pictured: An unmanned aerial vehicle from t...

Stroustrup's "A Tour of C++" now available

Dr. Bjarne Stroustrup, University Distinguished Professor and College of Engineering Endowed Chair in Computer Science at Texas A&M University, had a new book published Sept. 19. "A Tour of C++," purchasable as a paperback or eBook, is a guide to the application of C++ for those who have some f...

Dr. Xingfu Wu awarded NSF grant

Dr. Xingfu Wu, TEES associate research professor in the Department of Computer Science and Engineering at Texas A&M University, has been awarded a three year NSF grant, effective Aug. 1. He is the co-principal investigator with Dr. Faming Liang from the Texas A&M Department of Statistics on…

CSE's Dylan Shell awarded NSF grant

Dr. Dylan Shell was awarded an NSF grant for algorithms for adaptive robotics sampling of sparse spatio-temporal fields for his research project, "Collaborative Research: Decision-Making on Uncertain Spatial-Temporal Fields: Modeling, Planning and Control with Applications to Adaptive Sampling." Th…

Murphy gives Big Thinker talk at Yahoo!

Dr. Robin R. Murphy, Raytheon Professor in the Department of Computer Science and Engineering at Texas A&M University and director of the Center for Robot-Assisted Search and Rescue (CRASAR), gave a talk Sept. 10 at Yahoo! Murphy's talk, "Robots (and informatics) to the Rescue!" was part of Yaho…

Dylan Shell named Montague CTE Scholar
Assistant Professor of Computer Science and Engineering Dr. Dylan Shell has been named a Center for Teaching Excellence (CTE) 2013-2014 Montague-CTE Scholar. The Montague-CTE Scholar program, named after its founding donor, Kenneth Montague '37, honors early-career excellence in undergraduate teach…

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**Texas A&M Engineering moves up in latest undergraduate rankings**

Texas A&M Engineering ranked eighth among engineering schools at public institutions offering a doctorate, according to the latest U.S. News & World Report rankings of the country's undergraduate universities and programs. For the second year in a row, the Dwight Look College of Engineeri…

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**Computer science and engineering announces faculty promotions**

Dr. James Caverlee and Dr. Radu Stoleru, members of the Dwight Look College of Engineering's Department of Computer Science and Engineering (CSE) faculty at Texas A&M University, were promoted in academic rank from assistant professors to associate professors with tenure as of Sept. 1 Tenure an…

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**Järvi awarded NSF grant**

Dr. Jaakko Järvi, associate professor in the Department of Computer Science and Engineering at Texas A&M University, has been awarded an NSF grant, effective Sept. 1. The project, "SHF: Small: Foundations for User Interface Programming," will support his goal to significantly reduce the cost of…

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**Gu featured in MIT Technology Review**

Dr. Guofei Gu, assistant professor in the Department of Computer Science and Engineering at Texas A&M University, was quoted in an article by Tom Simonite for the "MIT Technology Review" Aug. 19. The article, "Buying 120,000 Twitter Accounts Reveals New Way to Block Spam," is about researchers …

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"**Computing for Disasters" REU student presents summer research, wins**

A student in the Department of Computer Science and Engineering's Computing for Disaster summer research program won first place in the Dwight Look College of Engineering's REU summer poster
Amato wins Hewlett-Packard/Harriett B. Rigas Award

Dr. Nancy Amato, Unocal Professor and interim head of the Department of Computer Science and Engineering at Texas A&M University, has been named recipient of the Hewlett-Packard/Harriett B. Rigas Award. Hewlett-Packard/Harriett B. Rigas Award recognizes outstanding faculty women who have made si…

Murphy to be featured in White House program today

The White House Office of Science and Technology Policy will host a "We the Geeks" Google+ Hangout on "Robots" with five experts in robotics, including Dr. Robin Murphy from Texas A&M’s Department of Computer Science and Engineering. We the Geeks will be held today (Aug. 9) at 2 p.m. EDT. The …

Q&A with Dr. Tiffani Williams for Smart Planet

Dr. Tiffani L. Williams, associate professor in the Department of Computer Science and Engineering at Texas A&M University, was interviewed by Christina Hernandez Sherwood, a contributing writer for Smart Planet, July 29. Read the article, "Q&A: Tiffani Williams, computer scientist, on crea…

Welch named college ombudsperson

Dr. Jennifer L. Welch, Regents Professor and Chevron Professor II in the Department of Computer Science and Engineering at Texas A&M University, has been named the faculty ombudsperson officer for the Dwight Look College of Engineering for two years starting Sept. 1. Welch will function as the …

Keep calm and play hard

Pictured: Dr. Gutierrez-Osuna (left) discusses the inner workings of a car-racing biofeedback game with Dr. Shipp and REU student Luis Jimenez. Ph.D. student Avinash Parnandi (bottom) plays the video game while his skin conductance levels are being monitored with a wrist-worn sensor. Stress estima…

Amato appointed interim head of computer science and engineering
Dr. M. Katherine Banks, vice chancellor and dean of engineering, has appointed Dr. Nancy Amato interim head of the Department of Computer Science and Engineering at Texas A&M University. Amato is the Unocal Professor in the Department of Computer Science and Engineering at Texas A&M and co-

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**Spotlight on student organizations: Upsilon Pi Epsilon**

Upsilon Pi Epsilon (UPE), the first and only existing international honor society in the computing and information disciplines, is a uniquely Aggie tradition. The society was first organized at Texas A&M University Jan. 10, 1967. Dr. Dan Drew, head of the computer science division, was the pr…

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**Stroustrup receives awards in St. Petersburg**

Dr. Bjarne Stroustrup, designer and implementer of the C++ programming language, received Upsilon Pi Epsilon's ABACUS Award during opening ceremonies for the 37th ACM International Collegiate Programming Contest (ICPC) held in St. Petersburg, Russia, June 30 through July 4. Stroustrup is the Univer…

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**Grad students' H-Radar app captures top prize**

A team of graduate students from Texas A&M University have developed H-Radar, an app that won first place in the 2013 "Go Viral to Improve Health: IOM-NAE (Institute of Medicine and National Academy of Engineering) Health Data Collegiate Challenge."

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**CSE grad student Brittany Duncan nominated for PEO Scholar Award**

Brittany Duncan, a graduate student in the Department of Computer Science and Engineering, has been selected and nominated for a 2014-2015 PEO Scholar Award. The award, provided by the Philanthropic Educational Organization, provides a maximum of $15,000 fellowship for a woman pursuing a doctoral gr…

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**Computer Science and Engineering students earn honorable mention from CRA**
Computer Science and Engineering students Cesar Rodriguez and David Turner were selected Honorable Mention in the Computing Research Association's (CRA) Outstanding Undergraduate Researcher Award 2013.

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**GeoTrooper acknowledged in Paris**

The Sketch Recognition Lab (SRL) at Texas A&M University was nominated for best case study at the recent ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2013) in Paris, France, for the paper, "Multimodal Location-Aware System for Paratrooper Team Coordination." CHI 2013 is th…

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**Stroustrup paper selected by Computing Reviews Best of 2012**

"Software Development for Infrastructure" by Dr. Bjarne Stroustrup was selected as a notable paper in computing in 2012 by the Association of Computing Machinery's (ACM) Computing Reviews Best of 2012. The Best of 2012 list consists of book and article nominations from CR’s reviewers and category e…

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**Computer science's Daugherity to head Faculty Senate**

Dr. Walter C. Daugherity, senior lecturer in the Department of Computer Science and Engineering and the Department of Electrical and Computer Engineering, officially transitioned from speaker-elect to speaker of the Texas A&M Faculty Senate May 13. Daugherity received a bachelor's degree from O…

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**Fourth edition of Stroustrup's book released**

The fourth edition of Dr. Bjarne Stroustrup's book, "The C++ Programming Language," was released May 13. And sold out within an hour. "I got my copy (the very first copy!) on Friday [May 10]," said Stroustrup, distinguished professor and holder of the College of Engineering Chair in Computer Scie…

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**Computer science students recognized for their volunteer service**
Manoj Prasad and Ralph Crosby received the President's Volunteer Service Award directly from the desk of President Barrack Obama in a ceremony April 19 on campus. Prasad and Crosby were selected by the Monte Cristo Center for Volunteer Development for their significant contributions to the Graduate…

**Computer science student launches AskAgs.com**

"Hats or no hats when doing a yell?" "What are the differences between northside and southside on-campus living?" "What is the last day for pica course evaluations?" And so forth and so on. These are some of the questions posted to AskAgs.com, which was founded by Tyler Mandry, senior computer s…

**Amato recognized for her commitment to honors and undergraduate research**

Dr. Nancy Amato, Unocal Professor in the Department of Computer Science and Engineering at Texas A&M University, has been chosen to receive the 2013 Betty M. Unterberger Award by Honors and Undergraduate Research in recognition of her exemplary record of commitment to Honors education and Underg…

**Computer science and engineering student designs popular Android app**

Waylon Brown, a sophomore computer science student in the Department of Computer Science and Engineering at Texas A&M University, has designed an Android App called SmartSilence: Silent Scheduler, available through Google Play. Commenting on his motivation for designing SmartSilence, Waylon say…

**Two computer science students awarded NSF EAPSI Fellowships**

Benjamin Fine and Paul Taele (pictured left and right), Ph.D. candidates in the Department of Computer Science and Engineering at Texas A&M University, have been awarded NSF East Asia and Pacific Summer Institute (EAPSI) fellowships for 2013. Fine will spend his time with the Australian Centre …

**Valerie Taylor appointed senior associate dean for academic affairs**

Dr. M. Katherine Banks, vice chancellor and dean of engineering, has appointed Dr. Valerie E. Taylor senior associate dean for academic affairs. Taylor is Regents Professor and the Wisenbaker Professor in the Department of Computer Science and Engineering, and an IEEE (Institute of Electrical and E…
**SERC delivers star field simulator**

The Space Engineering Research Center (SERC) delivered an innovative star field simulator to technical personnel at NASA’s Marshall Space Flight Center (MSFC) in Huntsville, Ala., in March. The simulator provides a realistic simulation of what a NASA space-based telescope would see when viewing th…

**Call for participation issued for Summer Institute on Chemical and Radiological Events June 4-7**

The schedule for the 2013 Summer Institute June 4-7 at Disaster City has been finalized, with state and federal agencies participating as well as numerous companies from the EDGE® consortium. Participating agencies include the U.S. Department of Homeland Security, the Texas A&M Engineering Exte…

**Stoleru receives NSF CAREER Award**

Dr. Radu Stoleru, assistant professor in the Department of Computer Science and Engineering at Texas A&M University, was named a National Science Foundation (NSF) CAREER Award recipient for his continuing research into the newly emerging field of flow-based cyber-physical system. The NSF awards…

**Engineering to honor outstanding alumni**

The Dwight Look College of Engineering at Texas A&M University will honor seven alumni April 4 at the Miramont Country Club in Bryan, Texas. Receiving the Outstanding Alumni Honor Award will be Thomas E. Ferguson ’78, former president of Flow Solutions Group; Col. Mike Fossum ’80, a NASA astron…

**Engineering names Faculty Fellow recipients**

Dr. M. Katherine Banks, vice chancellor and dean of engineering, has announced the recipients of the 2012-2013 College of Engineering Faculty Fellow Awards. Recipients of this year's awards are William Keeler FellowsDr. Binayak Mohanty, Biological and Agricultural EngineeringDr. Rosana Moreira, Bi…
Texas A&M Engineering moves up in latest graduate survey

Texas A&M Engineering's graduate program ranked 11th overall and sixth among public institutions in the latest U.S. News & World Report survey, "America's Best Graduate Schools 2014." The ranking is one place higher than in 2012, when the college ranked 12th overall. Individual programs...

Nikolova wins 2013 Google Research Award

Dr. Evdokia Nikolova, an assistant professor in the Department of Computer Science and Engineering at Texas A&M University, has received a Google Research Award. The research award committee said to Nikolova, "We are very excited about your work and are thrilled to support this project." Arno …

1,500 prospective students visit Texas A&M Engineering for Aggieland Saturday

The lobby of the Zachry Engineering Center was flooded with newly admitted incoming freshmen, high school juniors getting ready to apply next summer and K-12 prospective students and their families Feb. 16 at Aggieland Saturday. Approximately 1,500 students visited the Dwight Look College of E…

Texas A&M announces initiative to increase engineering enrollment to 25,000 students

Texas A&M University System Chancellor John Sharp today announced plans for Texas A&M University to grow engineering enrollment to 25,000 students by 2025.

Texas A&M research featured in ASEE Prism

A research project led by Dr. Richard J. Malak Jr., an assistant professor in the Department of Mechanical Engineering, has been featured in the January 2013 issue of ASEE Prism, the magazine of the American Society for Engineering Education (ASEE). The article, "Folding Frontier," focuses on origa…

Guofei Gu receives AFOSR Young Investigator Award
Dr. Guofei Gu, assistant professor in the Department of Computer Science and Engineering at Texas A&M University, has received an award from the Air Force Office of Scientific Research (AFOSR) through its Young Investigator Research Program (YIP). Gu was selected for his proposal, "Go Ahead of …

Computer science graduate student awarded dissertation fellowship

Manoj Prasad, a Ph.D. student in the Department of Computer Science and Engineering at Texas A&M has received the Texas A&M University 2012-2013 Dissertation Fellowship from the Office of Graduate Studies. The dissertation fellowship will last from Jan. 1 to Dec. 31. It is designed to suppo…

Welch named ACM Distinguished Scientist

The Association for Computing Machinery (ACM) has named Dr. Jennifer Welch a 2012 Distinguished Scientist. Welch is a Regents Professor and Chevron Professor II in the Department of Computer Science and Engineering at Texas A&M University. She is a nationally recognized leader in the area of di…

Amato named ACM Distinguished Scientist

Dr. Nancy Amato, Unocal Professor and OSIS director in the Department of Computer Science and Engineering at Texas A&M University, was named a Distinguished Scientist by the Association of Computing Machinery (ACM). This prestigious award honors those ACM members who have made significant contr…

Robin Murphy offers suggestions to Japanese government for faster international deployments of rescue robots

Dr. Robin Murphy, a pioneer in the area of rescue robotics, spoke to the New Energy and Industrial Technology Development Organization (NEDO) Dec. 11 in Tokyo.

Engineering, TEES honor faculty and staff for excellence, safety and years of service
Pictured: Austin Riddle, Kathy Waskom, Helen Hastings, Kaye Matejka, Barbara Slusher and Tammy Persky, with Dr. M. Katherine Banks. Dr. M. Katherine Banks, vice chancellor and dean of engineering and director of the Texas A&M Engineering Experiment Station (TEES), recognized faculty and st…

**Computer science professor named ACM Distinguished Scientist**

Dr. Daniel A. Jiménez, who will be joining the faculty in the Department of Computer Science and Engineering in January 2013 as an associate professor, was named Distinguished Scientist by the Association of Computing Machinery (ACM). This prestigious award honors those ACM members who have made si…

**Kensen Shi wins national Siemens Competition, $100,000 scholarship**

Kensen Shi, a senior at A&M Consolidated High School and a visiting student member of Texas A&M University's Parasol Lab in the Department of Computer Science and Engineering, won top honors and a $100,000 scholarship in the Siemens Competition Dec. 1-4 at The George Washington University in…

**Valerie Taylor named IEEE Fellow**

Dr. Valerie E. Taylor, Regents Professor and the Wisenbaker Professor in the Department of Computer Science and Engineering, has been named an IEEE (Institute of Electrical and Electronics Engineers) Fellow for 2013. Taylor is recognized for contributions to "performance enhancement of parallel com…

**International roboticists to offer response lessons for Hurricane Sandy**

Leading robotics researchers from 10 countries will meet at Texas A&M University Nov. 5-8 for the annual IEEE Symposia on Safety Security and Rescue Robotics. The nearly 100 scientists will share findings on how rescue robots are being used throughout the world and discuss advances needed to h…

**Texas A&M engineering entrepreneurs among Aggie 100**

The 100 fastest-growing Aggie-owned or Aggie-led businesses in the world were recognized Oct. 26 at the 8th Annual Aggie 100 program, sponsored by the Center for New Ventures and Entrepreneurship in the Mays Business School at Texas A&M University. The Aggie 100 focuses on growth as an indicato…
Humanities take digital leap with Mellon Foundation grant

An interdisciplinary team of Texas A&M University faculty recently received a two-year, $734,000 development grant from the Andrew W. Mellon Foundation to improve scholarly access to early modern texts. Funds from the grant will go toward the University’s Early Modern Optical Character Recogniti…

Tiffani Williams selected as 2012 Pop Tech Science Fellow

Dr. Tiffani Williams, associate professor in the Department of Computer Science and Engineering at Texas A&M University, has been selected as a Pop Tech Science Fellow: Class of 2012. She is recognized for her creation of new algorithmic tools that will help to reconstruct the Tree of Life, whi…

Texas A&M Engineering moves up in latest undergraduate rankings

Texas A&M Engineering ranked eighth among engineering schools at public institutions offering a doctorate, according to the latest U.S. News & World Report rankings of the country's undergraduate universities and programs. The Dwight Look College of Engineering is tied for 16th place overal…

Research team led by Malak awarded NSF grant

A research team at Texas A&M University led by Dr. Richard J. Malak Jr., an assistant professor in the Department of Mechanical Engineering, was recently awarded a National Science Foundation (NSF) grant through the Emerging Frontiers of Research and Innovation (EFRI) program.

Center for Emergency Informatics established at Texas A&M

The Board of Regents of the Texas A&M University System established the Texas Engineering Experiment Station’s (TEES) Center for Emergency Informatics (CEI) at its Aug. 3 meeting, recognizing the faculty effort in radically changing disaster response through advances in technology.

Computer science graduate student awarded dissertation fellowship

Lantao Liu, a Ph.D. candidate in the Department of Computer Science and Engineering, has been awarded a Dissertation Fellowship for 2012-2013 by the Texas A&M University Office of Graduate
Studies. The fellowship will last for nine months and is designed to support awardees while they are concl…

**Interface Ecology Lab wins NSF I-Corps Award for ZeroTouch**

Principal Investigator Andruid Kerne, Entrepreneurial Lead Jon Moeller, and Business Mentor Jamie Rhodes have been awarded an Innovation Corps grant by the National Science Foundation to sustain development of “ZeroTouch: High-Performance Sensing for Multi-Touch and Free-Air Interaction.” I-Corps a…
Appendix K – External Advisory Council

The Department of Computer Science and Engineering
External Advisory Council

The External Advisory Council is comprised of former students who represent a diverse range of industries and have shown leadership, accomplishments and ability and interest in contributing to the Council’s objectives. As the needs of the department change, the council is invited to offer solutions and reach out to current and former students by serving on committees such as the student connections, fundraising, and marketing committees. Their service has been important in providing industry perspective and support.

Mission
The mission of the Department of Computer Science and Engineering (CSE) External Advisory Council (EAC) is to assist and advise the Department in its drive for excellence through the following activities:

- Provide guidance on issues related to Department educational, research and service activities.
- Review and evaluate Department strategic goals, plans, specific programs and new initiatives.
- Support and steward the Department in fostering mutually beneficial relationships with industry, the engineering and scientific communities, state and federal governments, and present and former students.
- Assist in resource development in support of the needs and programs of the Department.

Current Board Members
Gary Allison ’87 Bazaarvoice
Melanie Bell ’91 Chevron
Tom Boyd ’88 Fieldbus
Keith Clanahan ’74 XlrINT
Bill Crane ’83
Steve Ellis ’89 Intermarine, LLC
Andrew Fikes ’99 Google
Susan Fojtasek ’92 Improving
Curtis Hite ’91 Improving
Mark Huse ’86 Kinder Morgan
Dorothy Jensen ’01 Southwest Airlines
Chris Jones ’99 iRobot
Terry Leeper ‘86  Amazon
Steven Leist ‘93  American Airlines
Jamita Barnett Machen ‘94  SW Airlines/The Software Vault
Bill Martin ‘58  TI
Bill Martin ‘76  Dell
Andrew Montz ‘90  Denim Group
Tammira Philippe ‘95  Bridgeway Capital Management
Steve Swanson ‘98  Boise State University
Troy Toman ‘88  Planet Labs
Andy Udden ‘80  PortaGAS
Ronnie Ward ‘73  TAMU
Al White ‘86  CACI, Inc.
Brian Williams ‘93  Perspectivity Int'l

Past Members (2012-2016)
David Craig ‘86  Baker Hughes
Eric Marin ‘86  Sirius Solutions
Monty Mueller ‘84  Retired-Accenture
Mike Pfister ‘78  ConocoPhillips
Steve Candler ‘78  Ben E. Keith
Past Meeting Dates and Number of Attendees (2012 to present)

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<td>3-Mar-17</td>
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Appendix L – Workload Adjustment Guidelines for Acute Family Care

Workload Adjustment Guidelines for Acute Family Care
Dwight Look College of Engineering, Texas A&M University
Texas Engineering Experiment Station

Purpose

The purpose of this document is to provide Department Heads, faculty and staff of the College of Engineering and Texas Engineering Experiment Station (TEES) with guidelines for the appropriate use of temporary workload adjustments in meeting acute family care needs. The document describes the range of situations for which workload adjustments are a suitable mechanism, the process by which workload adjustments are requested and approved, and several typical scenarios that illustrate appropriate use of workload adjustments.

Motivation

Temporary workload adjustments for acute family care (AFC) situations promote a family-friendly work environment that will enhance the recruitment, retention and long-term productivity of full-time faculty and staff within the Dwight Look College of Engineering at Texas A&M University and the Texas Engineering Experiment Station. Currently, there are no uniform guidelines for faculty, staff and administrators as to appropriate and fair workload modification measures to support AFC situations, such as pregnancy, childbirth, adoption, or the illness of a child, parent, partner, or close relative. Workload adjustment guidelines for the College of Engineering and TEES will facilitate consistency among the various departments that currently handle such situations on a case-by-case basis.

Guiding Principles

- The goal of workload adjustment within the College of Engineering and TEES is to provide temporary workload modification for faculty and staff for the purpose of supporting temporary family care demands such as recovery from childbirth or illness, care and bonding with a newborn or newly-adopted child, and/or temporary care of a close relative who is disabled, elderly or seriously ill.

- These guidelines are intended to cover AFC situations that would require at least a one-semester and no more than a one-year change in duties. Shorter or longer term needs are better dealt with in other ways.

- A faculty or staff member who has AFC responsibilities may request a period of active service-modified duties (ASMD). ASMD replaces time rigid responsibilities such as classroom teaching with equivalent, but more flexible duties for a temporary period of time.
• Faculty or staff members on ASMD status remain with a full-time load without a reduction in pay. They will be expected to fulfill other professional responsibilities during the ASMD period, including those responsibilities for which they are uniquely qualified, such as performing research, curriculum development, executing editorial duties, or advising doctoral candidates. If no equivalent other duties can be identified, then other arrangements outside the scope of these guidelines are indicated.

• The ASMD should be designed to provide maximum flexibility in the faculty and staff member’s schedule while being consistent with relevant System regulations and University and TEES rules and standard administrative procedures.

• Each faculty or staff member faced with AFC responsibilities may request for ASMD. Faculty and staff who make ASMD requests and who have ASMD status for a temporary period of time shall not be negatively impacted in employment status or opportunities.

• Workload issues should be proactively managed so that excess work demands are not placed on other faculty and staff.

• Dissemination of these guidelines should be widespread, so that all eligible faculty, staff and administrators are aware of these guidelines.

Eligibility

Eligible individuals are full-time faculty and staff within the College of Engineering and TEES who have AFC responsibilities. Faculty refers to all men and women whose title is so defined by the Faculty Senate.

Request Process

• A faculty or staff member makes a written request for ASMD to the Department Head of their main academic unit at the earliest possible time. The Department Head will make a decision regarding the request. If required by System Regulations or University/TEES Rules, the Dean will provide final approval.

• The written request requires the faculty or staff member: (1) to document the reason for the ASMD request, (2) to provide dates for the intended ASMD (which may have to coincide with the dates of nearest academic semesters depending on the nature of the modified duties); (3) to outline the modifications he/she is requesting (for faculty) in terms of teaching, research and service, and (staff) in terms of time- and presence-critical responsibilities; (4) to explain how they will address duties for which they are uniquely qualified.
The ASMD will be designed in conjunction with each individual faculty or staff member and his or her Department Head to meet the needs of both the faculty or staff member and the department. A range of possibilities should be available.

**Use**

- Eligible faculty and staff members may be approved for ASMD for each AFC event.
- Except in exceptional circumstances, the adjustment should occur within the first 12 months of the AFC event. In some instances, some part of the adjustment may occur before the event (e.g., in the case of the birth of a child toward the beginning of an academic semester), but generally the bulk of modified duties should be scheduled for after the AFC event.

**Exclusions and Clarifications**

- The guidelines outlined in this document do not encompass tenure clock issues for faculty. However, a tenure-track faculty member may separately request a tenure clock extension due to issues related to acute family care. More information can be found on the Dean of Faculties & Associate Provost Office web site at: [http://dof.tamu.edu/faculty/policies/worklife.php](http://dof.tamu.edu/faculty/policies/worklife.php)

- These guidelines are independent of and complementary to sick leave or vacation, which is taken in situations where no duties are conducted. Thus, a faculty or staff member will in general take either ASMD or sick leave during the same period of time but not both. In situations such as childbirth or illness recovery, a faculty or staff member might take sick leave first and then subsequently begin ASMD. However, in certain cases, where the faculty or staff member may be able to work at home for some portion of the day, a combination of ASMD and sick leave or vacation may be an appropriate option.

- Faculty or staff that are dissatisfied with the outcome of their request may follow the normal complaint and appeal processes as they exist.

**Possible Scenarios**

It is the intent of these guidelines to provide flexibility for a range of ASMD solutions that are tailored to individual faculty, staff and Departmental needs. Some possible implementations are outlined below:

- A tenure-track or tenured faculty who is a primary caregiver of a newborn and who normally teaches during the fall and spring academic semesters may, for example, be granted workload adjustment consisting of one non-summer semester without
teaching and a second non-summer semester with only one course of teaching. In lieu of his or her normal teaching duties a number of more flexible duties would be assigned, such as: the faculty member could develop a new course, spearhead a large research proposal, lead curriculum development, design new departmental programs such as an honors or industrial affiliates program, be involved in departmental recruitment or be responsible for a departmental web-based system.

- A tenure-track or tenured faculty member who has a seriously ill partner and who normally teaches during the fall and spring academic semesters may, for example, chair the graduate admissions committee, prepare and submit nominations for graduate student candidates for college- and university-level fellowships, and generally coordinate graduate recruitment activities for their department in lieu of his or her normal spring semester teaching obligations.

- A staff member who is not presence-critical for a significant part of his or her day (e.g., some accounting staff) and who has eldercare duties may be allowed to work from home for half a day for a period of one semester as long as this does not affect performance.

- A lecturer with a seriously ill child who needs to provide AFC may be granted a summer semester of no teaching. With approval, the ASMD could be extended beyond the original request to include reduced teaching duties for a non-summer semester. In lieu of his or her normal teaching obligation, the lecturer may be given other duties to assist the department such as curriculum development, writing an equipment proposal for teaching labs or an NSF proposal for an REU site, preparing ABET materials, or chairing a scholarship committee.

**About these Guidelines**

These guidelines were drafted by a subcommittee of the 2009-2010 Engineering Faculty Advisory Committee (EFAC) and were revised based on feedback from the EFAC, the Department Heads, and the Dean of the Dwight Look College of Engineering. The 2010-2011 EFAC approved these guidelines on November 5, 2010.
Appendix M – The site “Computer Science Rankings (Beta)"

This ranking of top computer science schools is designed to identify institutions and faculty actively engaged in research across a number of areas of computer science, based on the number of publications that have appeared at the most selective conferences in each field of computer science. The service is still in beta. Its methodology is described in their FAQ.

We include this link as an additional source of information regarding the publication profile of the Department of Computer Science Engineering, as it intends to focus on top conference venues. The information on the strength of the conferences targeted by a department may be useful information, but it certainly presents an incomplete representation of our research profile. The ranking ignores impactful work that appears in journal publications not indexed by DBLP. For example, we have faculty with outstanding levels of accomplishment, recognition from multiple professional societies, and high citation counts that do not appear at all in the csrankings.org analysis. With more faculty members pursuing multidisciplinary areas that may deploy journals as the most effective venue for disseminating results, it important to be aware of the limitation of a top-CS-conference approach for capturing publication impact.

The information has been retrieved on August 25, 2017. The site states that the publication data used to generate the ranking is from the DBLP computer science bibliography site (last updated August 24, 2017).

The site provides a ranking of institutions based on the selection of areas, as pictured in the figure below, where all areas are selected:
Within some specific areas such as computer graphics and robotics, we rank well (8 and 9, respectively). The figure below shows the combined ranking for these two areas:
Appendix N – Faculty Awards

Our faculty have received external honors for their research and professional service, ranging from best paper awards, NSF CAREER awards, society fellows, and professional and popular leadership awards. The following list highlights the diversity and range of awards our faculty, both past and present, have received.

**US Government Awards**

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<th>Recipient</th>
<th>Year</th>
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<td>Jeff Huang</td>
<td>2016</td>
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<td>NSF Faculty Early Career Development (CAREER) Award</td>
<td>Dylan Shell</td>
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<td>Air Force Office of Scientific Research Young Investigator (AFOSR) Award</td>
<td>Guofei Gu</td>
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Appendix O – Draft: College of Engineering Strategic Plan 2017-2025

-DRAFT-

Texas A&M College of Engineering
A Transformative Transition to Preeminence
Strategic Plan Template
2017-2025
Dean’s Message:

I am pleased to present the strategic plan for the Texas A&M University College of Engineering. This document reflects the goals and principles that will guide our organization through the year 2025.

The plan is the result of engagement with our stakeholders that began with an analysis of our strengths, weaknesses, opportunities, and threats. Key focus areas were identified and several town hall meetings were held to establish goals and strategies. I appreciate the contributions of many stakeholders who helped create this dynamic document.

The College of Engineering is at the mid-point of a critical period of growth and improvement with the launch of the 25 by 25 transformational education and enrollment growth initiative in 2013.

Through 25 by 25 and initiatives guided by the college’s last strategic plan, the college has elevated its academic programs, provided access to engineering education for more qualified students, enhanced and expanded its teaching and research facilities, recruited prestigious academic scholars and professors of practice, and been recognized nationally for its research expertise.

Moving forward, the main challenge is to prepare engineers, researchers and engineering educators to succeed in a diverse, globalized economy with a knowledge base that is growing exponentially. While it is a daunting task to educate engineers to succeed throughout their professional lives (that may span over four decades), it is incumbent upon us to educate our students to be lifelong learners; pursue research opportunities to positively impact our quality of life and the economies of the state of Texas and nation at large; and engage in service and outreach activities to share our knowledge base and shape the national agenda. The strategic plan presented here is a road map to achieve the College of Engineering goals by 2025.

Vision:

To define and lead transformative innovation in engineering education, research and service.

Mission:
To educate students who are well-grounded in engineering fundamentals for them to succeed in a multi-disciplinary global environment, to be lifelong learners and to conduct research and transform the results into knowledge base, products, and services to benefit society. We actively develop each member of the engineering program and leverage our resources for the betterment of the state, nation and world.

**Strategic Areas:**

1. **Elevate Undergraduate Education:**

   Providing the highest quality undergraduate education is a cornerstone of the mission of Texas A&M University and the College of Engineering. It is a priority to provide engineering undergraduates with an education that is well grounded in engineering fundamentals and advanced knowledge to prepare students to meet the complex technical challenges of society for today and tomorrow.

   **Goal #1: Provide undergraduate students with an excellent engineering education**

   Strategies to provide an excellent engineering education include:
   - Map the delivery of engineering education to the current learning modalities of the students.
   - Provide students with state-of-the art facilities for engineering education.
   - Expand opportunities for students to engage in ENGR\(^{[x]}\) (e.g., leadership, global experience, entrepreneurship, etc.) to match their passion.
   - Deliver a comprehensive honors program with intellectual challenges that inspire students to expand their horizons.

   **Goal #2: To be nationally recognized for engineering education and innovation**

   Strategies to establish leadership in engineering education and innovation include:
   - Providing high-impact, cost effective engineering education that prepares students to be engineering leaders for the 21\(^{st}\) century.
   - Expand opportunities for global experiences.
   - Develop and adapt innovative pedagogies and institutional technologies to maximize educational impact on students.
   - Enhance resources (facilities, faculty and staff) to meet the growing demand for an engineering education.

   **Goal #3: Cultivate a diverse undergraduate student population that is reflective of state-wide demographics**

   Strategies to bring about a diverse student population include:
• Provide an inclusive environment, inside and outside of the classroom, that values diversity of thought and experiences.
• Expand outreach and recruiting programs to diverse populations to increase interest and broad participation in an engineering education.
• Enhance programs and opportunities, starting with the first year in the college and sophomore year in the disciplines, which foster student communities of common interest and experiences.

Goal #4: Foster an Environment Focused on Student Success
Strategies to establish an environment focused on student success include:
• Increase access to resources (e.g., peer mentors, study groups, living learning communities, etc.) that foster student success.
• Integrate classes to provide engineering examples and hands-on-experiences to motivate the learning of concepts.
• Employ programs and student organizations to enhance student integration into the College of Engineering and foster life-long learning and a strong sense of belonging to engineering.

2. Elevate Graduate Programs:

Education, mentoring, and development of graduate students is crucial to the success of the research and education missions of the College of Engineering. In order to recruit, retain, and graduate students who will make a “difference,” it is imperative that the College of Engineering offers an environment that is rich with preeminent faculty, state-of-the-art curriculum, and state-of-the-art research facilities.

Goal #1: Enhance recruitment of top graduate students
The ability to recruit top graduate students is key to advancing research productivity and reputation.

Strategies to recruit the highest quality graduate students include:
• Make early offers to PhD students to improve chances of acceptance.
• Increase availability of internal fellowships to fund the first year of study for PhD students.
• Assist current and prospective PhD students in preparing competitive applications for federal fellowships.
• Engage industries to determine unmet workforce needs to align the graduate curriculum.
• Enhance adaptability to changes in graduate student recruitment channels (e.g., institutions, regions, countries that have provided strong pipelines are likely to change over time).
• Continue efforts to build relationships/pipelines with institutions known to graduate talented undergraduates but lack strong graduate programs.

Goal #2: Foster a diverse graduate student population that is reflective of the nationwide demographics
Strategies to bring about a diverse graduate student population include:
• Provide an environment (in the classroom and lab, as well as outside of the classroom and lab) that embraces diversity of thought and experiences.
• Expand opportunities for creating communities among graduate students.
• Enhance the outreach and recruiting programs to include diverse undergraduate student populations to increase interest and broaden participation in our graduate programs.
• Provide the financial support necessary for students to excel in research.
• Expand efforts for internship experiences with leading industry and national laboratory partners.
• Foster an academic culture to promote innovation and entrepreneurship.

Goal #3: Prepare students for thriving research careers in academia and industry
Strategies to prepare students for thriving research careers include:
• Increase opportunities for students to practice the skills needed for thriving research careers.
• Expand professional development programs to increase awareness about different career paths.
• Increase assistance and guidance for pursuing careers in academia and industry.

3. Elevate Faculty Reputation and Visibility:
Faculty are the intellectual capital of a university. It is a high priority for the College of Engineering that faculty of the highest reputation are recruited, retained and developed. Reputed faculty attract highly qualified and motivated students and research opportunities to the university.

Goal #1: Pivot to Preeminence
Strategies to recruit, retain, and develop faculty who are or have the potential to be global leaders in their respective fields include:

- Periodically identify strategic areas for investment to recruit, retain and develop faculty.
- Recruit highly qualified PhD graduates from top schools and also our undergraduate students after they graduate from leading graduate schools.
- Hire senior faculty in strategic areas and hire faculty clusters around them to build globally competitive research teams.
- Raise endowments to retain high-performing faculty and take advantage of system-wide and statewide opportunities such as the Chancellor’s Research Initiative and Governor’s University Research Initiative.
- Establish effective mentoring programs to retain faculty.
- Expand the partner placement program through enhanced bridge funding and tap into the local ecosystem to enhance the success rate in recruiting.
- Establish a leadership program to develop faculty leaders.
- Establish large-scale teaching and research facilities to recruit and retain faculty.
- Incentivize faculty to participate in the Intergovernmental Personnel Act (IPA) programs to serve as program managers at federal funding agencies. Increase the number of IPAs to 5-10 percent of our faculty.

Goal #2: Increase program rankings to top 10 and increase the number of National Academy of Engineering memberships and University Distinguished Professors to 10 percent of the faculty

Strategies to elevate faculty visibility include:

- Expect and incentivize faculty to publish in high impact research venues, including digital media.
- Promote faculty success stories in prominent public mediums and through social media.
- Proactively nominate faculty to national level awards, society fellowships and academy memberships. Establish a mechanism for identifying, nominating and facilitating the nomination of faculty for prominent external awards.
- Encourage and facilitate faculty appointments at federal funding and policymaking agencies and position faculty to deliver testimonies before state and federal legislative bodies.
- Host a national/international level thought leadership event each year on campus. Every year, every department, in their own way, should be a national leader in the “conversation”.
- Develop think tanks that generate position papers on new technologies.
Goal #3: To have a diverse faculty that is reflective of national demographics

Strategies to achieve a diverse faculty include:
- Proactive targeted recruitment of underrepresented minority and women faculty.
- Aggressively pursue partner placement efforts to attract faculty to Texas A&M University.
- Foster a strong mentorship program and promote cluster-hiring practices to retain faculty.
- Establish an environment that is welcoming of all faculty to develop and succeed.

4. Enhance Staff Development

Staff development includes the activities and programs that help to ensure staff members continually enhance the skills and competencies necessary to accomplish institutional and divisional goals and purposes. Staff development has at its core a mechanism to enable individuals the opportunity to grow personally and professionally and develop competencies and personal qualities that will provide the potential for better performance and satisfaction on the job.

Goal #1: Promote an organizational environment that values development, diversity and growth opportunities for all employees.

Strategies to promote staff development, diversity, and growth include:
- Elevate the importance of staff development opportunities to department heads.
- Incentivize training.
- Provide career paths inclusive of development plans to include benchmarks.

Goal #2: Foster development opportunities that enhance knowledge, develop skills and enrich the organization.

Strategies to promote development opportunities include:
- Create and foster a mentoring program by functional group.
- Leverage technology to provide specialized training and a wide spectrum of courses.
- Utilize development plan and/or performance evaluation to define the relationship of assigned tasks with organizational goals and assign associated development opportunities.

Goal #3: Provide individuals and the organization with the resources to respond efficiently and effectively to current and future demands for service.
Strategies to enable staff to respond to demands in a dynamic environment include:
- Provide centrally funded earmarks for development and incentives.
- Develop curriculum for certification programs and/or role specific trainings.
- Utilize various methods to advertise development opportunities.
- Establish unique learning opportunities and avenues suitable to staff workload and environment.

Goal #4: Impart ongoing leadership and support to the organization’s succession efforts.
Strategies to put in place a robust succession plan include:
- Develop leadership training/executive leadership program that is unique to the College of Engineering.
- Expand mentor programs for staff and staff managers to include supervisory and strategic alignment aspects
- Continually monitor staff development programs and adjust focus areas based on input and/or strategic initiatives

5. Elevate Development Activities
Raising funds from private sources, including foundations, is a high priority for the college. Typical sources include former students who wish to give back as a legacy gift to their alma mater; former students and friends of engineering who wish to make a donation to support their passion; and private foundations and corporations who disburse funds to promote a specific program or cause. Typically, funds are received as endowment gifts, pass through gifts and estate gifts.

Goal #1: Support the education of 50 percent of undergraduate students through scholarships
Strategies to raise funds to support undergraduate student scholarships include:
- Train faculty and staff leadership in development and stewardship of current scholarships.
- Connect scholarship recipients with donors.
- Recognize scholarship donors at department and college functions and in traditional and social media.
- Launch a $20 million campaign to raise funds to recruit, retain and graduate first generation students (FGEn).

Goal #2: Support recruitment and retention of graduate students
Strategies to raise scholarship and fellowship funds to recruit and retain highly competitive graduate students, particularly domestic students to achieve a diverse graduate student body include:

- Launch a $50 million campaign to recruit and retain domestic graduate students.
- Strategically approach a donor base that is supportive of graduate studies.

Goal #3: Support 60 percent of faculty through fellowships, professorships and chairs
To recruit and retain outstanding faculty, it is necessary to offer a named title along with discretionary funds. The level of discretionary funds varies with the faculty rank. Typically, funds to support faculty is in the form of endowments.

Strategies to raise endowments include:

- Hold periodic development events in the metropolitan areas and engage donors at sports events.
- Connect faculty who hold endowments with donors.
- Communicate the benefit of donating faculty endowments to corporate donors.
- Proactively pursue estate/planned gifts.

Goal #4: Promote the built environment to elevate excellence in education and research
State of the art infrastructure is essential to reach preeminence in educating students and conducting research. Strategies to raise funds to build and maintain state of the art infrastructure include:

- Highlight success stories in traditional and social media.
- Communicate the benefits of naming opportunities to donors.
- Advise corporate donors of benefits that include name recognition with prospective employees and users of their products.
- Educate students about philanthropy.

Goal #5: Big ideas to attract large donations
- Launch student centric programs to recruit, educate, and graduate first generation (FGEn) and women students in engineering.
- Engineering living and learning communities
- ENGR [8]
6. **Enhance Research and Scholarship**

The main goal for the college is to create research opportunities for faculty and students and promote the products of research to make a maximum impact upon society. The College of Engineering recognizes that the future of engineering research is multidisciplinary with multiple investigators and warranting establishment of large-scale user facilities.

**Goal #1: To be ranked #1 in research expenditures**

Strategies to reach #1 ranking in research expenditures include:

- Improve success rates with research proposals through targeted submissions, mock reviews and forming winning teams.
- Retool faculty research portfolios and establish collaborations through engagement with national laboratories, federal funding agencies and national policymaking bodies.
- Establish a state of the art built environment for collaborative research to address multidisciplinary challenges.
- Provide financial and logistical support to faculty leading large-scale proposal efforts.
- Provide seed funding to spur research in multi-disciplinary emerging areas.

Enhance the exposure of Texas A&M Engineering research by providing travel support for graduate students to present their work at conferences and workshops and assist doctoral students to pursue academic careers.

**Goal #2: Enhance ability to create and define research directions**

To enable faculty to set the national research agenda and to influence the future research directions for federal funding agencies.

Strategies to create and define future research directions are:

- Continue to rely on an effective governmental representative to help connect faculty with research opportunities and ensure that the college “has the ear” of legislators at both state and national levels.
- Encourage placement of PhD graduates in governmental laboratories where they can be in a position to identify and shape directions for new research.
- Resource mid-career faculty to retool and pursue newer research areas.

**Goal #3: Enhance research infrastructure and scholarship**

The College of Engineering recognizes that the establishment of large-scale research user facilities is required to promote multidisciplinary research. Promotion of the
dissemination of research results in high quality venues is essential to maximize the impact.

Strategies to achieve these goals include:

- Establish state of the art core facilities in areas of strategic importance (e.g. materials characterization facility, soft-material research center, autonomy and smart manufacturing).
- Recognize faculty contributions and impact in multi-principal investigator research grants during tenure and promotion and annual review considerations.
- Assemble a list of high quality journals in each research area with an expectation that faculty would publish in those publications.

**Goal #4: Enhance and promote multidisciplinary research and collaboration**
The College of Engineering recognizes that the skill sets required to address future research problems that are highly multidisciplinary do not rest with one or two researchers, but will require a team of researchers. Promotion of multidisciplinary and multi-investigator research is a priority for the college.

Strategies to promote multidisciplinary research include:

- Organize networking events to promote collaborations and multidisciplinary research.
- Encourage and incentivize junior faculty to become involved in multidisciplinary collaborations from an early stage in their careers.
- Adapt tenure and promotion and annual review policies to recognize and reward multidisciplinary research.
- Provide technical and communication assistance to faculty who are leading large multidisciplinary research proposals.

**Goal #5: Enhance engagement in entrepreneurship**
The College of Engineering recognizes that successful faculty, student, and staff entrepreneurs will maximize their research impact in a short time, create wealth and create jobs. The goal is to have at least 10 percent of faculty be successful entrepreneurs.

Strategies to promote an entrepreneurial culture and increase the number of successful entrepreneurs in the college include:

- Recognize and credit the impact of entrepreneurship and technology commercialization activities/products in the annual review and tenure and promotion considerations.
• Continue efforts to develop and foster an ecosystem for an entrepreneurship culture to succeed. Expand opportunities for PIs and graduate students to become involved in these activities.

Goal #6: Ensure adaptability to changes in research opportunities
Research opportunities track the state of the technology, socioeconomic conditions in a society and status of the national security. These broad variables affect the research direction and opportunities. Faculty must be adaptable to pursue opportunities where they exist (federal funding agencies, industry, international sources, state agencies) and type of research opportunities (basic, applied, product development, technology commercialization).

Strategies to make faculty adaptable to changes in the research opportunity landscape include:

• Continue efforts to establish and maintain a presence at national level forums that shape federal funding directions.
• Increase efforts to develop industry partnerships and funding sources. Engage at the highest levels of leadership between the College of Engineering and industry. Intellectual Property (IP) issues should be resolved to provide a welcoming environment for industries and alternative research delivery mechanisms such as consortia should be pursued.
• Assist faculty to reorient their research and communication skills to successfully engage with industry.
• Establish communication platforms to seek input from industry partners on their research needs.

7. Serve Constituents Through Active Engagement:
Increase engagement with our key constituents (industry partners, students, faculty/staff, donors, employers, workforce, state and federal organizations and the public) by building and implementing tools that serve the needs of our constituents. These tools will allow the college to develop key solutions to address the ideas and opportunities put forward by the constituency.

Goal #1: Develop a media outreach strategy (social and traditional) to engage constituents in conversations about mutually beneficial needs and opportunities.
Strategies to engage constituents through social and traditional media include:
• Develop a data-driven system to provide analytics on all constituent groups.
• Increase the number of town hall meetings (physical and virtual) to enable our constituents to provide feedback on opportunities.
• Develop a methodology to collect data from our constituents for analysis.

Goal #2: Drive interaction between our constituents and the college to assist in the refinement and development of new programming opportunities.
Strategies to engage constituents to create new programming opportunities include:

• Facilitate increased interaction between students and employers by creating additional internships, co-ops and research engagements.
• Increase outreach to industry partners for applied research and development needs based on education opportunities.
• Increase the number of workforce development opportunities available in the state of Texas.

Goal #3: Adapt our programs to facilitate the modification and improvement of our offerings to align with the changing needs of our constituents.
Strategies to align our programs to meet the needs of our constituents include:

• Develop a systematic approach to assimilating constituent analysis and integrate into program planning and development.
• Increase agility by reducing the lead-time to program implementation.
• Measure success of implementations and cycle feedback data into the development loop.

Goal 4: Expand our geographic reach to increase engagement and brand recognition of Texas A&M Engineering.
Strategies to increase our reach and brand recognition include:

• Develop a comprehensive market analysis of program development, modification and delivery.
• Develop a long-range branding campaign to ensure increased recognition.
• Increase the number of courses and programs delivered through distance learning technologies.
Acknowledgement

This strategic plan was developed over a period of one year through engagement with faculty and staff. Department heads conducted SWOT analysis (strengths, weakness, opportunity, and threat) in their respective units to identify focus areas and priorities. Inputs from department heads were integrated to determine focus areas that are a priority to the college. Over a dozen town hall meetings were conducted with faculty and staff to establish goals and strategies to achieve those goals. Participation of faculty and staff at large are acknowledged. Several individuals facilitated discussions at the town hall meetings and assisted with writing of this document. A list of facilitators in alphabetical order is listed below.

Appendix P – Graduate Course Syllabi

CSCE 606: Software Engineering

Spring 2017

3 Credits

Instructor
Duncan M. (Hank) Walker
Dept. of Computer Science and Engineering
HRBB 515B
Tel: 862-4387
Email: walker@cse.tamu.edu
Course Web Page: http://courses.cse.tamu.edu/csce606/walker
Office Hours: Following class and by appointment

Teaching Assistant
Savinay Narendra, savinay.90@gmail.com

Class Location
Lecture: HRBB 124 TR 5:30-6:45pm

Textbook


This book is available only at Amazon. It is available in both trade paperback and Kindle versions. The Kindle version is kept up-to-date and includes live links to references and code fragments.

Course Catalog Description

Development of advanced concepts in software engineering; software development environments as a mechanism for enhancing productivity and software quality; the classification, evaluation and selection of methodologies for environments; rapid prototyping and reusability concepts; artificial intelligence techniques applied to software engineering.

Course Summary and Learning Objectives

Study of software construction as an engineering activity. Review of life cycle models and their phases, including topics in requirements elicitation, system specification and design, configuration management, and testing. Topics in cost estimation, software reuse, analyzing software, formally specifying software, software modularity, and software design methodologies (and methodologies for design of software families).

The course topics will include:

- software lifecycle and software processes
- requirements elicitation and specification
- modeling software
- software design at various levels
• coding practices, interfaces, modularity, contracts
• verification and validation, testing
• managing a code base (version control, organizing releases, etc.)
• testing (unit and regression testing)
• practical designs (typical software architectures, design patterns, API designs)
• effort estimation

The learning objectives of the course are to (1) gain understanding of the difficulties and risks of software projects, and knowledge of the commonly applied techniques and methods to mitigate those risks and to increase the likelihood of success of software projects; (2) learn new and increase existing skills related to practical software construction; and (3) gain familiarity with the current research problems in software engineering.

Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Project (Team)</td>
<td>50%</td>
</tr>
</tbody>
</table>

Grades are assigned based on the standard curve: 90-100 A, 80-89 B, 70-79 C, 60-69 D, <60 F. If necessary a curve will be used.

Policies

Prerequisites: CSCE 431 or approval of instructor. In practice, the necessary prerequisite is to be experienced in object-oriented software development.

Americans with Disabilities Act (ADA) Policy Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information visit http://disability.tamu.edu.

Academic Misconduct: Collaboration on coursework is forbidden except where specifically specified as “Team” activities. In general, one team may not collaborate with another team on “Team” activities. As commonly defined, plagiarism consists of passing off as one’s own the ideas, work, writings, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you have the permission of the person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. Students violating this policy will be subject to procedures described in Section 20 (Academic Misconduct) of the current edition of the Texas A&M University Student Rules (http://student-rules.tamu.edu).

Academic Integrity Statement: "An Aggie does not lie, cheat, or steal or tolerate those who do." Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas
A&M University community from the requirements or the processes of the Honor System. For additional information, please visit http://aggiehonor.tamu.edu. On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student: "On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Copyrights: The materials in this course are copyrighted. This includes Web site content, class slides, text, papers, syllabi, projects, homework, handouts, textbook, etc. Because these materials are copyrighted, it is illegal for you to copy the handouts, unless expressly granted permission. Note that there are several copyright holders, so permission must be granted by the appropriate source.
CSCE-608 Database Systems

Instructor: Dr. Jianer Chen
Office: HRBB 315C
Phone: 845-4259
Email: chen@cse.tamu.edu
Office Hours: T,Th 10:50am-12noon

Teaching Assistant: Yi Cui
Office: HRBB 501C
Phone: 587-9043
Email: yicui@cse.tamu.edu
Office Hours: W,F 4pm-5pm


Course Description. This course is a “second” course in database systems. It studies the principle and implementation of database management systems. We assume that students are familiar in principle with basic knowledge of the functional aspects of databases and database programming (e.g., chapters 2-10 in the textbook). A general understanding of the course also assumes familiarity with undergraduate-level data structures and algorithms (e.g. CSCE-411).

We will start with a quick review of the fundamentals of database design and database programming (i.e., chapters 1-10 in the textbook). We then concentrate on more detailed discussions on the following topics (basically, chapters 13-19, if time permits also chapters 20 and 22, in the textbook):

- system architecture and file structure;
- efficient data manipulation using indexing and hashing;
- query processing;
- crash recovery;
- concurrency control;
- transaction processing;
- database security and integrity;
- distributed databases (if time permits)
- Data mining (if time permits)
Homework Assignments. There will be a number of homework assignments. The assignments are due on the designated due dates at the beginning of class. No late submissions will be accepted. Discuss unusual circumstances in advance with the instructor.

Course Projects. There are two course projects, one minor and one major. The minor project is on database programming that provides students with an opportunity to have experience in programming with a real database system. Note that database programming is not the focus of this course. Therefore, you are expected to have certain familiarity with database programming. The major project is to implement many components of a database management system. It is expected that your submission to the major project be able to handle simple SQL programs. Detailed descriptions of the course projects will be handed out later.

Exams. There is no midterm examination. The final examination will be on December 11, from 12:30pm to 2:30pm.

Grading:
Homework: 15%, FinalExam: 35%, Project#1: 10%, Project#2: 40%.

Remark. Course materials, including this course description, the lecture notes, and the homework assignments, can also be found via the instructor’s home page

http://faculty.cs.tamu.edu/chen
CSCE 614, Fall 2016
Computer Architecture

Professor: Daniel A. Jiménez, djimenez@cse.tamu.edu
Office: HRBB 509D
Office Hours: By appointment.

Teaching Assistant: Jiayi Huang, csce614@gmail.com
Office: Office Hours: To Be Announced

Class Times: Tuesdays and Thursdays, 2:20pm to 3:35pm in HRBB 113


Prerequisites:
- CSCE/ECEN 350: Computer Architecture and Design
- An undergraduate education in computer science or computer engineering including Java, C, and/or C++ programming.

Course Description:

From the Graduate Catalog:
614. Computer Architecture. (3-0). Credit 3. Reviews of von Neumann architecture and its limitations; parallel computer structures and concurrent computation; pipeline computers and vectorization methods; array processors, multiprocessor architectures and programming; dataflow computers. Prerequisite: CSCE 350/ECEN 350

From the professor:
This is a graduate level computer architecture class. We'll learn about computer architecture with an emphasis on microprocessor microarchitecture. We'll see how software and hardware cooperate to run programs, and we'll think a lot about improving computer systems.

Course Requirements:

- **Homework Assignments:** (5% of grade). We'll have several homework assignments, some requiring programming.
- **Midterm exam:** (25% of grade). There will be approximately one midterm exam.
- **Second Exam:** (35% of grade). There will be a comprehensive second exam.
- **Projects:** (25% of grade). There will be two projects involving C++ programming and writing. They will be individual projects; you will not be working in groups. The projects will be organized as competitions so that the best performing project(s) as determined by specific criteria will win an award to be decided later.
- **Class Participation** (10% of grade). Students are expected to contribute to the class discussion by asking questions or offering information.

(This list of requirements is tentative and may be modified during the first or second week of class based on class size and other factors.)
Grading

Letter grades will be assigned as follows: A is ≥ 90%; B is ≥ 80%; C is ≥ 70%; D is ≥ 60%; F is < 60%.

Policy on Assignments and Tests

Late assignments are not accepted. If you have not completed an assignment by the time it is due, turn in what you have for partial credit. Make-up tests are generally not given except for university sanctioned reasons, such as religious holidays, documented illnesses, or other grave situations. You must inform the professor before missing the test.

Academic Dishonesty

Unless a programming project or problem set is specifically assigned as a group project, students are not allowed to work together on assignments. You may discuss general ideas related to the assignment, but you may not e.g. share program code or read each others writeups. Instances of such collaboration will be dealt with harshly, but the real cost comes when a student doesn't know how to answer questions on a test about issues involved in doing an assignment. In writing assignments, you may not copy or paraphrase work in whole or in part from other sources without giving proper attribution and making it clear which passages of text are from other sources. Failure to do so is considered plagiarism.

Academic Integrity Statement

"An Aggie does not lie, cheat, or steal or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: http://www.tamu.edu/aggiehonor.

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student: "On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."
CSCE 617 – HW-SW Codesign of Embedded Systems

Welcome to Fall 2016!!

Proposal: Present your proposal on 25th October, 206 in the class. It should have two parts.

- A report in the format specified in our website. Submit latest by 24th midnight.

Syllabus

Lecture: HRBB 126, Tue, Thu: 3:55-5:10 pm

Ever-increasing embedded system design complexity combined with reduced time-to-market window has revolutionized the embedded system design process. The traditional design techniques (independent hardware and software design) are now being challenged when heterogeneous models and applications are getting integrated to create a complex system on chip. In hardware-software codesign, designers consider trade-off in the way hardware and software components of a
system work together to exhibit a specified behavior, given a set of performance goals and technology.

**Course Objective:**

The course will cover system level design of embedded system with top-down design approach. The students will learn various design steps starting from system specifications to hardware/software implementation and will experience process optimization while considering various design decisions. Students will gain design experience with project/case studies using contemporary high-level methods and tools.

**Prerequisite(s):**

*Microprocessor Systems or approval of Instructor*

**Who can take this course:**

Graduate and Senior-undergraduate students of engineering involved in embedded system design.

**Text Book(s):**

There is no particular text for this course. Students should be prepared to follow the technical papers from recent conferences/workshops and journals. Following materials may be used as they contain some useful research topics in the codesign.

- Lecture notes

**Tentative topics to be covered (to be reassigned on group interests):**

- Codesign overview
- Models and methodologies of system design
- Hardware software partitioning and scheduling
- Cosimulation, synthesis and verifications
- Architecture mapping, HW-SW Interfaces and Reconfigurable computing
- System on Chip (SoC): NoC, Security of IP cores
- Data analytic Codesign
- IoT: Issues and Challenges
- Real-Time Embedded Systems
- Low-power ES

**Grading**

Test (30%), Projects: (45%), Term-paper/Seminar/Assignments: (25%)

**Scholastic Dishonesty:**
**Plagiarism** is the passing of someone else’s work as one’s own, without giving the original author due credit. Scholastic dishonesty will be treated very strictly as per Texas A&M University rules. Typically, the given incidence **has to be reported to the Department Head**. The Department Head will then determine the type of punitive actions, including, 0 points to the assignment, an F grade in the course, academic suspension, or even expulsion from Texas A&M University.

**Instructor**: Rabi Mahapatra, Phone: 5-5787, 520B HR Bright, rabi@cs.tamu.edu

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**Embedded Systems and Codesign Lab**

Department of Computer Science and Engineering,
H. R. Bright Building,
Texas A&M university,
College Station,
TX 77843-3112.

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**Tools**

[Carbon Design Tool](http://codesign.cs.tamu.edu/teaching/csc617/)

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**Links**

- [Dept. of CSE](http://codesign.cs.tamu.edu/teaching/csc617/)
- [Texas A&M University](http://codesign.cs.tamu.edu/teaching/csc617/)
- [State of Texas](http://codesign.cs.tamu.edu/teaching/csc617/)
- [Texas Homeland Security](http://codesign.cs.tamu.edu/teaching/csc617/)

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**Archives**

Select Month ▼

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Final Project

Overview
In the remaining weeks of the class, you will be focusing on the final project. Assignments and Homeworks are now completed, and the Readings have been shifted to benefit your projects. The final project is a team-based, sketch-centric assignment which includes several deliverables that will be discussed below.

Deliverables

Following Assignment 7 and the in-class discussions, everyone should now be a member of a team with a total of 12 teams in all.

The final project may be broken down into three deliverables:

(1) Project Code - Since this is a computer science class, you need to build a program, website, or some form of software tool as part of the final project. The language, data sources, interface, etc. are up to you and your team. It is worth noting that using the paper.js canvas available on the shared class drive and your previous homework assignments, every team has a working, real-time sketch canvas with corner detection and simple recognition already built in Javascript.

The Project Code will need to be documented with some sort of ReadMe file and information about building and using the code. Email a ZIP of all the code together or provide a link to a GitHub project, just submit the entire code source in some form.

(2) Project Report - Alongside the application itself, you need to be able to communicate your project. A written paper should be submitted in the SIGCHI 2016 format. You may obtain a Word or LaTex template in this format by downloading this repository as a ZIP file. The template will provide some useful section suggestions, but a typical paper should include an Introduction, Prior Work, Methodology, Evaluation, and Conclusion. These exact sections are not necessary but the content corresponding to background, explanation of your project, and how you tested it should be in the paper.

The Project Report should be at least 8 pages. Also, you must have at least 8 citations per team member. Thus, a team with 3 people needs 24 citations at a minimum. There is no maximum on the number of pages or citations.

(3) Project Presentation - Another important part of communicating your project is the final presentation. This consists of a 15 minute oral presentation. The content should roughly correspond to your paper: background and what's been done before, what you have done, and how you evaluated it.

The Project Presentation must include a demo video. You can speak over it in the live presentation, but having a standalone demo video with its own narration will be important for the final submission. The presentation slides will need to be submitted as well.

Due Date
All of the project files must be submitted by midnight on the last day of finals, December 15. This consists of the code from (1), the report from (2), and the presentation + video demo from (3). Only one submission is necessary per team.

The Project Presentations will take place on the last day of class, December 7, and the schedule final exam time, December 14. Three teams will present on Dec. 7 with the remaining nine presenting on Dec. 14. The slots for Dec. 7 are available on a first-come first-serve basis, so email to obtain one of these slots as soon as possible if you are interested in finishing early.
Readings 18 to 25 - Project Readings

Overview
We have now completed the assigned readings portion of the course. At this point, you should turn your attention to your final project and focus on finding reading materials to strengthen your work and project report. To further this goal, all future reading assignments are self-directed.

Project Readings
You should select 8 papers related to your project and blog about them. You may reuse some of the papers you explored in Assignment 6. If your project plan has changed or you find more relevant works to include, you are encouraged to select those as well.

If you are on a team, it will be beneficial to find different papers than your teammates. This is because your final report requires a minimum number of citations based on your team size and having the readings done for the blog assignment will simplify this task so long as each person has read their own papers.

Due Dates
The standard reading schedule is not impacted by the shift to project readings. You will continue to post summaries to your blogs by Sundays; the only difference is that the readings are no longer pre-selected and you must choose your own. The 8 project readings correspond directly to the typical M/W/F schedule we have been following for assigned readings. The timeline is as follows:

11/11, 11/14, 11/16 (Readings 18, 19, and 20) due 11/20
11/18, 11/21, 11/23 (Readings 21, 22, and 23) due 11/27
11/28, 11/30 (Readings 24 and 25) due 12/04

Reading 17 - ChemInk

Paper

Notes
Now that all of the homework assignments are complete, we are shifting the class focus towards the final project. In line with that plan, we have several system-oriented papers which will be useful preparation for your own project development and final report. In this work, Ouyang and Davis describe an interface for recognizing chemical diagrams.

Reading 16 - No Rubine?

Paper
Paulson, Brandon, et al. "What?! no Rubine features?: using geometric-based features to

**Notes**
This is another recognition paper which discusses a system based on a hybrid approach to achieve its recognition rates.

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**Friday, October 28, 2016**

**Assignment 7 - Project Proposal**

**Overview**
We have completed the homework portion of the class and covered a majority of the readings, so it is time to start finalizing plans for the project. In Assignment 5, you started thinking about ideas, and in Assignment 6 you explored these ideas a little bit in terms of their novelty and applicability. You now will form a team and build your refined proposal. You have the last month-and-a-half of class to complete the final project, but we would like for you to be able to get started as soon as possible once November begins.

**Instructions**
Write a paragraph describing your project proposal. You should discuss what you want to do, why you want to do it, and how you plan to accomplish it. Roughly, this corresponds to the idea, the motivation, and the project plan. If you need more than a paragraph, that is fine, but if you need only a few sentences to describe each, a paragraph is sufficient.

At the end, state whether you are working alone or on a team, and if you are on a team, list the team members.

Post this proposal to your blog by the due date. Only one member of each team needs to post the proposal itself, but if you are a team member, you should create a post that links to the team’s proposal and states your intention to work on the project.

If you need help forming a team, a spreadsheet has been placed in the class drive. I encourage team leaders who have an idea post their name and a short summary of their idea to this spreadsheet. That will help you find members, since those who are looking for a team are encouraged to sign up in the team slots that interest them. We can finalize teams some time next week; this is just to help get your ideas out there and express your interests.

**Obtaining Credit**
You should have a blog post corresponding to Assignment 7 by the due date. You need either a project proposal or a link to a project proposal stating that you are working on that team.

**Due Date**
Nov. 7, Monday @ Midnight
25% deducted per day late

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**Monday, October 24, 2016**

**Reading 15 - Tahuti**

**Paper**

**Notes**
Tahuti is a system for recognizing UML diagrams and automatically generating code. It includes some very simple and intuitive geometric recognition methods, including an algorithm for arrow recognition.

Monday, October 17, 2016

Reading 14 - LADDER

Paper

Notes
LADDER is a sketch language for defining geometric-based relationships that allow recognition of shapes from any domain.
Syllabus

NEWS: 8/30/16, 11:28AM (Tue)

- [08/30] Course web site goes online.
- [LINKS] • News archive • Grades • Codes • Lecture notes

Read-Only Bulletin Board: 8/26/16, 11:37AM (Fri)

Page last modified: 8/30/16, 11:28AM Tuesday.

I. General Information

Instructor:
Dr. Yoonsuck Choe
Email: choe@tamu.edu
Office: HRBB 322B
Phone: 979-845-5466
Hours: Tue/Thu 2:30pm-3:30pm

TA:
Randall Reams
Email: rcr344@tamu.edu
Office: HRBB 339
Office hours: TBA

Grader:
Anavil Tripathi
Email: anaviltripathi@tamu.edu
* Grader does not hold office hours.

Prerequisite/Restrictions:
CPSC 311 or equivalent

Lectures:
Tue/Thu 3:55pm-5:10pm, ETB 1020

Goals:
To understand the problems in AI and to learn how to solve them:

1. traditional methods in AI (search, pattern matching, logical inference, theorem proving, planning, etc.).
2. modern approaches in AI (learning, probabilistic approaches, etc.).

Textbook:
Computer Accounts and Usage:

1. Computer accounts: if you do not have a unix account, ask for one on the CS web page. We will be using the CMU Common Lisp as our main language. You may use a different language but example code will only be made available in Lisp.
2. CMU Common Lisp:
   - Carnegie Mellon U. Common Lisp homepage

Topics to be covered:

See the Weekly Schedule section for more details.

1. Introduction
2. LISP
3. Search
4. Game playing, alpha-beta pruning
5. Propositional Logic, first-order logic, theorem proving
6. Planning
7. Uncertainty, probabilistic approaches
8. Learning
9. Advanced topics

Grading:

1. Exams: 50% (midterm: 20%, final: 30%)
   - Make up exams:
     - There will be no make up exam for those who do not show up for the exam without 24 hour prior notice that is due to legitimate reasons.
     - For illness-related absence, explicit doctor's note of excuse (e.g. "<Full Name> is unable to attend classes on <Date> due to illness.") is required. Just a note acknowledging that you visited the doctor's clinic or student health center is not enough.
     - Make up exams will be different from the original exams although the difficulty will be adjusted to be comparable.

2. Homeworks: 15% (about 3, 5% each)
3. Programming Assignments: 30% (about 3: 10% each)
4. Attendance: 5%

There will be no curving. The cutoff for an `A' will be 90% of total score, 80% for a `B', 70% for a `C', 60% for a `D', and below 60% for an 'F'.

Attendance is mandatory. Sign-in sheet will be distributed on random dates (about 10 times). More than 2 recorded absences will lead to 0% for attendance. Faked signatures will get 0% for attendance and an additional 15% penalty toward the final grade.

Late penalty: 1 point (out of 100) per hour. Late submissions will not be accepted 4 days after the deadline and/or after the solution has been posted.

Academic Integrity Statement:
AGGIE HONOR CODE: An Aggie does not lie, cheat, or steal or tolerate those who do.

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

For additional information please visit: http://aggiehonor.tamu.edu/

Local Course Policy:

- All work should be done **individually** and **on your own** unless otherwise allowed by the instructor.
- Discussion is only allowed immediately before, during, or immediately after the class, or during the instructor's office hours.
- If you find solutions to homeworks or programming assignments on the web (or in a book, etc.), you may (or may not) use it. Please check with the instructor.

**Students with Disabilities:**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, or call 845-1637.

**II. Resources**

1. LISP quick reference
2. CMU Common Lisp (This one will be used in the class.)
3. GNU Common Lisp
4. My general resources page

**III. Weekly Schedule and Class Notes**

- **Lecture notes (in PDF format):** all notes will be uploaded in this directory.
- It is your responsibility to download, print, and bring the notes to the class. Notes will be available 24 hours before each class.
- See the TAMU Calendar for breaks, etc.
- When reading the chapters, you do not have to memorize everything. A separate list of terms you need to know will be handed out prior to each exam.
- All reading material below refers to the AIMA book 3rd edition.
- More detail will be available as we go along.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Assignments</th>
<th>Notices and Dues</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/30</td>
<td>Introduction</td>
<td>Chapter 1</td>
<td></td>
<td>First day of class</td>
<td>slide01</td>
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<tr>
<td></td>
<td></td>
<td>Introduction,</td>
<td>Chapter 26</td>
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</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Chapter(s)</td>
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</tbody>
</table>
| 9/1  | LISP                                                                | 26.1 and 26.2
<p>|      | <strong>Lisp quick ref</strong>                                                   |                             |
| 9/6  | Symbolic Differentiation                                            | <strong>Lisp quick ref</strong>          |
| 9/8  | Uninformed Search (BFS,DFS,DLS,IDS)                                 | Chapter 3.1-3.6             |
| 9/13 | Informed Search (BestFS,Greedy,A*)                                   | Chapter 4.1-4.3 (4.4 optional) |
| 9/15 | IDA*, Heuristic Search, Simulated Annealing, Constraint Satisfaction, etc. | Chapter 4, Chapter 6.1      |
| 9/20 | Game playing                                                        | Chapter 5                   |
| 9/22 | Game playing wrap up; Representation, logic, frames                 | Chapter 5                   |
| 9/27 | <strong>Guest Lecture</strong>                                                    | Topic TBA                   |
| 9/29 | <strong>Guest Lecture</strong>                                                   | Topic TBA                   |
| 10/4 | Propositional Logic                                                 | Chapter 7                   |
| 10/6 | Theorem proving                                                      | Chapter 8; Chapter 9        |
| 10/11| <strong>Midterm Exam</strong>                                                    | In class                    |
| 10/13| Theorem proving for FOL                                             | Chapter 8; Chapter 9        |
| 10/18| Inference for FOL                                                   | Chapter 9                   |
| 10/20| Planning                                                            | Chapter 10                  |
| 10/25| Uncertainty                                                         | Chapter 13                  |
| 10/27| Uncertainty: Decision theory, Bayes rule                            | Chapter 13, Chapter 14      |
| 11/1 | Uncertainty: Belief network                                         | Chapter 13, Chapter 14      |
| 11/3 | Advanced topic: Neuroevolution                                      |                             |
| 11/8 | Learning: Inductive learning, Decision trees, Perceptrons           | Chapter 14, Chapter 18      |
| 11/10| Learning: Perceptrons, Multilayer networks                          | Chapter 18, Chapter 20      |
| 11/15| <strong>Guest Lecture</strong>                                                   | Evolving tool use behavior  |
| 11/17| Learning: Backpropagation                                           | Chapter 18, Chapter 20      |
| 11/22| Learning: Unsupervised learning, Self-organizing maps               | Chapter 18, Chapter 20      |
| 11/24| <strong>Thanksgiving: No class</strong>                                          |                             |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 11/29</td>
<td>Learning: Recurrent networks, Genetic algorithms</td>
</tr>
<tr>
<td>14 12/1</td>
<td>Advanced topic: Deep learning</td>
</tr>
<tr>
<td>15 12/6</td>
<td>Autonomous semantics through sensorimotor grounding</td>
</tr>
<tr>
<td>16 12/13</td>
<td>Final exam: December 13 (Tuesday): 1-3pm, in ETB 1020</td>
</tr>
</tbody>
</table>

### IV. Credits

Many ideas and example codes were borrowed from [Gordon Novak's AI Course](#) and [Risto Miikkulainen's AI Course](#) at the University of Texas at Austin (Course number CS381K).
Algorithm design and analysis is a fundamental and important part of computer science and engineering. This course introduces students to advanced techniques for the design and analysis of algorithms, and explores a variety of applications.

The course is a continuation of the undergraduate algorithm analysis course (such as CSCE-411). The objective of this course is to study and analyze a broad variety of important and useful algorithms: methods for solving problems which are suited for computer implementation. We will deal with many different areas of applications, always trying to concentrate on “fundamental” algorithms that are important to know and interesting to study. We will also study the “complexity”, i.e., the inherent difficulties of practical problems. The topics that will be discussed in this course include: advanced data structures, advanced design and analysis techniques, advanced graph algorithms, NP-completeness theory, approximation algorithms, randomized algorithms, and parameterized algorithms.

We will not follow the textbook chapter and chapter. Instead, we will select proper materials from the textbook, starting with a brief review of the basic definitions in algorithm analysis. Supplementary lecture notes will be provided for materials not included in the textbook. A more detailed description for the course can be found in page 2. There will be six homework assignments plus a programming project. The assignments are due on the designated due dates at the beginning of class. No late submissions will be accepted. Discuss unusual circumstances in advance with the instructor.

A midterm examination will be given on Thursday, March 9, from 5:30pm to 6:45pm. The final examination is on Tuesday, May 9, from 3:30pm to 5:30pm.


The following books are also useful and helpful.


Supplementary lecture notes will also be provided.

Grading: Homework 30%, Programming 10%, Midterm 20%, and final exam 40%.

Remark. Course materials, lecture notes, and homework assignments can be found via the instructor’s home page: http://faculty.cse.tamu.edu/chen
What am I supposed to know before taking this course

Background of an undergraduate algorithm course. I will be assuming that you are familiar with the topics listed below. Discussion on these materials can be found in our textbook. Some of the materials here may be quickly reviewed in class.

- pseudo-code for describing algorithms
- big-Oh notation and complexity analysis
- related mathematics foundations
- data structures such as lists, stacks, queues, and binary trees
- sorting: insertion sort, selection sort, mergesort, quicksort, heapsort, radix sort
- selection problem
- basic graph concepts and representations
- depth-first search and breadth-first search
- Dijkstra shortest path algorithm
- Dijkstra-Prim minimum spanning tree algorithm
- the algorithm for testing biconnectivity
- Strassen’s matrix multiplication algorithm
- Warshall’s transitive closure algorithm
- general idea of P, NP, and NP-completeness

What am I going to study in this course

- search tree structures (worst case analysis)
- union and find (amortized analysis)
- topological sort (application of DFS)
- strongly connected components (application of DFS)
- minimum spanning tree algorithms (greedy algorithms, including improved Kruskal’s algorithm and Prim’s algorithm)
- single-source shortest path algorithms (greedy algorithms, including Dijkstra’s algorithm and Bellman-Ford algorithm)
- maximum flow
- graph matching
- string and sequence algorithms
- NP-completeness
- approximation algorithms
- randomized algorithms
- parameterized algorithms
- bigdata algorithms
CPSC-637 Complexity Theory

Spring 2012

Instructor: Dr. Jianer Chen
Office: ENSB 315C
Phone: 845-4259
Office Hours: MWF 10:00am-11:00am

Textbook:
C. Papadimitriou Computational Complexity, Addison-Wesley, 1994, and supplementary reading materials to be handed out in class.

Prerequisites:
Background in algorithm design and automata theory, or permission from the instructor.

Course Description
Computational complexity has been one of the most active subareas in theoretical computer science. Here we are focused on the study of computational models and computational resources required to solve a variety of problems.

Given a problem, how much computing power and/or resources do we need in order to solve it? To date, we have not made much progress toward finding precise answers to such questions. We have, however, made a great deal of progress in classifying problems into general “complexity classes”, which characterize, at least in a rough way, something of their inherent difficulties.

This course will provide an overview of the major results and developments, as well as introduce the most active research to date in computational complexity. The course topics will be divided into three parts. Part I is on the fundamentals of NP-completeness theory, Part II is on more advanced topics in general complexity theory, and Part III is on recent development in complexity theory. Most materials for Part I and Part II will be selected from Part I, Part III, Part IV, and Part V of the textbook, plus certain supplementary handouts. Materials for Part III will be provided in class.

The course is heavily research oriented. Reading the textbook and selected research papers to understand the fundamentals of the area is essen-

1
tial to the course. However, the most important parts of the course are the participation in course research and working on a course project in which students will have an opportunity to practise what they learn from the course to try to derive new research results interesting in the area. Problems for the research project will be suggested by the instructor in the class. Students are also encouraged to find research problems by themselves.

The course performance will be evaluated based on three components of the course: homework assignments based on class lectures, research paper reading, and a course research project. Each student should pick a recent research paper, read it, and give a presentation on the paper to the class. Students should contact the instructor to arrange a time slot in class to give the presentation. Each student also needs to pick a research topic to work on as his/her course project, and write a project report on his/her research. Students should submit a project proposal by March 19 to give an outline on their course project research. The final project report is due May 1.

**Grading:**

Homework: 20%, Paper presentation: 20%, Project: 60%.

**Remark.** Course materials, including this course description, the lecture notes, and the homework assignments, can also be found via the instructor’s home page

http://faculty.cse.tamu.edu/chen
Course title and number  CSCE 440/640 Quantum Algorithms
Term             Fall 2016
Meeting times and location  MWF 3:00-3:50pm, HRBB 126

Course Description and Prerequisites

This course gives a self-contained introduction to quantum algorithms, one of the most exciting recent developments in computer science. We do not expect any background knowledge in quantum computing nor in quantum physics. You should know how to multiply a matrix with a vector, but the most important prerequisite is simply an open mind.

Course Objectives

At the end of this course, students should understand the basics of the quantum circuit model, be able to understand fundamental quantum algorithms, and ways to protect quantum information.

Instructor Information

Name              Prof. Dr. Andreas Klappenecker
Telephone number  979 458 0608
Email address     klappi @ cse.tamu.edu
Office hours      M and T 2:00-2:50pm or by appointment
Office location   HRBB 509B

Textbook and/or Resource Material

Required:

Recommended (for more in depth study):
http://faculty.cs.tamu.edu/klappi/csce640-f16/index.html

Grading Policies

Midterm exam 30%, final project 30%, assignments 40%. The grades will be assigned on an absolute scale: A=90-100, B=80-89, C=70-79, D=60-69, F=0-59. I will lower the cut-offs if the grades are lower than expected.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>M Aug 29</td>
<td>Introduction</td>
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<tr>
<td>W Aug 31</td>
<td>Background</td>
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<tr>
<td>F Sep 02</td>
<td>Quantum Cryptography</td>
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<tr>
<td>M Sep 05</td>
<td>Quantum Gates</td>
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<td>W Sep 07</td>
<td>Quantum Gates</td>
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<td>F Sep 09</td>
<td>Quantum Gates</td>
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<tr>
<td>M Sep 12</td>
<td>Quantum Circuits</td>
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<td>W Sep 14</td>
<td>Quantum Circuits</td>
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<td>F Sep 16</td>
<td>Quantum Circuits</td>
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<td>M Sep 19</td>
<td>Quantum Search</td>
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<td>W Sep 21</td>
<td>Quantum Search</td>
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<td>F Sep 23</td>
<td>Quantum Search</td>
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<tr>
<td>M Sep 26</td>
<td>Quantum Counting</td>
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<td>W Sep 28</td>
<td>Quantum Counting</td>
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<tr>
<td>F Sep 30</td>
<td>Simon’s Algorithm</td>
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<tr>
<td>M Oct 3</td>
<td>Simon’s Algorithm</td>
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<tr>
<td>W Oct 5</td>
<td>Factoring</td>
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<tr>
<td>F Oct 7</td>
<td>Factoring</td>
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<tr>
<td>M Oct 10</td>
<td>Shor’s Algorithm</td>
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<tr>
<td>W Oct 12</td>
<td>Shor’s Algorithm</td>
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<tr>
<td>F Oct 14</td>
<td>Shor’s Algorithm</td>
</tr>
<tr>
<td>M Oct 17</td>
<td>Kitaev’s Algorithm</td>
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<tr>
<td>W Oct 19</td>
<td>Review</td>
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<tr>
<td>F Oct 21</td>
<td>Midterm</td>
</tr>
<tr>
<td>M Oct 24</td>
<td>Midterm exam solutions</td>
</tr>
<tr>
<td>W Oct 26</td>
<td>Quantum communication</td>
</tr>
<tr>
<td>F Oct 28</td>
<td>Quantum communication</td>
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</tbody>
</table>
The midterm exam is on Friday, Oct 21. There will be a final project that can be done in teams (up to 2 persons for a theoretical topic, and up to 3 persons for a programming intensive project). The final exam time on Tuesday, December 13, 10:30am-12:30pm will be used for project presentations as well.

**Other Pertinent Information**

The course webpage is

http://faculty.cs.tamu.edu/klappi/csce640-f16/index.html

You will find homework assignments, current class schedule, and other information on that page.
Americans with Disabilities Act (ADA) Policy Statement

The following ADA Policy Statement (part of the Policy on Individual Disabling Conditions) was submitted to the University Curriculum Committee by the Department of Student Life. The policy statement was forwarded to the Faculty Senate for information.

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, the legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1637.

Copyrights

The handouts used in this course are copyrighted. By “Handouts” we mean all materials generated for this class, which include but are not limited to syllabi, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy such handouts, unless the author expressly grants permission.

Scholastic Dishonesty

As commonly defined, plagiarism consists of passing off as one’s own the ideas, work, writings, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you have the permission of the person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules [http://student-rules.tamu.edu/rule20], under the section “Academic Misconduct”. Academic misconduct of any form will be penalized and can lead to an F*.

Academic Integrity Statement

"An Aggie does not lie, cheat, or steal or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: http://www.tamu.edu/aggiehonor

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student: "On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."
VIZA 654 / CSCE 646: Digital Image

Fall 2016

Course Information

Catalog Data: Viza 654, Digital Image (3-2). Credit 4.

Instructor: Ergun Akleman, Ph.D.

Hours: MW 08:00am - 10:05am

Office: Langford A, Room 105

Classroom: Architecture C 414

Phone Number: (979) 845-6599

E-mail: ergun dot akleman at gmail dot com

Office Hours: Open Door Policy

Description: Tools and techniques for the generation, handling and analysis of two-dimensional digital images. Image representation and storage, display, media conversion, painting and drawing, warping, color space operations, enhancement, filtering, and manipulation. Just as digital sound has become the standard for high-quality audio recording, the digital image is becoming the standard form of electronic image. Digital images have the advantages of lossless storage, transmission, and retrieval. Their form greatly facilitates generation, manipulation, and display within a computing environment, and they provide a natural syntax for image representation that pervades the world of computer graphics and visualization. Thus, an understanding of the nature, form, and technology of the digital image is essential to a visualization practitioner.

Goals: This course will provide a thorough grounding in the state of the art in the treatment of digital images, particularly within the context of computer graphics, and digital effects. It is designed to prepare students to

- understand existing systems for storage, display, transformation and manipulation of digital images
- write their own software for working with digital images
- undertake creative work and research involving digital images

Students read, discuss, and are tested on handout material, and complete a series of exercises on the computer. Many of the exercises will involve programming and making use of graphics libraries. Work may be done on any computer supporting C++, OpenGL and the OpenGL interface API GLUT (OpenGL Utility Toolkit), and will involve a brief study of professional image manipulation software.

Learning Outcomes:

Upon completion of this
Course, students will know the state of the art in the treatment of digital images in the context of computer graphics, and digital effects. They will understand existing systems for storage, display, transformation and manipulation of digital images, they will be able to write their own software for working with digital images and they will be able to undertake creative work and research involving digital images.

**Attendance:** Attendance is required.

## Course Outline

The course will cover mathematical, computational and artistic foundations of digital image. The course topics include the following:

1. **The Fundamental Nature of Digital Images**
   - sampling
   - point spread
   - reconstruction

2. **Digital Representation and Display of Images**
   - bitmaps and pixmaps
   - framebuffer hardware
   - CRT displays
   - color and color spaces
   - color lookup tables
   - gamma correction
   - color manipulation techniques

3. **Archival Storage of Images**
   - image file formats

4. **Compositing**
   - alpha channel and opacity
   - image combination operations
   - bluescreening

5. **Filtering Algorithms**
   - convolution filters
   - morphological operators
   - Image Warping
   - general image maps
   - forward warp
   - inverse warp
   - affine warps
   - projective warps
   - bilinear warp

6. **Sampling, Filtering and Reconstruction**
   - sampling and the aliasing problem
   - spatial convolution

7. **General Warping and Morphing Algorithms**
   - scanline warp algorithm
   - morphing as warp + compositing
   - feature based morphing algorithms

8. **High Dynamic Range Imaging**
   - acquisition
   - tone mapping
   - applications

9. **Advanced Topics** (time permitting)
   - lossy image compression (JPEG and wavelet)
   - NPR image methods

## Course Materials and Testing:

**Textbook:** As a textbook, we will use *The Digital Image*, by Donald House.

**Course Materials & Quizzes:** Additional course materials and quizzes will be available in Webassign: [https://www.webassign.net/](https://www.webassign.net/). Students are responsible for enrollment to Webassign. For enrollment instructions, either go to [http://people.tamu.edu/~ergun/courses/viza654/16fall/syllabus.php](http://people.tamu.edu/~ergun/courses/viza654/16fall/syllabus.php)
https://www.webassign.net/user_support/faculty/ or read student quick start guide and download Self-Enrollment Class Handout. The class key for enrollment is tamu 2071 4167. To access to WebAssign, each student pays a basic content subscription fee: $22.95/student per course. (See https://www.webassign.net/pricing/ for fee information).


Grading Policy

Quizzes: 44 points
Projects: 36 points
Class Participation: 20 points

The highest possible grade is 100.

- A Grade >90 points
- B 90 points > Grade >80 points
- C 80 points > Grade >70 points
- D 70 points >Grade >60 points
- F 60 points > Grade

Quizzes:
We will have weekly quizzes, which are not necessarily be equally weighted. Quizzes will be given and graded using Webassign. Make sure to pay attention to due dates and times. If you miss the deadline, your quiz will be graded over %50 of actual grade.

Projects:
Students will be responsible to complete 12 programming projects. The project descriptions are available in class project website. Each project will be graded by 3 points. The grading of each project will be based on both quality and process. Quality measures are provided in associated project pages. If you miss the grading deadline, your project will be graded over %50 of actual grade. The total grade one can get from projects (without bonuses) is 36 points. With bonuses you can get well above 36 points.

Class Participation:
Class participation will be computed mainly based on attendance. Students will miss 2 points for unexcused absense from their "class participation grade". A student can miss at most 20 points from class participation. Students who regularly provide insightful inputs by participating class discussions will get some bonus points in class participation.

Americans with Disabilities Act (ADA) Policy Statement
The following ADA Policy Statement (part of the Policy on Individual Disabling Conditions) was submitted to the University Curriculum Committee by the Department of Student Life. The policy statement was forwarded to the Faculty Senate for information.
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1637.

Academic Integrity Statements

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For additional information please visit: [http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)

Plagiarism

In this course, we want to encourage collaboration and the free interchange of ideas among students and in particular the discussion of homework assignments, approaches to solving them, etc. However, we do not allow plagiarism, which, as commonly defined, consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section on Scholastic Dishonesty.

College of Architecture's "Don't deface the property" statement

"It is unlawful for any person to damage or deface any of the buildings, statues, monuments, trees, shrubs, grasses, or flowers on the grounds of any state institutions of higher education (Texas Education Code Section 51.204)"

The words damage or deface refer specifically to any and all actions, whether direct or indirect, that either diminish the value or mar the appearance of the physical environment.

Acknowledgements

Thanks to Prof. Donald House, who developed this course originally and provided course materials and strong support to the instructor.
<table>
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<th>Useful Links</th>
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http://people.tamu.edu/~ergun/courses/viza654/16fall/syllabus.php
VIZA 659/ CSCE 649 – Physically-Based Modeling

Meets:  T, R 12:45 – 2:25, Room 307, ARCC
Final Exam time (leave open): Wednesday, December 14, 8:00-10:00

Class Web Page: ecampus.tamu.edu

Instructor:
Dr. John Keyser
Office: 304A, H. R. Bright Building
Phone: 458-0167
e-mail: keyser@cs.tamu.edu
Office Hours:  Monday: 2:00-3:00; Thursday 9:30-11:00 (2:30-4:00 on 9/1, 9/15); or by appointment

Topics and Goals:
Physically-based modeling and simulation are important to the automatic description of geometry, motion, and behavior within graphics applications. This course will cover the fundamental methods for describing and then applying rules to simulate various phenomena.

We will begin by using a simple example – a bouncing ball – to review relevant principles of calculus, physics, linear algebra, and numerical methods. We will gradually build on this basis to discuss more complex examples, including particle systems, spring-based systems, rigid body dynamics, and fluids.

Among the specific topics to be covered in lecture periods are:
- Basic principles of physically-based modeling and simulation
- Particle systems and interactions between particles, such as flocking
- Detecting and responding to collisions
- Spring-mass-damper systems and their application to springy structures
- Representing stiff systems
- Explicit and implicit integration techniques
- Representing motion and rigid body dynamics
- Smoke and fluid

Other topics such as constraint systems, inverse dynamics, and specific application-oriented topics may be covered, time permitting.

The objectives of the class are for students to learn these fundamentals, be able to apply them to generate physically-based simulations of their own, and be able to design extensions to these simulations to achieve computational or artistic goals. By the end of the course, students should be capable of reading some, but probably not all, of the current research literature in physically based simulation.

Prerequisites:
While there are no formal prerequisites, students will be expected to have basic knowledge of several topics, including calculus, linear algebra, and physics. Students will be expected to generate interactive simulations using a high-level language and some simple visualization tool (C/C++ and OpenGL are common), so familiarity with those languages/libraries will be assumed. Those familiar with basic graphics principles can probably learn OpenGL well enough for this class, and those familiar with a basic structured or object oriented language can probably learn the parts of C/C++ necessary for this class, however both of these will take commitment to significant additional work early in the semester. Programming in other languages is allowed, but there can be restrictions on the level of support those languages provide. Likewise, the critical linear algebra topics will be reviewed, but may require some additional studies. Many students have been successful in this
course without prior knowledge of some of these specifics, but it may take additional independent study. If you have concerns in these areas, please talk to the instructor.

**Class Meetings**
The course is a mixture of lecture and more hands-on individual feedback, through homework and project demos. You are expected to attend all classes, and in particular the demo days. It is important to demonstrate your work in front of the others in the class, as well as to be present (and ask questions/give feedback) to other students. Make-ups for demo times will be given only in specific approved circumstances; you should NOT plan on being able to make up a demo if you miss/skip class that day.

It is also important to attend lectures. You should not expect help with material if you missed class when it was first covered. Also, some of the more interesting parts of the course come from student questions (this also helps keep the instructor from jumping too far ahead, too fast); you need to be in class to participate in this!

This course often has a mix of students with varied backgrounds, and so some classes may be used to review material that a significant portion of the class is already familiar with. These classes will be announced ahead of time, and can be considered optional if you feel you know the material. However, you should plan to attend all classes until you hear otherwise.

There may be some days when the instructor is not able to be present. These sessions will either have a guest speaker, or will have an alternative optional class scheduled.

Please leave the final exam time available until instructed otherwise, as this time might be used for presentation of the final projects – i.e. you should not plan to be absent on that day! However, there will not be an actual final exam in the course.

**Assignments and Grading:**
This will be a project-oriented course. There will be five homework assignments in the class, each due roughly every two weeks. These assignments will be equally weighted and will collectively account for 70% of the overall grade. There will be a final project in the class, of the student’s own choosing. This will account for 20% of the overall grade. The final 10% of the grade will be a participation grade, as described below.

As part of the class, students will be required to submit a short video sequence for the class reel. This will occur near the end of the semester. This will not be graded explicitly, but if it is not turned in, then the participation portion of the grade will be an F.

Each assignment will be graded using a letter grade scale. Generally, an assignment will receive a “B” grade if all required portions are completed satisfactorily. In order to receive a higher grade, some additional features must be included, with the quality and difficulty of those additional features indicating how much higher of a grade is received.

There are 15 possible grades, each with the following numerical values:

- A = 4.0, A- = 3.7, A-/B+ = 3.5, B+ = 3.3, B=3.0, B- = 2.7, B/C = 2.5, C+ = 2.3, C = 2.0, C- = 1.7, C/D = 1.5, D+ = 1.3, D=1.0, D- = 0.7, F=0.0.

Final course grades will be assigned as: A>=3.5>B>=2.5>C>=2.0>F (notice that any average below 2.0 will receive an ‘F’ for the course). In addition, students who do not complete one entire assignment may not receive an A (regardless of average), and students skipping two entire assignments or the course project may not receive a B (regardless of average).

Assignments and projects will be graded by demonstrating them in class; certain classes will be considered “demo days,” in which much if not all of the class time is devoted to student presentations of their assignments. The project grade will be assigned primarily based on a demonstration of program functionality during these
class times, although programs must be turned in, and grades may be adjusted based on an examination of the code. Because work will be demonstrated in class, it is important that all assignments be completed on time. To encourage this, late assignments will not be accepted without prior approval for some extenuating circumstance. **If you do not turn in and demonstrate your code on the due date (unless approval is specifically given otherwise), the assignment will receive an F.** You are strongly encouraged to use an iterative development cycle for your programs, implementing the functionality in stages so that there is always something to show in class, even if you don’t “finish” the assignment. You should ensure that your code can be demonstrated in class by checking the use of a laptop or the in-room computers prior to the class demo time. If you anticipate a problem with this, please see the instructor.

Turnin of assignments will be on ecampus, and you must turn in your code in order to receive a grade! Your code should be turned in prior to the demo class meeting.

**Participation Grade:**
Each person begins with a participation grade of ‘A’. However, there will be ways to lose increments of the participation grade throughout the semester (an increment meaning lowering the grade, e.g. from A- to A/B).

There are four main ways that participation grades may be lost:
- The instructor may ask students to fill out a short quiz/survey to check that students are keeping up with the reading/material. Failure to complete the quiz/survey by a deadline, which might include stating that material has been read, can result in a lower grade.
- The instructor may, without advance notice, take attendance in class on any day; anyone not present on that day and without an approved absence may lose one increment in the participation grade.
- Students may also lose increments in the participation grade if the instructor determines that they are not participating in the classroom activities. This is a subjective evaluation of the instructor, and will occur, e.g. if a student never asks questions or does not respond to questions.
- As stated earlier, failure to turn in a video for the class reel will result in an F on the participation grade.

**Textbooks:**
We will be using a new textbook that has been written specifically for this course (and an equivalent one at Clemson University). The book is in pre-print form and will be provided for you for download from the ecampus website. This book will not appear in print until later in the semester, but it is being provided for free for your own use, and should not be shared with those not in the course.

For those not familiar with OpenGL and planning to use it for course projects, you are encouraged to obtain the *OpenGL Programming Guide* (the red book), by Shreiner, Woo, Neider, and Davis. Much of the red book material is available for free online at: http://www.opengl.org/documentation/red_book/

Note that OpenGL is not required for the class, but an early version will be the default used for demonstrations.

For more details regarding numerical computations, the *Numerical Recipes* series of books by Press et al. are recommended as good sources.

**Policies:**

**Communication:** We will use ecampus for most of the material in the course. You should make sure you can access ecampus. Some announcements will be sent through email.

**Qualtrics:** The participation grade may involve filling out surveys from Qualtrics. You will need to access that site to provide feedback.

**Code Documentation:** Assignments will be graded primarily based on in-class demonstration, but all code must be turned in. Although the code itself will not be examined in great detail, it may be examined to verify the way it was implemented. It is your responsibility to make sure that the code is understandable. In addition, all code should include instructions giving all details needed to compile and run the program.
**Academic Honesty:**
The Aggie Honor Code is: “An Aggie does not lie, cheat, or steal, or tolerate those who do.” Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit: [www.tamu.edu/aggiehonor](http://www.tamu.edu/aggiehonor/)

To emphasize and clarify these points, note that any aspect of passing another’s ideas, words, writings, etc. off as your own is an example of an honor code violation. **If you use any outside source in the completion of your assignments** (besides the instructor and materials distributed as part of the course), **you need to acknowledge that fully and clearly, as well as the extent of assistance received** (e.g. did you ask for help finding a bug from someone, or did you copy someone’s code, etc.). Note that using such sources could still result in a lower assignment grade (if you did not do parts of the work yourself), but by acknowledging that help, you avoid a violation of the honor code. Note also that a **full and clear** acknowledgement does not mean burying a reference to help in submitted code, muttering something when presenting, or anything similar. Use of outside sources should be acknowledged **both** during the in-class demonstration, as well as in clear, easy-to-find locations in your submission.

It is common (and in fact good) practice to use external libraries for basic operations such as matrix and vector mathematics, basic camera setup and rendering, etc. When you use such libraries, you are responsible for being sure that you are following the appropriate use guidelines, and that you acknowledge their use. For assignments, there is usually a list of key items that are desired in the assignment. Those items should not be accomplished via library functions – you are expected to implement them yourself.

Many of the sources we link to are copyrighted, and you should ensure that you follow appropriate restrictions in their use. Also, please note that the course materials, including the textbook, in-class notes, linked notes, the contents of the website, etc. are copyrighted, and may not be reproduced for purposes beyond your coursework without permission. This is particularly true for the textbook that is being provided to you.

If there are any questions or concerns about whether an action is appropriate, you should check with the professor first. If in doubt, assume that it is not appropriate.

**ADA Statement:**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu).
# Course Title and Number
Virtual Reality (VIST 489; CSCE 489; VIZA 689; CSCE 689)

# Term
Fall 2016

# Meeting Times
5:30pm-6:45pm Tuesdays and Thursdays

# Location
ARCC207

## Course Description and Prerequisites
This course covers the theory and practice of virtual reality (VR). Virtual reality includes interactive 3D virtual environments that take advantage of immersive technology to provide enhanced perceptual realism and an embodied interaction experience. The course aims to provide an overview of VR with topics including input devices, output devices, 3D interaction techniques, augmented reality, the role of realism in VR, navigation techniques, design guidelines, and evaluation methods. Student will gain hands-on experience designing VR experiences emphasizing application, demonstration, or research purposes.

Students are expected to have some experience with computer programming and 3D graphics tools prior to taking this course. While the course has no official prerequisites, recommended experience includes topics covered in courses such as VIST 271, CSCE 221, or CSCE 441. Students who are uncertain of the expected level of technical proficiency are encouraged to contact the instructor to discuss specifics. Experience with graphical and visualization tools, frameworks, and libraries (e.g., Unity, Unreal, Processing, OpenGL) is recommended. Familiarity with concepts of human-computer interaction, aesthetic design, and mathematical functions is also recommended, but experience with all is not required.

## Learning Outcomes or Course Objectives
- Produce interactive 3D virtual environments and 3D interaction techniques
- Develop immersive virtual reality applications with a team
- Characterize and describe virtual reality systems in terms of display properties and interaction techniques
- Evaluate virtual reality applications in terms of design, purpose, benefits, and limitations
- Review and organize past and current virtual reality techniques and knowledge

## Instructor Information
Name
Eric Ragan

Email address
eragan@tamu.edu

Office hours
By appointment (please email to confirm an appointment)

Office location
Langford A-136

## Textbook and/or Resource Material
Reading assignments will be given from articles and research papers that are available through the university. There is no required textbook for the course, but the two recommended textbooks will complement the topics covered in the course.


Grading Policies
Course grades will be calculated based on a combination of weighted scores for projects, homework, exams, and quizzes. The final grade (after applying weights) will be truncated to the nearest whole number to determine the letter grade.

<table>
<thead>
<tr>
<th>Evaluation Weights</th>
<th>Grading Scale</th>
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<tr>
<td>Project: 40%</td>
<td>A: 90-100%</td>
</tr>
<tr>
<td>Homework: 15%</td>
<td>B: 80-89%</td>
</tr>
<tr>
<td>Presentations: 15%</td>
<td>C: 70-79%</td>
</tr>
<tr>
<td>Exams: 15%</td>
<td>D: 60-69%</td>
</tr>
<tr>
<td>Participation: 15%</td>
<td>F: &lt; 60%</td>
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</tbody>
</table>

Project (40% of final grade)
Students will work in teams to complete a semester-long project involving the design and development of a virtual reality application. Projects will provide students with opportunities to prototype creative designs and interaction techniques. More details on possible project concepts and expectations will be given in class. Early in the semester, teams will decide on project goals and develop an execution plan to be approved or revised by the instructor, and students will be expected to provide status updates and demonstrations throughout the class. Final project deliverables will include:

1. An oral presentation of the project goals and accomplishments
2. A live demonstration of the project outcomes
3. A brief video (maximum 3 minutes) demonstrating the outcome, design, and novelty of the work
4. A document explaining the project’s purpose, the rationale for the approach, the design, and the results of any evaluation.
5. A document summarizing each team member’s contributions to the project

For all but the last of the listed deliverables, each team is expected to work together to produce a single deliverable. For example, each team will submit one document and create one video (rather than multiple individual submissions). However, every student is expected to submit a separate summary of contributions explaining how each team member contributed to the project.

Homework (15% of final grade)
Homework assignments will be described as the course progresses. Unless otherwise stated, homework must be submitted before class on the given deadline to be eligible for full credit. Students can submit an assignment one day late to earn up to 50% of the assignment total; otherwise, a score of zero will be earned.

Students may be given the option of making up at most one assignment with a new assignment to be determined by the instructor. It is optional to make up points, and opportunities to make up points are not guaranteed. Make-up assignments may not be at the same level of difficulty or require the same level of work as the original assignment. Make-up opportunities must be agreed upon by both instructor and student.

Presentation and discussion (15% of final grade)
Students will present assigned topics in class and lead a class discussion. Each student is expected to present at least once throughout the semester unless otherwise decided by the instructor. Presentation length and requirements will be determined by the instructor prior to presentation topic assignments. Students will also be expected to lead class discussions. In addition, active and meaningful participation in discussions led by other students will contributed towards the presentation grade.

Exams (15% of final grade)
Up to two exams will be administered in class: a midterm exam and a final exam.

Participation (15% of final grade)
Class attendance and participation are expected and required. Students are expected to engage in class discussion, offer answers to questions, and ask questions during/after presentations.

Extra Assignments (extra credit)
Opportunities to earn extra credit or are not promised, but the instructor may opt to offer supplemental assignments for extra credit. Details will be determined per assignment and must be agreed upon by both the instructor and the student.
Course Topics, Calendar of Activities, Major Assignment Dates

Class attendance is expected. Students should report any known future absences at least one week prior to the absence. Any graded class activities missed (e.g., exams, presentations, homework submissions) during unapproved absences cannot be made up without the instructor’s prior approval and a valid excuse.

This below schedule is tentative and may change (notice will be given if changes are made).

<table>
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<td>Aug. 30 Course overview</td>
<td>Sep. 1 Foundations</td>
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<tr>
<td>Sep. 6 Navigation</td>
<td>Sep. 8 Papers: Navigation Present &amp; discuss</td>
</tr>
<tr>
<td>Sep. 13 Selection and manipulation</td>
<td>Sep. 15 Papers: Selection and manipulation</td>
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<tr>
<td>Sep. 20 Fidelity and presence</td>
<td>Sep. 22 Papers: Fidelity and presence Present &amp; discuss</td>
</tr>
<tr>
<td>Project plan due (team roles, schedule, description)</td>
<td>Sep. 29 Papers: Perceptual illusion Present &amp; discuss</td>
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<tr>
<td>Sep. 27 Perceptual illusion</td>
<td>Oct. 4 Papers: Evaluation methodology</td>
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<tr>
<td>Oct. 11 Applications</td>
<td>Oct. 6 * Papers: Evaluation methodology</td>
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<tr>
<td>Project related literature</td>
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<td>Oct. 18 Sickness and perception</td>
<td>Oct. 13 Papers: Applications Present &amp; discuss</td>
</tr>
<tr>
<td>Oct. 25 * Project work day</td>
<td>Oct. 20 Papers: Haptics Present &amp; discuss</td>
</tr>
<tr>
<td>Oct. 25 * Project work day</td>
<td>Oct. 27 * Project work day</td>
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<tr>
<td>Preliminary project report (team roles, schedule, description, literature review)</td>
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<td>Nov. 1 Project: 3-minute updates</td>
<td>Nov. 3 Papers: System control and symbolic input Present &amp; discuss: System control and symbolic input</td>
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<tr>
<td>Nov. 8 3D tracking systems</td>
<td>Nov. 10 Papers: Collaborative VR Present &amp; discuss</td>
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<tr>
<td>Nov. 15 Final exam review</td>
<td>Nov. 17 Final exam review</td>
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<td>Nov. 22 Preliminary project videos</td>
<td>Nov. 24 Thanksgiving No class</td>
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<td>Project: 3-minute updates</td>
<td></td>
</tr>
<tr>
<td>Nov. 29 Project presentations</td>
<td>Dec. 1 Project presentations</td>
</tr>
<tr>
<td>Dec. 6 Project presentations</td>
<td>Dec. 8 Reading day No class</td>
</tr>
<tr>
<td>Final project deliverables</td>
<td></td>
</tr>
</tbody>
</table>

**Final Exam**

3:30 – 5:30 p.m. Wednesday, December 14, 2016
Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Defacement of University Property
It is unlawful for any person to damage or deface any of the buildings, statues, monuments, trees, shrubs, grasses, or flowers on the grounds of any state institutions of higher education (Texas Education Code Section 51.204). The words damage or deface refer specifically to any and all actions, whether direct or indirect, that either diminish the value or mar the appearance of the physical environment.

This course involves the use of hardware, technology, and equipment. While students will have access to university resources, it is expected that they be used only for educational course purposes. Respect for all university property is required, and evidence of intentional or negligence may result in disciplinary action as well as failure in the course.

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu/

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”

In this course, students are responsible for their own work, and credit must be given for external resources or assistance from others. Sharing or adopting the work of others (including, but not limited to, writing, code, and ideas) without providing proper credit can be interpreted as cheating or plagiarism. However, targeted discussion and collaboration with other students is encouraged in this course. Discussion of topics, design concepts, research philosophies, and implementation approaches is recommended to help elicit new ideas, improve understanding, and achieve a broader range of overall knowledge. Therefore, helping other students is acceptable and appreciated so long as any given assistance does not inhibit others from doing their own work and achieving assignment objectives for themselves. Use your best judgement and be mindful of the university integrity policies.
CSCE 489/689: Computational Fabrication

Fall 2016

Location: HRBB 126
Time: MW 1:50-2:40
Web: http://courses.cs.tamu.edu/sueda/CSCE689/2016F

Instructor
Shinjiro Sueda
Email: sueda@tamu.edu
Office: HRBB 527D
Phone: (979) 845-4893
Office Hours: M 12:30-1:30, W 3:00-4:00

Goals and Topics
This is an undergraduate/graduate level course that investigates problems in computational fabrication. Topics include: an overview of fabrication methods with focus on additive manufacturing (e.g., 3D printing), 3D scanning, geometry processing, appearance measurement and representations, advanced rendering methods, measurement of mechanical material properties, FEM simulation, discrete and continuous optimization methods.

At the end of the course, students should know the basics of several fabrication methods, be able to use procedural 3D modeling software, understand numerical optimization at a high level, and gain familiarity with cutting-edge research in computational fabrication.

Schedule
The following schedule for the lectures and assignments may (and will) change—it is meant to serve as a basic outline of topics and schedule.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Introduction; Solid and Procedural Modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2</td>
<td>3D Scanning; Range Processing Pipeline</td>
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<tr>
<td></td>
<td>Assignment 1 due</td>
</tr>
<tr>
<td>Week 3</td>
<td>3D Printing Hardware</td>
</tr>
<tr>
<td>Week 4</td>
<td>3D Printing Software</td>
</tr>
<tr>
<td>Week 5</td>
<td>Direct and Functional Specification</td>
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<td></td>
<td>Assignment 2 due</td>
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<tr>
<td>Week 6</td>
<td>Appearance and Optics</td>
</tr>
<tr>
<td>Week 7</td>
<td>Mechanical Properties; Material Models</td>
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<tr>
<td>Week 8</td>
<td>Simulation; Finite Element Method</td>
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<td></td>
<td>Assignment 3 due</td>
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<tr>
<td>Week 9</td>
<td>Numerical Optimization</td>
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<tr>
<td>Week 10</td>
<td></td>
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<tr>
<td>Week 11</td>
<td></td>
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<tr>
<td>Week 12</td>
<td>Reading and presentation of important published papers</td>
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<tr>
<td>Week 13</td>
<td></td>
</tr>
<tr>
<td>Week 14</td>
<td>Final Project due</td>
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</tbody>
</table>
Prerequisites
While there are no formal prerequisites, students will be expected to have basic knowledge of several topics, including calculus, linear algebra, physics, and programming. It will be helpful to have taken computer graphics (CSCE 441). Students will be expected to know or learn Matlab and C/C++. Those familiar with a basic structured or object oriented language can probably learn the parts of C/C++ necessary for this class; however, this will take commitment to significant additional work early in the semester. Likewise, the critical linear algebra topics will be reviewed, but may require some additional studies. Many students have been successful in this course without prior knowledge of some of these specifics, but it may take additional independent study. If you have concerns in these areas, please talk to the instructor.

Class Meetings
The course is a mixture of lecture and more hands-on individual feedback, through homework and project demos. You are expected to attend all classes, and in particular the demo days. It is important to demonstrate your work in front of the others in the class, as well as to be present (and ask questions/give feedback) to other students. Make-ups for demo times will not be given except as provided by Student Rule 7 (listed at http://student-rules.tamu.edu/rule07). You should NOT plan on being able to make up a demo if you miss/skip class that day.

It is also important to attend lectures. This course does not have a textbook, and so missing class might cause you to miss key material. You should not expect help with material if you missed class when it was covered. Also, some of the more interesting parts of the course come from student questions (this also helps keep the instructor from jumping too far ahead, too fast); you need to be in class to participate in this!

This course often has a mix of students with varied backgrounds, and so some classes may be used to review material that a significant portion of the class is already familiar with. These classes will be announced ahead of time, and can be considered optional if you feel you know the material. However, you should plan to attend all classes until you hear otherwise.

Please leave the final exam time available until instructed otherwise, as this time might be used for presentation of the final projects – i.e. you should not plan to be absent on that day! However, there will not be an actual final exam in the course. We will likely schedule the final project presentations BEFORE the final exam times, but the final exam period is a “failsafe” option and should be expected until you hear otherwise.

Assignments and Grading
This will be a project-oriented course with no exams. There will be four homework assignments in the class, each due about every two-three weeks. These assignments will be equally weighted and will collectively account for 70% of the overall grade. There will be a final project in the class, of the student’s own choosing. This will account for 20% of the overall grade. The final 10% of the grade will be a subjective grade based on the instructor’s evaluation of class participation, including attendance and discussion. Students are expected to attend all classes, complete all reading assignments and homework, and participate in the class discussions.

Each assignment will be graded using a letter grade scale. Generally, an assignment will receive a “B” grade if all required portions are completed satisfactorily. In order to receive a higher grade, some additional features must be included, with the quality and difficulty of those additional features indicating how much higher of a grade is received. A similar approach will be used for the subjective course participation: simply regularly attending and rare class participation will receive a “B”, significant absences may reduce the grade, while significant class participation and effort may increase it.

Assignment grades will be converted to a numerical scale for averaging purposes as follows: A=4.0, B=3.0, C=2.0, D=1.0, F=0.0. Final course grades will be assigned as: A ≥ 3.5 > B > 2.5 ≥ C ≥ 2.0 > F. In addition, students who do not complete one entire assignment may not receive an A (regardless of average), and students skipping two entire assignments or the course project may not receive a B (regardless of average).

Assignments and projects will be graded by demonstrating them in class; certain classes will be considered “demo days,” in which much if not all of the class is devoted to student presentations of their assignments. The project grade will be assigned primarily based on a demonstration of program functionality during these class times, although depending on the assignment, programs must be turned in, and grades may be adjusted based on an examination of the code. Because work will be demonstrated in class, it is important that all assignments be completed on time. To encourage this, late assignments will not be accepted except as provided by Student Rule 7 (listed at http://student-rules.tamu.edu/rule07). If you do not turn in and demonstrate your project on the due date (unless approval is specifically given otherwise), the assignment will receive an F. You are strongly encouraged to use an iterative development cycle for your programs, implementing the functionality in stages so that there is always something to show in class, even if you don’t “finish” the assignment.
Details of the specific turnin procedure will be announced later, but will probably rely on csnet.cse.tamu.edu. You should ensure that your code can be demonstrated in class by checking the use of a laptop or the in-room computers prior to the class demo time. If you anticipate a problem with this, please see the instructor.

**Additional Requirements for CSCE 689**
In addition to the assignments and final project above, students enrolled in the graduate class will be required to complete about two additional labs and to implement one of the research papers that we read in the 2nd half of the course.

**Textbook**
We will make use of several sources for course material. Besides notes from lectures, we will use several articles and notes available online.

**Policies**
Communication: A class web page (listed at the top of this syllabus) will be created in the near future and maintained throughout the semester. Students are responsible for checking both the web page and email regularly for class updates.

Code Documentation: Assignments will be graded primarily based on in-class demonstration, but all code must be turned in. Although the code itself will not be examined in great detail, it may be examined to verify the way it was implemented. It is your responsibility to make sure that the code is understandable. In addition, all code should include instructions giving all details needed to compile and run the program.

**Academic Honesty**
The Aggie Honor Code is: “An Aggie does not lie, cheat, or steal, or tolerate those who do.” Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit: http://www.tamu.edu/aggiehonor/

To emphasize and clarify these points, note that any aspect of passing another’s ideas, words, writings, etc. off as your own is an example of an honor code violation. If you use any outside source in the completion of your assignments (besides the instructor and materials distributed as part of the course), you need to acknowledge that fully and clearly, as well as the extent of assistance received (e.g. did you ask for help finding a bug from someone, or did you copy someone’s code, etc.). Note that using such sources could still result in a lower assignment grade (if you did not do parts of the work yourself), but by acknowledging that help, you avoid a violation of the honor code. Note also that a full and clear acknowledgement does not mean burying a reference to help in submitted code, or anything similar. Use of outside sources should be acknowledged both during the in-class demonstration, as well as in clear, easy-to-find locations in your submission.

It is common (and in fact good) practice to use external libraries for basic operations such as linear algebra, numerical optimization, etc. When you use such libraries, you are responsible for being sure that you are following the appropriate use guidelines, and that you acknowledge their use. For assignments, there is usually a list of key items that are desired in the assignment. Those items should not be accomplished via library functions – you are expected to implement them yourself.

Many of the sources we link to are copyrighted, and you should ensure that you follow appropriate restrictions in their use. Also, please note that the course materials, including in-class notes, linked notes, the contents of the website, etc. are copyrighted, and may not be reproduced for purposes beyond your coursework without permission.

If there are any questions or concerns about whether an action is appropriate, you should check with the professor first. If in doubt, assume that it is not appropriate.

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Introduction to Hardware Design Verification  
CSCE, EECN 489/689  
Fall 2016

Course Logistics

1. Time and Place: TR 9:35am – 10:50am Room: ETB-1035
2. Course Page (eCampus): [HERE](#)
3. Course Discussion Forum (Piazza): [HERE](#)
4. Instructor: Michael Quinn, HRBB-527C, 979-862-4673
5. Office Hours: By Appointment (email to [m.d.quinn@tamu.edu](mailto:m.d.quinn@tamu.edu))
6. Teaching Assistant (TA): TBD, HRBB-TBD

Prerequisites

- CSCE 312 or 350 or equivalent course in Computer Architecture
- Familiarity with C/C++/Verilog/VHDL programming

Catalog Description

Introduction to hardware functional verification; case studies on verification in integrated circuit design; introduction to industry best practices; introduction to logic functional verification.

Textbooks


In addition, we will refer to published papers in areas of verification and validation.

Grading Policies (Subject to Change)

Grading is broken down in 50-50 proportions between project/homework and exams/quizzes as follows for a total of 100 points.

- Project: 40 points, Homework: 10 points (Total of 50 Points)
- Midterm: 20 points, Final: 20 points, Quizzes: 10 points (Total of 50 Points)

Grade scale is as follows: 90-100=A, 80-89=B, 70-79=C, 60-69=D, Below 60 = F

Differences in Expectations for Graduate/Undergraduate-Honors and Undergraduate Students:

- The exams for Graduate and Undergraduate-Honors students will have additional
AND/OR more difficult questions.

- The homework assigned to Graduate and Undergraduate-Honors students will have additional AND/OR more difficult sections (which in some cases may also be presented to the Undergraduate students for Extra Credit).
- The project design code used by the Graduate and Undergraduate-Honors students will have additional AND/OR more complex bugs inserted. This is consistent with the assumption that the Graduate and Undergraduate-Honors students will have a stronger background in Logic Design and Micro-Architecture.

Late-Submission Policy: Unless stated otherwise, lateness is penalized as a simple linear function of minutes late – One Percentage point deducted for every hour late.

Attendance and Participation: Lecture and lab attendance is expected. Infrequent unavoidable absences are understood, but each student is responsible for any missed material. For excused absences, students will not be penalized. See Section 7 (http://student-rules.tamu.edu/rule07) of the Student Rules for the excused absence policy. For acute illnesses of less than three days, both option A and option B of section 7.1.6.2 are acceptable in this course. For unexcused absences, a grade of zero will be assigned for missed work.

Course Objectives & Topics
The objective of this course is to provide you with an overall breadth understanding of the landscape of Hardware Design Verification. Verification asks the critical question: Are we designing the specified product. This course will place early emphasis on the criticality of Verification in Hardware Design via Case Studies and Best Known Industry Practices. Special emphasis will be placed on Functional Verification. Key takeaways for students are as follows:

- Appreciation for Verification and Validation in Product Development
- Design Specification (as an input to Design Functional Verification)
- Design Functional Verification (using Industry-Standard toolset)

Course topics (subject to change):
1. Introduction to Hardware Design Verification
   a. Verification in the Chip Design Process - Product life cycle, Case Studies of Major Verification and Validation Escapes
   b. Verification Flow
   c. Fundamentals of Simulation Based Functional Verification
   d. Fundamentals of Formal Verification
   e. The Verification Plan
2. Simulation Based Functional Verification
   a. HDL’s and Simulation Engines
   b. Verification Environments
   c. Strategies for Simulation-Based Stimulus Generation & Results Checking
   d. Re-Use Strategies and System Simulation
3. Comprehensive Verification
   a. Pervasive Functional Verification
   b. Completing the Verification Cycle
4. Case Studies inspired by Industry Examples
## Course Content and Tentative Schedule

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<tr>
<th>Week</th>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
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<td>Tue</td>
<td>30-Aug</td>
<td>Course Introduction</td>
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<tr>
<td></td>
<td>Thu</td>
<td>1-Sep</td>
<td>Overall Perspective of Verification</td>
</tr>
<tr>
<td>Week 2</td>
<td>Tue</td>
<td>6-Sep</td>
<td>Cache Basics and Project Intro (Demo)</td>
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<tr>
<td></td>
<td>Thu</td>
<td>8-Sep</td>
<td>Cache Basics</td>
</tr>
<tr>
<td>Week 3</td>
<td>Tue</td>
<td>13-Sep</td>
<td>Cache Coherency</td>
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<tr>
<td></td>
<td>Thu</td>
<td>15-Sep</td>
<td>Cache Coherency</td>
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<tr>
<td>Week 4</td>
<td>Tue</td>
<td>20-Sep</td>
<td>Verification in Chip Design Process</td>
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<td>Thu</td>
<td>22-Sep</td>
<td>Verification in Chip Design Process</td>
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<tr>
<td>Week 5</td>
<td>Tue</td>
<td>27-Sep</td>
<td>Formal Verification</td>
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<td>Thu</td>
<td>29-Sep</td>
<td>Formal Verification</td>
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<tr>
<td>Week 6</td>
<td>Tue</td>
<td>4-Oct</td>
<td>Verification Flow</td>
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<td></td>
<td>Thu</td>
<td>6-Oct</td>
<td>Fundamentals of Simulation Based Functional Verification</td>
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<tr>
<td>Week 7</td>
<td>Tue</td>
<td>11-Oct</td>
<td>Verification Plan</td>
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<td></td>
<td>Thu</td>
<td>13-Oct</td>
<td><strong>MIDTERM EXAM</strong></td>
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<tr>
<td>Week 8</td>
<td>Tue</td>
<td>18-Oct</td>
<td>Verification Environments</td>
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<td></td>
<td>Thu</td>
<td>20-Oct</td>
<td>Verification Environments</td>
</tr>
<tr>
<td>Week 9</td>
<td>Tue</td>
<td>25-Oct</td>
<td>Strategies for Simulation Based Stimulus Generation</td>
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<td></td>
<td>Thu</td>
<td>27-Oct</td>
<td>Strategies for Simulation Based Stimulus Generation</td>
</tr>
<tr>
<td>Week 10</td>
<td>Tue</td>
<td>1-Nov</td>
<td>Strategies for Results Checking in Simulation Based Verification</td>
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<td></td>
<td>Thu</td>
<td>3-Nov</td>
<td>Strategies for Results Checking in Simulation Based Verification</td>
</tr>
<tr>
<td>Week 11</td>
<td>Tue</td>
<td>8-Nov</td>
<td>Pervasive Functional Verification</td>
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<tr>
<td></td>
<td>Thu</td>
<td>10-Nov</td>
<td>Pervasive Functional Verification</td>
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<tr>
<td>Week 12</td>
<td>Tue</td>
<td>15-Nov</td>
<td>Case Studies Inspired by Industry Examples</td>
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<td></td>
<td>Thu</td>
<td>17-Nov</td>
<td>Case Studies Inspired by Industry Examples</td>
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<tr>
<td>Week 13</td>
<td>Tue</td>
<td>22-Nov</td>
<td>Case Studies Inspired by Industry Examples</td>
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<td>Thu</td>
<td>24-Nov</td>
<td><strong>THANKSGIVING</strong></td>
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<td>Week 14</td>
<td>Tue</td>
<td>29-Nov</td>
<td>System Simulation</td>
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<td></td>
<td>Thu</td>
<td>1-Dec</td>
<td>Completing the Verification Cycle</td>
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<tr>
<td>Week 15</td>
<td>Tue</td>
<td>6-Dec</td>
<td>Completing the Verification Cycle</td>
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<tr>
<td></td>
<td>Thu</td>
<td>8-Dec</td>
<td>NO LECTURE</td>
</tr>
<tr>
<td></td>
<td>Fri</td>
<td>9-Dec</td>
<td><strong>FINAL EXAM (12:30 PM – 2:30 PM)</strong></td>
</tr>
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</table>
**Academic Integrity Statement and Policy**

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Course title and number  CSCE689: Fundamentals of Software Analysis
Term (e.g., Fall 200X)  Fall 2016
Meeting times and location  MW 05:45 pm-07:00 pm, HRBB 115

Course Description and Prerequisites

Development of advanced concepts in program analyses; program abstraction, features, verification, testing, analysis, concurrency, reliability, aspect orientation, fault detection; tools and empirical experimentation for program analyses.

There are no formal prerequisites, but it will help to have some background in programming languages, compilers, software engineering, and/or operating systems in general; and program analysis, parallel/concurrent programming, and/or software reliability in particular.

Learning Outcomes

The intent of this course is to offer the in-depth introduction to graduate students on a wide range of software analysis concepts and techniques. The topics can be explored at different levels of depths depending on the interests of the class. The content of the course is roughly divided into two general themes: program representation and program analysis. Following the first theme, we study different abstractions, representations, and interpretations of a software program itself. Following the second, we study how analysis techniques and algorithms can help interpret the runtime meaning of the program and, in turn, help us monitor and improve the quality of the software programs.

Instructor Information

Name  Jeff Huang
Telephone number  979-845-5485
Email address  jeff@cse.tamu.edu
Office hours  TBA
Office location  416 HRBB

Textbook and/or Resource Material

There is no required textbook; all relevant materials will be made available online.

Grading Policies

The course will be evaluated based on a combination of participation, hands-on effort, homework, understanding of cutting-edge research results and paper presentations. The mark breakdown is as follows.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mark</th>
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<tbody>
<tr>
<td>Lecture Participation</td>
<td>10%</td>
</tr>
<tr>
<td>HOME Work</td>
<td>20%</td>
</tr>
<tr>
<td>Paper Review and Presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Course Project</td>
<td>50%</td>
</tr>
</tbody>
</table>

The following grading policy will be used:

90-100: A
80-89: B
70-79: C
60-69: D
<60: F

Late Policy: The late submission will have 2% penalty for each hour after the due time.

Project

A major component of the course is a software development project. It is essentially a mini research project that may involve building a new system, designing a new algorithm, improving an existing technique, applying an existing technique to a new domain, or performing a large case study. You are encouraged to come up with a topic of your own, which I'll help refine; alternatively, you can choose one of the projects I suggest. The timeline of the project will be posted on the course webpage.

Attendance and Make-up Policies

Students are expected to attend all scheduled classes. Make-up lessons will be arranged in case of instructor absences for any reason.
Course Topics

• Syntax, Grammar, Parsing
• Program analysis fundamentals and tools
  o Data flow analysis
  o Abstract interpretation
  o Type and effect systems
  o Pointer analysis
  o Call graph construction
  o Dynamic analysis
  o Symbolic execution
• Testing, debugging, verification
• Concurrency fundamentals such as race conditions

Note: please refer to the course webpage for the accurate schedule.

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Academic Integrity

For additional information please visit: http://aggiehonor.tamu.edu

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”
Course title and number  Natural Language Processing: Foundations and Techniques  
Term (e.g., Fall 200X)  Fall 2016  
Meeting times and location  TBD  

Course Description and Prerequisites

This is an especially exciting time to study Natural Language Processing (NLP), which aims to enable computers to understand and automatically process human language. This course will focus on NLP fundamentals including language models, automatic syntactic processing and automatic semantic processing. In addition, this course will also introduce various applications of NLP, including information extraction, sentiment analysis, question and answering, text summarization and machine translation.

The students will digest and practice their NLP knowledge and skills by working on a class project. Required prerequisite: students should have taken the course Data Structure and Algorithms (CSCE 221).

Learning Outcomes

Through this course, students will gain solid theoretical knowledge and enough practical experience to design and develop their own text processing applications in the future.

Instructor Information

Name  Ruihong Huang  
Telephone number  979-862-2908  
Email address  huangrh@cse.tamu.edu  
Office hours  TBD  
Office location  402B HRBB  

Textbook and/or Resource Material

Required textbook: Speech and Language Processing, Daniel Jurafsky and James H. Martin, 2008. Prentice Hall; 2nd edition. Relevant tutorials and papers will also be handed out during the class.

Grading Policies

Grading scales: A: 100-90, B: 89-80, C: 79-70, D: 69-60, F: < 60. Grades are based on class attendance and contributions, class assignments and a class project. The formula is: 10% * (attendance) + 50% * (assignments) + 40% * (class project)

Attendance and Make-up Policies

Every student should attend the class, unless you have an accepted excuse. Please check student rule 7 http://student-rules.tamu.edu/rule07 for details.

Course Topics, Calendar of Activities, Major Assignment Dates
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Overview</td>
<td>Book chapters</td>
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<tr>
<td>2</td>
<td>Language Models</td>
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<td>3</td>
<td>Classification</td>
<td>Book chapters</td>
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<tr>
<td>4</td>
<td>Parts of Speech Tagging</td>
<td>Book chapters</td>
</tr>
<tr>
<td>5</td>
<td>Syntactic Parsing</td>
<td>Tutorial</td>
</tr>
<tr>
<td>6</td>
<td>Word Representations</td>
<td>Book chapters</td>
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<tr>
<td>7</td>
<td>Word Sense Disambiguation</td>
<td>Book chapters</td>
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<tr>
<td>8</td>
<td>Semantic Role Labeling</td>
<td>Book chapters</td>
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<tr>
<td>9</td>
<td>Information Extraction</td>
<td>Book chapters</td>
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<tr>
<td>10</td>
<td>Coreference Resolution</td>
<td>Book chapters</td>
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<tr>
<td>11</td>
<td>Discourse, Dialogue</td>
<td>Book chapters</td>
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<tr>
<td>12</td>
<td>Applications</td>
<td>Book chapters</td>
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<tr>
<td>13</td>
<td>Applications</td>
<td>Book chapters</td>
</tr>
<tr>
<td>14</td>
<td>Project Presentations</td>
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</tr>
</tbody>
</table>

**Other Pertinent Course Information**

**Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu)

**Academic Integrity**

*For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)*

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”
CSCE 681: Graduate Seminar
Course Homepage
Fall 2016

Class Meeting:
Mondays and/or Wednesdays, 4:10-5:25pm, 124 HRBB

Course homepage: http://parasol.tamu.edu/~amato/Courses/681
Seminar Schedule: http://www.cse.tamu.edu/research/seminars/681seminar

Instructors:
Nancy Amato
office: 425H Harvey R. Bright Bldg
email: amato [at] tamu.edu
url: http://parasol.tamu.edu/~amato
office phone: 979-862-2275

Lawrence Rauchwerger
office: 425E Harvey R. Bright Bldg
email: rwerger [at] tamu.edu
url: http://parasol.tamu.edu/~rwerger
office phone: 979-845-8872

Special Announcements

- IMPORTANT ANNOUNCEMENT: All the information needed for students taking CSCE 681 is provided on this webpage - please be sure to familiarize yourself with the contents here. We will NOT go over this information in class.

- Monday August 29, 2016: This IS NOT an official CSCE 681 seminar - it is only required for new graduate students and does NOT count as a CSCE 681 seminar.

- Wednesday August 31, 2016: This IS the first official CSCE 681 seminar. Paper reports can be done for this seminar - you can read and report on a paper authored by a faculty member(s) in our department. (Note: you should not select a paper for which you or your advisor, if you have one, are authors.) For this seminar only, the paper reports can be submitted the Monday following the seminar.

Course Goals: The purpose of the course is to expose you to a broad range of current research topics in computer science and related fields. Every graduate student in the department must register for the seminar at least once during their graduate studies.

All graduate students are encouraged to attend as many seminars as possible, not only during the semester(s) during which they are registered. It is useful for you to attend even when the topic seems unrelated to your research - indeed, seminars provide the best way for
you to round out your knowledge by exposing you to current research in areas that are not directly related to your own research.

**Course Content and Schedule:** This course consists of seminars which will be presented roughly once a week, on a monday and/or a wednesday. Generally, after the speaker is finished, there will be a question and answer period where the audience can ask any questions they might have that were not answered during the seminar. This is often quite interesting and is considered part of the seminar (so you should not leave until it is over).

The schedule will be continually evolving, but there will be a minimum of 14 seminars over the course of the semester. You are responsible for checking the seminar schedule on the web ([http://www.cse.tamu.edu/research/seminars/681seminar](http://www.cse.tamu.edu/research/seminars/681seminar)) and your email (announcements will be sent to mailing list for all graduate students) for up to date information. Be sure to check each monday and wednesday as sometimes seminars will be announced/cancelled at the last moment.

Although you should reserve the entire scheduled time slot (4:10-5:25), in most cases the seminars will finish a few minutes early. *If the speaker is not finished, or if the question and answer period is ongoing, you are expected to stay until the end, or until 5:25pm, whichever comes first.* If this is a problem for you, then you should consider taking the seminar another semester as it is scheduled to go until 5:25pm.

If you are in the seminar, you are expected to pay attention and refrain from activities such as doing other work, reading the newspaper, surfing the web, or sleeping. Behavior such as this gives speakers a bad impression of our graduate program and students. Students noticed exhibiting such behavior will not receive credit for attending that seminar. Thus, if you are not interested in a particular seminar, then don't attend - and attend a make-up seminar instead.

**Mechanics and Grading:** To receive credit for this course you must satisfy all of the following requirements:

- Satisfactorily complete at least 6 **Paper Reports**. (Note: Paper reports can only be done for CSCE 681 seminars for which the student also submits a Seminar Report, i.e., you cannot do a paper report if you are going to miss the seminar.)
- Satisfactorily complete at least 12 **Seminar Reports**, at most 2 of which can be **make-up seminars**.

**Paper Reports**

To receive credit for a paper report, students should select a technical paper authored by the speaker, read it, prepare a report as outlined below, and submit it in to eCampus at least 10 minutes before the beginning of the associated seminar (usually by 4:00pm for a seminar that starts at 4:10pm). (i.e., they can only be done for CSCE 681 seminars and must be turned in before the presentation starts).

The paper should have appeared in (or be accepted to) a peer reviewed conference or journal. Papers should be technically rigorous for the field (e.g., typically papers published in magazines papers would not be appropriate), but papers (but not short papers or poster papers) in IEEE or ACM journals or conferences would be appropriate.
The goal of the reports is to allow students to become familiar with the topic of the presentation prior to the presentation. This will enable them to better understand the talk and will give them time to formulate questions. Students are encouraged to discuss a given paper with other students in the course for better understanding of the paper content; each student, however, is required to write an independent paper report.

Each paper report will receive a grade of 1, 2 or 3. You must receive a grade of 2 or 3 on the paper report to receive credit for it towards the 6 required reports.

The paper report should be prepared using a word processing system and be roughly 2 pages (single-spaced, at most 12 point font) in length. It must include the clearly labeled sections listed below:

- **Paper Bibliography Information**: title, author(s), where and when published, pages, year, etc. This should be presented as if it would be in the list of references at the end of the paper. (Remember, select a paper from a quality conference or journal that has been through peer review.)
- **Summary (at least 1 page)**: Provide a high-level summary of the paper including the following clearly labeled points.
  - *Problem Statement*: In your own words identify the problem addressed in the paper and why the problem is significant.
  - *Proposed Solution*: Describe the solution method proposed by the author(s) or the analysis completed by the author(s).
  - *Results/Findings*: Summarize the major results/findings/conclusions of the paper.
- **Critique (at least 1/2 page)**: Provide your critique of the paper, as if you were reviewing a paper submitted for publication. Describe your opinions (positive and negative) about the research, note aspects strengths and weaknesses of the paper, identify items you particularly like and those that you think could be improved (and note how), identify open issues that relate to the problem area but are not addressed in the paper, etc. This is the most important part of the report.
- **Ideas for Follow-On work (at least 1/2 page)**: Describe your ideas for extending and improving upon the paper. You should clearly and explicitly explain the idea you have for improving the paper and also how you would go about implementing it.

**Seminar Reports for CSCE 681 seminars**

To receive credit for attending a regular CSCE 681 seminar (this includes distinguished lectures presented during the normal CSCE 681 time slot), students must prepare a short report of the seminar on a form that will be available in the classroom at the beginning of the seminar. The completed forms are due at the conclusion of the seminar (after the conclusion of the final question and answer session) and will be collected at the conclusion of the seminar.

**Seminar Reports for Make-Up Seminars**

Students will be allowed to make-up for up to 2 missed seminars by attending other relevant seminars. (Note, paper reports cannot be done for make-up seminars, only for regular CSCE 681 seminars.) A seminar report form must be completed for make-up seminars. In this
case, the students should print out a copy of the form (available here) and should submit the completed seminar report to eCampus. These reports are due within 5 days of the seminar (e.g., on Wednesday for a seminar on Friday).

Seminars which are automatically approved are listed below. For other seminars, please see (or email) the instructor for approval.

- **Distinguished Lectures** (often held as part of the 681 seminar)
- **Computer Engineering Seminars** (Fridays 3:00-3:50; backup Tuesdays 3:55-5:10pm)
- **Parasol Seminar** (usually held Fridays at 4pm in 302 HRBB)
CPSC 672: Computer-Supported Cooperative Work (CSCW)

Fall Semester, 2016
Time and place: M/W/F 10:20 - 11:10 am, HRBB 126
Instructor: Dr. Frank Shipman
Office hours: HRBB 404, to be determined, or by appointment

Students

There may be students from technical and non-technical disciplines in this course. Projects and assignments are designed such that each student can show off their own skills. Programming and software development is part of the group projects so it is recommended that students from outside of computer science join project teams with students from computer science.

List of students

Course description

Collaborative systems are all around us. They help us keep up with friends and family, they help us write papers, and they help us slay the evil beast in the woods.

Why does Facebook work? What does it do? What about MS Word's track changes features? And what about the interface to MMORPGs? How are they similar and how are they different? These are the types of questions we will examine.

This class investigates the design of systems to support collaborative activity. As such, the class will read papers and develop class projects related to topics such as: (1) How do people use existing tools (word processors, email) to collaborate? (2) What issues play a role in the success of tools supporting collaborative activity (critical mass, benefit/effort distribution, etc.)? (3) What characteristics of tools play important roles in these contexts (awareness, reciprocity, synchronous activity)?

These topics will be discussed at both a conceptual and tool level. By the end of the course, you will be able to look at an existing system or design a new system with an understanding of the impact it may have on collaborative activity.

Prerequisites

Students should have a basic knowledge of computing and the social sciences, and either the ability to program complex systems or able to learn new software tools on their own. Ask instructor if you have any questions.
Reading materials

Reading schedule and presenter/discussant list

This course will focus around discussions of the readings. We will read assorted papers taken from a variety of conferences and journals concerning computer-support cooperative work, groupware, human-computer interaction, etc.

Selected papers:

The following links require access to the ACM Digital Library. Access to ACM Digital Library is available from on-campus computers.

Grading

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Short assignments</td>
<td>10%</td>
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<tr>
<td>Class participation</td>
<td>20%</td>
</tr>
<tr>
<td>Pop quizzes</td>
<td>30%</td>
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<tr>
<td>Team project</td>
<td>40%</td>
</tr>
</tbody>
</table>

Grades will be on a 10 point scale: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, and <60 = F.

Short assignments

List of assignments

There will be a number of assignments due in class. These assignments may require use of specific software outside of class time and will take the form of short essays, written answers to questions, and design documents. All material turned in should be printed using a computer printer or typed except when noted otherwise.

Homework late policy:
10% is deducted from your grade for every school day late up to a maximum of one week after the original due date.

Class participation

Most class periods will include a discussion of reading materials. One student will be selected to present a brief overview of each paper and another student will be assigned to have discussion questions ready and lead discussion. All students are expected to have done the readings and be able to participate in discussions.

Pop Quizes

Because readings and discussion are at the center of this course there will be an unknown number of pop quizzes on the readings throughout the semester. The quizzes will be relatively easy if you have read the material but will be very hard if you have not. **If you do not keep up with the readings, this is likely to damage your grade!**
**Team Project**

Students will form 3 to 5-person teams and define a semester project or select one from a list of existing ideas. There will be three preliminary progress reports for the projects emphasizing particular phases of the interface design process:
(1) identifying a topic, determining cognitive and social issues, and determining an approach,
(2) creating an initial system design and mock-up, and
(3) instantiating the design in a prototype implementation.

The final project report (8-12 pages in ACM Format) will also require the design of an evaluation procedure for refining the resulting interface. The in-class presentations of project progress will be about 10 minutes long and the final presentation on the project will be approximately 20 minutes long and include a demo of your working system.

Project grades will be determined by both the instructor's review of the project and student's description of their and other member's work.

**Programming for projects:**
done in language and operating system of your choice on machines to which you have access.

**General Note on Assignments**

Important: All reports are to be printed on a word processor or typed (no handwritten assignments will be accepted). All writing should be the work of the student -- any text taken from other sources needs to be quoted and referenced. It is expected that students will correct grammar and spelling -- these are grounds to deduct from your grade. (i.e. Use a spelling checker and reread what you write before turning it in.)

**Attendance Policy**

All students are expected to attend and participate every class. Attendance policy will be administered in accordance with Texas A&M University Student Rule 7.

**Americans with Disabilities Act (ADA) Policy Statement**

The following ADA Policy Statement (part of the Policy on Individual Disabling Conditions) was submitted to the UCC by the Department of Student Life. The policy statement was forwarded to the Faculty Senate for Information.

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room B118 of Cain Hall or call 845-1637.
Aggie Honor Code

"An Aggie does not lie, cheat, or steal or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: www.tamu.edu/aggiehonor/

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student:

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."
CSCE 666: Pattern analysis
Fall 2016

**Time:** MWF 09:10-10:00am, **Room:** HRBB 126

**Instructor:** Ricardo Gutierrez-Osuna

**Office:** 506A HRBB

**Office Hours:** WF 10:00-10:30am or by appointment

**Phone:** 979.845.2942

**Email:** rguiter@cse.tamu.edu

**URL:** http://faculty.cs.tamu.edu/rgutier/

**Catalog description:** Introduction to methods for the analysis, classification and clustering of high-dimensional data in Computer Science applications. Course contents include density and parameter estimation, linear feature extraction, feature subset selection, clustering, Bayesian and geometric classifiers, non-linear dimensionality reduction methods from statistical learning theory and spectral graph theory, Hidden Markov models, and ensemble learning.

**Prerequisites:** CPSC 206, MATH 222, MATH 411 (or equivalent) and graduate standing in CPSC, CECN, ELEN, CEEN (or permission of the instructor). Basic knowledge of Linear Algebra, Probability and Statistics: algebra of matrices, geometry of Euclidean space, vector spaces and subspaces, basis, linear independence, linear transformations, eigenvalues and eigenvectors, mean, variance, probability and distributions. Programming experience in a high-level language is required.

**Textbook:**

**Recommended:**

**References:**

**Course objectives:** The objectives of this course are to:
- Introduce the fundamental concepts of pattern recognition
- Provide the students with a toolbox of methods and algorithms they can use for practical pattern recognition problems

**Course outcomes:** Upon satisfactory completion of the course, the student will be able to:
- Analyze a pattern recognition problem and present a valid formulation
- Propose and evaluate possible methods to solve the problem
- Implement a number of algorithms in a high-level language
- Design an experiment to validate formulation and implementation
Course outline

- **Introduction (4 lectures)**
  - Pattern recognition
  - Probability and statistics
  - MATLAB® and linear algebra
  - Fourier analysis

- **Pattern classifiers (7 lectures)**
  - Bayesian decision theory
  - Quadratic classifiers
  - Parameter and density estimation
  - Nearest neighbors
  - Linear discriminant functions
  - Cross-validation

- **Feature and Dimensionality Reduction (4 lectures)**
  - Principal components analysis
  - Fisher’s discriminants analysis
  - Feature subset selection
  - Advanced methods (snapshot PCA, oriented PCA, NMF, LLE, ISOMAP)

- **Clustering and Unsupervised Learning (3 lectures)**
  - Mixture models and Expectation Maximization
  - Statistical clustering
  - Independent components analysis

- **Advanced Topics (6 lectures)**
  - Support vector machines
  - Kernel PCA/LDA
  - Hidden Markov models
  - Ensemble learning

**Grading:** The course grade will be the weighted sum of four grades. Grading will be straight scale (90-100 A, 80-89 B, 70-79 C, 60-69 D, below 60 F). These numeric thresholds may be lowered due to clustering, but will not be raised.

- **Homework:** There will be three homework assignments, distributed every 2-3 weeks during the first part of the semester. Homework assignments will emphasize the implementation (programming) of material presented in class. *Homework assignments must be done individually.*

- **Tests:** There will be a midterm exam and a final exam. All tests will be closed-books, closed-notes. One double-sided, hand-written sheet (8.5 x 11") will be allowed. Tests will have an emphasis on new material from the class notes or the reading assignments.

- **Project:** The last part of the semester will be dedicated to a term project. Students are encouraged to propose projects related to their own research. The projects must be performed in groups of up to three people. Projects will be graded by their content (75%) and the quality of a classroom presentation (25%) at the end of the semester. Peer reviews will also be performed to measure the individual members’ contributions to the project. *Grading criteria for the project presentation, final report and peer reviews are available in the course webpage.*
Homework submissions. Homework assignments are due at 8:00AM on the due date. Electronic material will be submitted with the “turnin” utility at https://csnet.cs.tamu.edu; hardcopies will be submitted directly to the instructor. Email submissions will not be accepted. Note that 'turnin' has a maximum file size that can be submitted. With the exception of MATLAB's built-in functions (e.g., cov, eig, mvnrnd), you are expected to write your own implementation of the algorithms; in case of doubt please consult with the instructor.

Late submissions. Late submissions (i.e., as flagged by csnet) will receive a 15% penalty on the total grade of the assignment; the penalty will increase by an additional 15% every 24 hours. Hardcopies of late submissions must be date and time stamped by the staff in the Computer Science main office. An assignment is considered submitted when ALL components of the assignment have been submitted; e.g., late submission of one problem in a homework will cause your entire homework to be considered as a late submission.

Missed tests: Missed tests can only be made up in case of emergency or work conflicts, and will require supporting documentation. Whenever possible, these issues should be discussed with the instructor prior to the conflicting date.

Collaboration vs. academic dishonesty: Students are encouraged to exchange ideas and form study groups to discuss the course material, and prepare for homework assignments and tests. However, discussions regarding homework assignments should be kept at the conceptual level (i.e., sharing code is not allowed). Scholastic dishonesty will not be tolerated in homework assignments, tests or projects. For a list of examples of scholastic dishonesty see Section 20 of the TAMU Student Rules (http://student-rules.tamu.edu/).

Academic integrity statement

“An Aggie does not lie, cheat, or steal or tolerate those who do.” Please review the Aggie Code of Honor at http://student-rules.tamu.edu/aggiecode

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<th>Weight (%)</th>
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<td>Homework</td>
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<td>Project</td>
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<tr>
<td>Midterm</td>
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<td>Final Exam</td>
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## Course schedule

<table>
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<tr>
<th>Week/day</th>
<th>Special events</th>
<th>Topics (supplemental reading)</th>
</tr>
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<tbody>
<tr>
<td>1 8/29</td>
<td></td>
<td>Introduction to pattern recognition (Section 1.1)</td>
</tr>
<tr>
<td>8/31</td>
<td>HW1 assigned</td>
<td>Probability and linear algebra (1.2, 2.3, Appendix C)</td>
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<td>9/2</td>
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<td>2 9/5</td>
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<td>Fourier analysis</td>
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<td>9/7</td>
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<td>Bayesian decision theory (1.5)</td>
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<td>9/9</td>
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<tr>
<td>3 9/12</td>
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<td>Quadratic classifiers (4.2)</td>
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<td>9/14</td>
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<td>Parameter estimation</td>
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<td>9/16</td>
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<tr>
<td>4 9/19</td>
<td>HW1 due; HW2 assigned</td>
<td>Kernel density estimation (2.5.1, 3.2)</td>
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<td>9/21</td>
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<td>Nearest neighbors (2.5.2)</td>
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<td>5 9/26</td>
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<td>Linear discriminant functions (4.1.1 - 4.1.3, 4.1.7)</td>
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<td>9/28</td>
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<td>Cross-validation (1.3)</td>
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<td>9/30</td>
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<td>6 10/3</td>
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<td>Principal components (1.4, 12.1, Appendix E)</td>
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<td>10/5</td>
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<td>Fisher linear discriminants (4.1.4 - 4.1.6)</td>
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<td>10/7</td>
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<td>7 10/10</td>
<td>HW2 due</td>
<td>Feature subset selection</td>
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<td>10/12</td>
<td>Midterm Exam</td>
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<td>8 10/17</td>
<td>HW3 assigned</td>
<td>Advanced dimensionality reduction (Roweis; Tenenbaum; 12.1.4, 12.4.3)</td>
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<td>10/19</td>
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<td>Mixture models and EM (9.2-9.4)</td>
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<td>9 10/24</td>
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<td>Statistical clustering (9.1)</td>
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<td>10/26</td>
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<td>Independent components analysis (Hyvarinen; 1.6, 12.4.1)</td>
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<td>10/31</td>
<td>HW3 due</td>
<td>Support vector machines (7, Burges)</td>
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<td>11/2</td>
<td>Proposal presentations</td>
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<td>11/4</td>
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<td>11/7</td>
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<td>SMVs and kernel methods (7, Burges)</td>
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<td>11/9</td>
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<td>Kernel methods (7, Burges)</td>
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<td>11/11</td>
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<td>12 11/14</td>
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<td>Kernel PCA, LDA and regression (12.3, Mika)</td>
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<td>11/16</td>
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<td>Discrete HMMs, Viterbi (13.1-2, Rabiner)</td>
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<td>11/18</td>
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<tr>
<td>13 11/21</td>
<td>Reading day (no class)</td>
<td>Baum-Welch, continuous HMMs (13.1-2, Rabiner)</td>
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<tr>
<td>11/23</td>
<td>Thanksgiving (no class)</td>
<td>Ensemble learning (14)</td>
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<td>11/25</td>
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<td>12/7</td>
<td>Final exam</td>
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<tr>
<td>12/9</td>
<td>No class</td>
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<tr>
<td>16 12/12</td>
<td>Project presentations</td>
<td>8:00-10:00AM</td>
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</tbody>
</table>
CPSC 663 -- Real-Time Systems (Fall 2016)

Section 663-600:

Time:
   TR 9:35-10:50am

Location:
   HRBB 126

Instructor:

Riccardo Bettati
   509C Harvey R. Bright Bldg
   845-5469

Office hours:
   TR 11:00am-12:00pm
   or by appointment

e-mail:
   bettati@tamu.edu

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Slides | Video | Tests | Homeworks | Reading Assignment | Projects
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News/Announcements:

This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates and myself. If you have questions, consider posting them on Piazza. This will give everybody a chance to contribute.

Find our class page at: piazza.com/tamu/fall2016/csce663/home.

The signup link is: piazza.com/tamu/fall2016/csce663.

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Course Overview

Cyber-physical systems are all the rage. The advent of computation-enabled physical devices in consumer products, together with the increased use of commercial off-the-shelf technology in embedded systems have raised the general awareness for real-time issues. From being traditionally confined to industrial of embedded and/or control systems, where timing constraints have played an important role for a long time, real-time issues now are prevalent in consumer products, medical devices, automotive systems, and others. In
accordance to these developments, we have seen real-time capabilities increasingly becoming an important part of general-purpose computing equipment.

This course is designed to provide the student with the theoretical foundations for the design and synthesis of real-time systems and applications; it also presents criteria used to evaluate and validate such systems. Throughout the course we will be reminded that computing elements in cyber-physical systems interact very closely with their physical environment. We will discuss how to model such systems and their interaction. We will also discuss security aspects that are particular to cyber-physical systems.

Reading material will expose the student to a small fraction of the classical literature in this area and to recent developments. This course is introductory in nature, and will not have a strong research component to it.

Prerequisites

I will assume that you have a background in operating systems and networks, and a good notion of algorithms. We will be talking about control as well, but no prior knowledge in this area is expected other than basic math.

Material Covered in Course

Real-time computing means computing so that things get done in time. We will therefore devote much time to how to get things done in time (scheduling) and how to validate whether things will be done in time (schedulability analysis). We will then study how operating systems must be designed to support real-time computing, and how some of them are not. Finally, we will devote some time on real-time communication, and how to get it to work in terms of scheduling, architectures, and protocols.

Sometimes it is not possible to get everything to complete in time all the time. Nevertheless, you would like to give guarantees about how often you can get things done in time (probabilistic or statistical guarantees). We will study how to formulate such guarantees, and how to analyze systems whether they meet such guarantees.

We will also discuss how to represent the physical environment in which the real-time computing system operate and how to model the interaction of computation and the environment in the cyber-physical system.

In the second part of the course we will discuss application domains where real-time capabilities are critical, such as cyber-physical systems and Internet of Things.
Required Reading

The material covered in the first part of the course follows very closely the textbook *Hard Real-Time Computing Systems* by Giorgio Buttazzo. Access to it is highly recommended. (Hard copies and soft copies are available through the TAMU library.)

We will be reading additional papers in the area of cyber-physical systems. Stay tuned for details.

Exams

We will have two tests. These tests will be open-book.

A **midterm exam** will be held on **Thursday, October 13**, in class. The **final exam** will be held on **Friday, December 9, from 12:20pm to 2:30pm**.

Reading Assignment

By mid-semester, you will be asked to select a small number of papers from recent proceedings of the IEEE Real-Time Systems Symposium, the IEEE Real-Time Technology and Applications Symposium, the IEEE/ACM International Conference on Cyber-Physical Systems, the IEEE Internet of Things Journal, or the IEEE World Forum on Internet of Things. You will be asked to write a critical review of your selected papers. Details about this assignment are posted [here](http://faculty.cs.tamu.edu/bettati/Courses/663/2016C/course_homepage.htm).

Projects

An important part of this class will be a term project.

Students will have the chance to pick from either one of two types of projects:

- Later in the semester a small set of Call for Solutions will be posted, where students are asked to propose solutions to well-specified problems in the cyber-physical domain.
• Students who are more inclined to investigate a real-time problem can do that in form of a more traditional, research-oriented, term paper. Students who are interested in this should talk to me. Under no circumstances I will accept work that even remotely resembles a survey paper. (You will be writing a survey paper as part of the Reading Assignment.)

Assessment Method

Ideally, grades will be assigned along the following lines:

• A: Understanding of the material presented in class and in the literature. Strong indication of ability to independently develop new ideas based on material learned in class.
• B: Good understanding of material presented in class and in required reading.
• C: Unsatisfactory understanding of material presented in class and required reading.
• D: ....

Last modified: August 2016
Course title and number  PETE/CSCE 657: High Performance Computing for Earth Science and Petroleum Engineering
Term (e.g., Fall 200X)  Fall 2016
Meeting times and location  Mondays, 11:30am-2:40pm, RICH 208

Course Description and Prerequisites

Covers numerical simulation of problems in Earth Sciences and Petroleum Engineering using high performance computing (HPC). Students are expected to develop a parallel reservoir simulator as part of this course.
Graduate classification. Attendance will be limited to a maximum of 15 students.

Learning Outcomes or Course Objectives

The objectives of the course are for students to:
1. Develop an in-depth understanding of current approaches to building and simulating complex models of flow in porous media and Earth sciences using high performance computing.
2. Bridge the gap between reservoir modeling and simulation, high performance computing and parallel implementations, having a solid theoretical background in parallel architectures (software and hardware) and practical solutions to real world large-scale problems faced by scientist and petroleum engineers.

Instructor Information

Name  Dr. John Killough, Dr. Vivek Sarin and Dr. George Moridis
Telephone number  (979) 862-6416 (Killough); (979) 458-2214 (Sarin)
Email address  jkillough@tamu.edu; sarin@tamu.edu; gjmoridis@lbl.gov
Office hours  TBD
Office location  TBD

Textbook and/or Resource Material

The main source of material for the course will be a series of notes and slides handed out to the students. Complementary textbooks are:
- *Introduction to Parallel Computing, 2nd ed.*, by A. Grama, A. Gupta, G. Karypis, and V. Kumar, Addison-Wesley
- *An Introduction to Parallel Algorithms*, by Joseph JaJa, Addison-Wesley Publishing Company
- *Numerical Analysis, Burden and Faires*, 2005
- *Matrix Computations*, Golub and Van Loan, 1996
- *Theory and Practice of Finite Elements* by Alexandre Ern and Jean-Luc Guermond, Springer, 2004
- *Petroleum Reservoir Simulation*, by Khalid Aziz and A. Settari, 1979
Grading Policies

Homework .......................................................................................................................... (50%)
Final Project Presentation .................................................................................. (15%)
Final Project Report ........................................................................................................ (35%)
Total ........................................................................................................................................ (100%)

Grading Scale
A........................................................................................................................................... 90-100%
B............................................................................................................................................... 80-89%
C............................................................................................................................................... 70-79%
D............................................................................................................................................... 60-69%
F............................................................................................................................................... 0-59%

Course Topics, Calendar of Activities, Major Assignment Dates (TENTATIVE)

<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>08/29/16</td>
<td>Intro to the course and Reservoir Simulation – Killough/Sarin/Moridis</td>
</tr>
<tr>
<td>2</td>
<td>09/05/16</td>
<td>Intro to reservoir simulation and numerical computing (linear solvers, numerical linear algebra, etc) – Killough</td>
</tr>
<tr>
<td>3</td>
<td>09/12/16</td>
<td>Intro to reservoir simulation and numerical computing (linear solvers, numerical linear algebra, etc) – Killough</td>
</tr>
<tr>
<td>4</td>
<td>09/19/16</td>
<td>Parallel computing technology – Sarin</td>
</tr>
<tr>
<td>5</td>
<td>09/26/16</td>
<td>Algorithms – Sarin</td>
</tr>
<tr>
<td>6</td>
<td>10/03/16</td>
<td>Programming (MPI) – Sarin</td>
</tr>
<tr>
<td>7</td>
<td>10/10/16</td>
<td>Programming (OpenMP) – Sarin</td>
</tr>
<tr>
<td>8</td>
<td>10/17/16</td>
<td>Numerical algorithms (linear Systems) – Sarin</td>
</tr>
<tr>
<td>9</td>
<td>10/24/16</td>
<td>Numerical algorithms – Sarin</td>
</tr>
<tr>
<td>10</td>
<td>10/31/16</td>
<td>Numerical algorithms – Sarin</td>
</tr>
<tr>
<td>11</td>
<td>11/07/16</td>
<td>Simulation Project</td>
</tr>
<tr>
<td>12</td>
<td>11/14/16</td>
<td>Reservoir Simulation Code – Parallelization - Killough</td>
</tr>
<tr>
<td>13</td>
<td>11/21/16</td>
<td>Tutorial on Nexus Comercial software – Killough - Hands-on session (lecture by Halliburton)</td>
</tr>
<tr>
<td>14</td>
<td>11/28/16</td>
<td>Reservoir Simulation Code – Parallelization - Moridis</td>
</tr>
<tr>
<td>15</td>
<td>12/05/16</td>
<td>Redefined day - Final project assignment</td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

Since general reservoir simulation concepts will be discussed with no emphasis on specific areas, all engineering and computer science majors are welcome to attend the class. Also, mathematics and applied mathematics students are well suited to attend this course, although there will be no specific emphasis on the numerical algorithms and theorems proofs. Students are expected to know the following: Basic Reservoir Simulation or equivalent class; Linear Algebra and Matrix Computations of equivalent class; Advanced Calculus or equivalent class; Programming experience. Matlab, Fortran, C, C++.

Students may refer to Students Rule 07 for attendance policies: http://student-rules.tamu.edu/rule07
Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity

For additional information please visit: http://www.tamu.edu/aggiehonor

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”
policies

Grading

- 5% Experience Breakdown
- 2% IRB Certification
- 20% Shopping Support
- 20% Midterm Exam
- 33% Final Project Cycle
- 10% Class Participation + Quizzes
- 10% Reading Reflections Blog

The grading scale expected to be used is

A > 90% > B > 80% > C > 70% > D > 60% > F.

The instructor reserves the right to provide a relative or absolute curve to any assignment's grade (note that such a curve has often not been applied, and should not be assumed).

Late Assignments: Each project will have a specified date and time when intermediate and final deliverables are due. If deliverables are turned in late, this may result in a penalty applied to the overall project grade. Expect to lose up to 1% per day.

If your grade for a deliverable on a team assignment was less than 90, you have an opportunity to submit an improved version of your deliverable. See Regrade Deliverable Request Policy.

Course Meetings, Participation, Make-ups

Attendance is required. It may be recorded. Class participation, for which attendance is necessary, but not sufficient, constitutes 10% of the course grade. To get credit for attendance and participation, you must bring a big, bold, printed name tag (like this) to every lecture and lab.

Your participation grade will be based on how you thoughtfully participate, in each class meeting, in discussions about the readings and assignments. Be prepared! The blog post assignment is designed to prepare you to participate in class. I encourage you to perform your own version of this assignment for every meeting of this class and for other classes. Once per week is generally required.

Students seeking excused absences must notify the teaching team ahead of time about any planned missed classes. Unexcused absences may result in a lower course grade.

Absent students might miss quizzes, which may be given any time without notice. Quizzes will not be made up without prior approval of excused absence.

In accord with TAMU Student Rule 7, students with excused absences will be provided with a satisfactory alternative to missed classwork. The makeup assignment for attendance, quizzes and class participation, for

http://ecologylab.net/courses/hcc/policies.html
Appendix Q – Institutional Profile

January 2, 2017

TO: External Program Reviewers and Program Accreditors

FROM: Michael T. Stephenson
Associate Provost for Academic Affairs and SACSCOC Accreditation Liaison

RE: Information required for USDOE Accrediting Bodies

Texas A&M University is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award baccalaureate, master's, and doctoral degrees. Consistent with comprehensive standard 3.13.1, the following provides the institution’s official position on its purpose, governance, programs, degrees, diplomas, certificates, personnel, finances, and constituencies and is published in official university documents as noted.

Purpose

Classified by the Carnegie Foundation as a Research Doctoral University (Highest Research Activity), Texas A&M embraces its mission of the advancement of knowledge and human achievement in all its dimensions. The research mission is a key to advancing economic development in both public and private sectors. Integration of research with teaching prepares students to compete in a knowledge-based society and to continue developing their own creativity, learning, and skills beyond graduation.

The institution’s official mission statement, published both on the institution’s web page as well as in its annual university catalog, is:

Texas A&M University (Texas A&M) is dedicated to the discovery, development, communication and application of knowledge in a wide range of academic and professional fields. Its mission of providing the highest quality undergraduate and graduate programs is inseparable from its mission of developing new understandings through research and creativity. It prepares students to assume roles in leadership, responsibility and service to society. Texas A&M assumes as its historic trust the maintenance of freedom of inquiry and an intellectual environment nurturing the human mind and spirit. It welcomes and seeks to serve persons of all racial, ethnic and geographic groups, women and men alike, as it addresses the needs of an increasingly diverse population and a global economy. In the twenty-first century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions.

Governance

The governance of the institution was described in the 2012 certification of compliance submitted to SACSCOC.

Texas A&M University at College Station, the flagship institution of the Texas A&M University System, has branch campuses located in Galveston, Texas and Doha, Qatar. A ten-member Board of Regents, appointed by the Governor, directs the Texas A&M System. The appointment of each Regent follows Texas Education Code (TEC, Chapter 85, Section 21).
TEC outlines the duties and responsibilities of the Board of Regents. These responsibilities are also defined in System Policy 02.01 Board of Regents and TEC 51.352. The Board elects two officers: Chair and Vice Chair. There are four standing committees: Audit, Academic & Student Affairs, Finance, and Buildings & Physical Plant. Special committees may be appointed by the Chair with Board approval.

At Texas A&M University the President is the chief executive officer; the President is not the presiding officer of the Board of Regents. The President reports to the state-appointed Board of Regents through the Chancellor of the Texas A&M University System. System Policy 2.05 Presidents of System Member Universities defines the duties of the President. The appointment of the President follows conditions set forth in System Policy 01.03 Appointing Power and Terms and Conditions of Employment, section 2.2.

**Personnel**

The institution is led by the President and members of his cabinet:

- Michael K. Young, President
- Karan L. Watson, Provost and Executive Vice President
- Jerry R. Strawser, Executive Vice President for Finance and Administration and CFO
- Michael Benedik, Vice Provost
- M. Dee Childs, Vice President for Information Technology and CIO
- Michael G. O’Quinn, Vice President for Government Relations
- Dr. Douglas Palmer, Interim Vice President and COO, TAMU-Galveston
- Barbara A. Abercrombie, Vice President for HR & Organizational Effectiveness
- Jessica Rubie, Associate Vice President for Strategic Initiatives
- Christine Stanley, Vice President and Associate Provost for Diversity
- Amy B. Smith, Senior Vice President and Chief Marking & Communications Officer
- Glen A. Laine, Vice President for Research
- Carrie L. Byington, Senior Vice President TAMU Health Science Center, Dean of the College of Medicine, and Vice Chancellor for Health Services
- Daniel J. Pugh, Sr., Vice President for Student Affairs
- Gen Joe E. Ramirez, Jr. Commandant, Corps of Cadets
- Amy B. Smith, Senior Vice President and Chief Marketing and Communications Officer
- Scott Woodward, Director of Athletics

**Programs, Degrees, Diplomas, and Certificates**

See the Institutional Summary submitted to SACSCOC

**Finances**

See the Financial Profile 2016 submitted to SACSCOC
GENERAL INFORMATION

Name of Institution  Texas A&M University

Name, Title, Phone number, and email address of Accreditation Liaison
Michael T. Stephenson
Associate Provost for Academic Affairs and SACSCOC Accreditation Liaison
979.845.4016
mstephenson@tamu.edu

Name, Title, Phone number, and email address of Technical Support person for the Compliance Certification
Alicia M. Dorsey
Assistant Provost for Institutional Effectiveness
979.862.2918
amdorsey@tamu.edu

IMPORTANT:

Accreditation Activity (check one):

☒ Submitted at the time of Reaffirmation Orientation
☐ Submitted with Compliance Certification for Reaffirmation
☐ Submitted with Materials for an On-Site Reaffirmation Review
☐ Submitted with Compliance Certification for Fifth-Year Interim Report
☐ Submitted with Compliance Certification for Initial Candidacy/Accreditation Review
☐ Submitted with Merger/Consolidations/Acquisitions
☐ Submitted with Application for Level Change

Submission date of this completed document:  September 29, 2015
1. Level of offerings (Check all that apply)

☐ Diploma or certificate program(s) requiring less than one year beyond Grade 12
☐ Diploma or certificate program(s) of at least two but fewer than four years of work beyond Grade 12
☐ Associate degree program(s) requiring a minimum of 60 semester hours or the equivalent designed for transfer to a baccalaureate institution
☐ Associate degree program(s) requiring a minimum of 60 semester hours or the equivalent not designed for transfer
☒ Four or five-year baccalaureate degree program(s) requiring a minimum of 120 semester hours or the equivalent
☒ Professional degree program(s)
☒ Master's degree program(s)
☒ Work beyond the master's level but not at the doctoral level (such as Specialist in Education)
☒ Doctoral degree program(s)
☐ Other (Specify) _____

2. Types of Undergraduate Programs (Check all that apply)

☐ Occupational certificate or diploma program(s)
☐ Occupational degree program(s)
☐ Two-year programs designed for transfer to a baccalaureate institution
☒ Liberal Arts and General
☒ Teacher Preparatory
☒ Professional
☐ Other (Specify) _____

GOVERNANCE CONTROL

Check the appropriate governance control for the institution:

☐ Private (check one)

☐ Independent, not-for-profit

Name of corporation OR
Name of religious affiliation and control: _____

☐ Independent, for-profit *

If publicly traded, name of parent company: _____
Public state *(check one)*

☐ Not part of a state system, institution has own independent board

☒ Part of a state system, system board serves as governing board

☐ Part of a state system, system board is super governing board, local governing board has delegated authority

☐ Part of a state system, institution has own independent board

* If an institution is part of a state system or a corporate structure, a description of the system operation must be submitted as part of the Compliance Certification for the decennial review. See Commission policy “Reaffirmation of Accreditation and Subsequent Reports” for additional direction.*

INSTITUTIONAL INFORMATION FOR REVIEWERS

Directions:
*Please address the following and attach the information to this form.*

1. **History and Characteristics**
   Provide a brief history of the institution, a description of its current mission, an indication of its geographic service area, and a description of the composition of the student population. Include a description of any unusual or distinctive features of the institution and a description of the admissions policies (open, selective, etc.). If appropriate, indicate those institutions that are considered peers. Please limit this section to one-half page.

2. **List of Degrees**
   List all degrees currently offered (A. S., B.A., B.S., M.A., Ph.D., for examples) and the majors or concentrations within those degrees, as well as all certificates and diplomas. For each credential offered, indicate the number of graduates in the academic year previous to submitting this report. Indicate term dates.

3. **Off-Campus Instructional Locations and Branch Campuses**
   List all locations where 50% or more credit hours toward a degree, diploma, or certificate can be obtained primarily through traditional classroom instruction. Report those locations in accord with the Commission's definitions and the directions as specified below.

*Off-campus instructional sites*—a site located geographically apart from the main campus at which the institution offers 50% or more of its credit hours for a diploma, certificate, or degree. This includes high schools where courses are offered as part of dual enrollment. For each site, provide the information below. *The list should include only those sites reported and approved by SACSCOC.* Listing unapproved sites below does not constitute reporting them to SACSCOC. In such cases when an institution has initiated an off-campus instructional site as described above without prior approval by SACSCOC, a prospectus for approval should be submitted immediately to SACSCOC.
<table>
<thead>
<tr>
<th>Name of Site</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 50% or more credits hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
</table>

**Institutions with off-campus instructional sites** at which the institution offers 25-49% credit hours for a diploma, certificate, or degree—including high schools where courses are offered as dual enrollment—are required to notify SACSCOC in advance of initiating the site. For each site, provide the information below.

<table>
<thead>
<tr>
<th>Name of Site (Indicate if site is currently active or inactive. If inactive, date of last course offerings and date of projected reopening)</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Notified SACSCOC by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 25-49% credit hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
</table>

**Branch campus**—an instructional site located geographically apart and independent of the main campus of the institution. A location is independent of the main campus if the location is (1) permanent in nature, (2) offers courses in educational programs leading to a degree, certificate, or other recognized educational credential, (3) has its own faculty and administrative or supervisory organization, and (4) has its own budgetary and hiring authority. The list should include only those branch campuses reported and approved by SACSCOC. Listing unapproved branch campuses below does not constitute reporting them to SACSCOC. A prospectus for an unapproved branch campuses should be submitted immediately to SACSCOC.

<table>
<thead>
<tr>
<th>Name of Branch Campus</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs (specific degrees, certificates, diplomas) with 50% or more credits hours offered at the branch campus</th>
<th>Is the campus currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
</table>
4. Distance and Correspondence Education
Provide an initial date of approval for your institution to offer distance education. Provide a list of credit-bearing educational programs (degrees, certificates, and diplomas) where 50% or more of the credit hours are delivered through distance education modes. For each educational program, indicate whether the program is delivered using synchronous or asynchronous technology, or both. For each educational program that uses distance education technology to deliver the program at a specific site (e.g., a synchronous program using interactive videoconferencing), indicate the program offered at each location where students receive the transmitted program. Please limit this description to one page, if possible.

5. Accreditation

(1) List all agencies that currently accredit the institution and any of its programs and indicate the date of the last review by each.

(2) If SACS Commission on Colleges is not your primary accreditor for access to USDOE Title IV funding, identify which accrediting agency serves that purpose.

(3) List any USDOE recognized agency (national and programmatic) that has terminated the institution’s accreditation (include the date, reason, and copy of the letter of termination) or list any agency from which the institution has voluntarily withdrawn (include copy of letter to agency from institution).

(4) Describe any sanctions applied or negative actions taken by any USDOE-recognized accrediting agency (national, programmatic, SACSCOC) during the two years previous to the submission of this report. Include a copy of the letter from the USDOE to the institution.

6. Relationship to the U.S. Department of Education
Indicate any limitations, suspensions, or termination by the U.S. Department of Education in regard to student financial aid or other financial aid programs during the previous three years. Report if on reimbursement or any other exceptional status in regard to federal or state financial aid.

Document History
Adopted: September 2004
Revised: March 2011
Revised: January 2014


1. History and Characteristics

Provide a brief history of the institution, a description of its current mission, an indication of its geographic service area, and a description of the composition of the student population. Include a description of any unusual or distinctive features of the institution and a description of the admissions policies (open, selective, etc.). If appropriate, indicate those institutions that are considered peers. Please limit this section to one-half page.

History. Texas A&M University was established in 1871 as the state’s first public institution of higher education and opened for classes in 1876. We are now one of a select few institutions in the nation to hold land grant, sea grant (1971) and space grant (1989) designations. We are also one of few universities to host a presidential library; the George Bush Presidential Library and Museum opened in 1997. A mandatory military component was a part of the land grant designation until 1965 and today we are one of only three institutions with a full-time corps of cadets, leading to commissions in all branches of service. We have two branch campuses, one in Galveston, Texas, (established in 1962, officially merged with Texas A&M in 1991) and one in Doha, Qatar (established in 2003). In 2001 we were admitted to the Association of American Universities (AAU) and in 2004 to Phi Beta Kappa. We are classified by the Carnegie Foundation as a Research University (very high research activity).

Mission. Texas A&M University is dedicated to the discovery, development, communication, and application of knowledge in a wide range of academic and professional fields. Its mission of providing the highest quality undergraduate and graduate programs is inseparable from its mission of developing new understandings through research and creativity. It prepares students to assume roles in leadership, responsibility and service to society. Texas A&M assumes as its historic trust the maintenance of freedom of inquiry and an intellectual environment nurturing the human mind and spirit. It welcomes and seeks to serve persons of all racial, ethnic and geographic groups as it addresses the needs of an increasingly diverse population and a global economy. In the 21st century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions.

Enrollment Profile.

77.42% Undergraduate, 18.41% Graduate, 4.02% Professional, and 0.14% Post-Doc Certificate

Undergraduate Students:
93.58% Texas Residents, 3.96% non-Texas Residents, 2.46% non-Texas, non-US Residents;
62.41% White, 3.11% Black, 22.33% Hispanic, 6.21% Asian

Graduate Students:
45.09% Texas Residents, 16.57% non-Texas Residents, 38.34% non-Texas, non-US Residents
Admissions Process. Selective. Automatic admission for Texas resident applicants in the top 10% of their high school graduating class; automatic admission for applicants who rank in the top 25% of their high school graduating class and achieve a combined (old) SAT math and SAT critical reading score of at least 1300 with a test score of at least 600 in each component, or combined (newly redesigned) SAT math and SAT evidence based reading and writing (EBRW) score of at least 1360 with a test score of at least 620 in Math and 660 in EBRW, or 30 composite on the ACT with a 27 in the math and English components; review of all other applicants based on academic potential, distinguishing characteristics, exceptional circumstances and personal achievements.

Peer Institutions. Georgia Institution of Technology, Ohio State University, Pennsylvania State University, Purdue University, University of California- Berkeley, Davis, Los Angeles, San Diego, University of Florida, University of Illinois – Champaign/Urbana, University of Michigan, University of Minnesota, University of North Carolina – Chapel Hill, University of Texas – Austin, and University of Wisconsin – Madison.
2. List of Degrees

List all degrees currently offered (A. S., B.A., B.S., M.A., Ph.D., for examples) and the majors or concentrations within those degrees, as well as all certificates and diplomas. For each credential offered, indicate the number of graduates in the academic year previous to submitting this report. Indicate term dates.

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3. Off-Campus Instructional Locations and Branch Campuses

List all locations where 50% or more credit hours toward a degree, diploma, or certificate can be obtained primarily through traditional classroom instruction. Report those locations in accord with the Commission's definitions and the directions as specified below.

**Off-campus instructional sites**—a site located geographically apart from the main campus at which the institution offers 50% or more of its credit hours for a diploma, certificate, or degree. This includes high schools where courses are offered as part of dual enrollment. For each site, provide the information below. The list should include only those sites reported and approved by SACSCOC. Listing unapproved sites below does not constitute reporting them to SACSCOC. In such cases when an institution has initiated an off-campus instructional site as described above without prior approval by SACSCOC, a prospectus for approval should be submitted immediately to SACSCOC.

### Off-Campus Instructional Locations – 50% or more.

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<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 50% or more credits hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
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<td>Name of Site</td>
<td>Physical Address (street, city, state, country) Do not include PO Boxes.</td>
<td>Date Approved by SACSCOC</td>
<td>Date Implemented by the institution</td>
<td>Educational programs offered (specific degrees, certificates, diplomas) with 50% or more credits hours offered at each site</td>
<td>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------</td>
<td>-----------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Institute of Biosciences and Technology</td>
<td>2121 W. Holcombe Blvd. Houston, TX 77030</td>
<td>2000</td>
<td>2000</td>
<td>ORAL AND MAXILLOFACIAL PATHOLOGY CTGFA ORAL AND MAXILLOFACIAL RADIOLOGY CTGFA ORAL BIOLOGY MS ORAL BIOLOGY PHD ORTHODONTICS CTGFA PEDIATRIC DENTISTRY CTGFA PERIODONTICS CTGFA PROSTHODONTICS CTGFA</td>
<td>HEALTH ADMINISTRATION MHA MEDICINE MD</td>
</tr>
<tr>
<td>Rangel College of Pharmacy</td>
<td>1010 W. Avenue B. Kingsville, TX 78363</td>
<td>2011</td>
<td>2006</td>
<td></td>
<td>PHARMACY PHMD Yes</td>
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<tr>
<td>College of Medicine - Temple</td>
<td>2401 S. 31st Street Temple, TX 76508</td>
<td>2000</td>
<td>2000</td>
<td>MEDICINE MD</td>
<td>MEDICAL SCIENCES PHD</td>
</tr>
<tr>
<td>Clinical Learning Resource Center</td>
<td>Health Professions Building 3950 North A. W. Grimes Blvd. Round Rock, TX 78665</td>
<td>2011</td>
<td>2010</td>
<td>MEDICINE MD</td>
<td>NURSING BSN</td>
</tr>
<tr>
<td>Rural Public Health - McAllen Teaching Site</td>
<td>2101 South McColl Road McAllen, TX 78503</td>
<td>2011</td>
<td>2010</td>
<td>HEALTH POLICY AND MANAGEMENT MPH HEALTH PROMOTION AND COMMUNITY HEALTH SCIENCES MPH</td>
<td>NURSING BSN</td>
</tr>
<tr>
<td>Texas A&amp;M University School of Law</td>
<td>1515 Commerce St Fort Worth, TX 76102</td>
<td>2013</td>
<td>2013</td>
<td>HEALTH CARE LAW JM INTELLECTUAL PROPERTY ML INTELLECTUAL PROPERTY MJ JURISPRUDENCE MJ LAW JD LAWS ML</td>
<td></td>
</tr>
<tr>
<td>Houston Methodist Hospital</td>
<td>6670 Bertner Avenue, R2-216 Houston, TX 77030</td>
<td>2015</td>
<td>2015</td>
<td>MEDICINE MD</td>
<td></td>
</tr>
<tr>
<td>Baylor University Medical Center</td>
<td>3500 Gaston Avenue Dallas, TX 75246</td>
<td>2012</td>
<td>2011</td>
<td>MEDICINE MD</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Off-Campus Instructional Locations – 25%-49%.

<table>
<thead>
<tr>
<th>Name of Site (Indicate if site is currently active or inactive. If inactive, date of last course offerings and date of projected reopening)</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Notified SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 25-49% credit hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of State Health Services</td>
<td>1100 West 49th Austin, TX. 78756</td>
<td>2011</td>
<td>2004</td>
<td>HEALTH POLICY &amp; MANAGEMENT - MPH</td>
<td></td>
</tr>
</tbody>
</table>

### Branch Campuses

<table>
<thead>
<tr>
<th>Name of Branch Campus</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs (specific degrees, certificates, diplomas) with 50% or more credits hours offered at the branch campus</th>
<th>Is the campus currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas A&amp;M University at Galveston</td>
<td>200 Seawolf Pkwy. Galveston, TX 77553</td>
<td>1992</td>
<td>1991</td>
<td>MARINE BIOLOGY BS OFFSHORE &amp; COASTAL SYSTEMS ENGINEER BS MARINE BIOLOGY MS MARINE BIOLOGY PHD MARINE ENGINEERING TECHNOLOGY BS MARINE FISHERIES BS MARINE RESOURCES MANAGEMENT MMR MARINE SCIENCES BS MARINE TRANSPORTATION BS</td>
<td>Yes</td>
</tr>
</tbody>
</table>
4. Distance and Correspondence Education

Provide an initial date of approval for your institution to offer distance education. Provide a list of credit-bearing educational programs (degrees, certificates, and diplomas) where 50% or more of the credit hours are delivered through distance education modes. For each educational program, indicate whether the program is delivered using synchronous or asynchronous technology, or both. For each educational program that uses distance education technology to deliver the program at a specific site (e.g., a synchronous program using interactive videoconferencing), indicate the program offered at each location where students receive the transmitted program. Please limit this description to one page, if possible.

Initial Approval in February 2000

<table>
<thead>
<tr>
<th>Credit Bearing Degree Programs</th>
<th>Site</th>
<th>Synchronous/Asynchronous/Both</th>
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</thead>
<tbody>
<tr>
<td>AEROSPACE ENGINEERING</td>
<td>MENGRT</td>
<td>Asynchronous</td>
</tr>
<tr>
<td>AGRICULTURAL DEVELOPMENT</td>
<td>MAGRT</td>
<td>Asynchronous</td>
</tr>
<tr>
<td>AGRICULTURAL EDUCATION</td>
<td>EDD</td>
<td>Synchronous course offered worldwide via PC or LMS</td>
</tr>
<tr>
<td>AGRICULTURAL SYSTEMS MANAGEMENT</td>
<td>MS</td>
<td>Asynchronous</td>
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</tbody>
</table>

Texas A&M University at Qatar

<table>
<thead>
<tr>
<th>253 Texas A&amp;M Qatar Engineering Building Education City Al Luqta St Doha, Qatar</th>
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<tr>
<td>2005</td>
</tr>
<tr>
<td>2003</td>
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<tr>
<td>CHEMICAL ENGINEERING BS</td>
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<td>CHEMICAL ENGINEERING MS</td>
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<tr>
<td>CHEMICAL ENGINEERING MEN</td>
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<tr>
<td>ELECTRICAL ENGINEERING BS</td>
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<tr>
<td>MECHANICAL ENGINEERING BS</td>
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<tr>
<td>PETROLEUM ENGINEERING BS</td>
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<tr>
<td>Texas A&amp;M University at Qatar</td>
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Initial Approval in February 2000
<table>
<thead>
<tr>
<th></th>
<th>Degree</th>
<th>Layer</th>
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<tr>
<td>ANALYTICS</td>
<td>MS</td>
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<tr>
<td>BILINGUAL EDUCATION</td>
<td>MED</td>
<td></td>
<td>Asynchronous</td>
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<tr>
<td>BILINGUAL EDUCATION</td>
<td>MS</td>
<td></td>
<td>Asynchronous</td>
</tr>
<tr>
<td>BIOLOGICAL AND AGRI ENGINEERING</td>
<td>MENGR</td>
<td></td>
<td>Asynchronous</td>
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<tr>
<td>COMPUTER ENGINEERING</td>
<td>MENGR</td>
<td></td>
<td>Synchronous course offered worldwide via PC or LMS</td>
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<tr>
<td>CURRICULUM &amp; INSTRUCTION</td>
<td>EDD</td>
<td></td>
<td>Asynchronous</td>
</tr>
<tr>
<td>CURRICULUM &amp; INSTRUCTION</td>
<td>MED</td>
<td></td>
<td>Asynchronous</td>
</tr>
<tr>
<td>EDUC HUMAN RESOURCE DEVELOPMENT</td>
<td>MS</td>
<td></td>
<td>Asynchronous</td>
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<tr>
<td>EDUCATION FOR HEALTH CARE PROFESSIONALS</td>
<td>MS</td>
<td></td>
<td>Asynchronous</td>
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<tr>
<td>EDUCATIONAL ADMINISTRATION</td>
<td>MED</td>
<td></td>
<td>Asynchronous</td>
</tr>
<tr>
<td>EDUCATIONAL PSYCHOLOGY</td>
<td>MED</td>
<td></td>
<td>Synchronous course offered worldwide via PC or LMS</td>
</tr>
<tr>
<td>EDUCATIONAL PSYCHOLOGY</td>
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<td></td>
<td>Asynchronous</td>
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<tr>
<td>EDUCATIONAL TECHNOLOGY</td>
<td>MED</td>
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<tr>
<td>ELECTRICAL ENGINEERING</td>
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<td></td>
<td>Asynchronous</td>
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<tr>
<td>ENERGY</td>
<td>MS</td>
<td></td>
<td>Asynchronous</td>
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<tr>
<td>ENGINEERING</td>
<td>MENGR</td>
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<td>Asynchronous</td>
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<tr>
<td>ENGINEERING SYSTEMS MANAGEMENT</td>
<td>MS</td>
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<td>Asynchronous</td>
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<tr>
<td>EPIDEMIOLOGY</td>
<td>MPH</td>
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<td>Asynchronous</td>
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<tr>
<td>FAMILY NURSE PRACTITIONER</td>
<td>MSN</td>
<td>Bryan, TX</td>
<td>Both</td>
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<td>HEALTH EDUCATION</td>
<td>MS</td>
<td></td>
<td>Asynchronous</td>
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<tr>
<td>INDUSTRIAL DISTRIBUTION</td>
<td>MID</td>
<td>College Station, TX</td>
<td>Both</td>
</tr>
<tr>
<td>INDUSTRIAL ENGINEERING</td>
<td>MENGR</td>
<td></td>
<td>Asynchronous</td>
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<tr>
<td>LAWS</td>
<td>LLM</td>
<td></td>
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<tr>
<td>JURISPRUDENCE</td>
<td>MJ</td>
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<td>Asynchronous</td>
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<tr>
<td>MARITIME ADMINISTRATION &amp; LOGISTICS</td>
<td>MMAL</td>
<td></td>
<td>Asynchronous</td>
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<tr>
<td>MATHEMATICS</td>
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<td></td>
<td>Asynchronous</td>
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<td>MECHANICAL ENGINEERING</td>
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<tr>
<td>NATURAL RESOURCES DEVELOPMENT</td>
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<td>NURSING</td>
<td>BSN</td>
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<tr>
<td>NURSING EDUCATION</td>
<td>MSN</td>
<td>Bryan, TX</td>
<td>Both</td>
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<tr>
<td>PETROLEUM ENGINEERING</td>
<td>MENGR</td>
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<tr>
<td>Program</td>
<td>Degree</td>
<td>Location</td>
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<td>Plant Breeding</td>
<td>MS</td>
<td>Asynchronous</td>
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<tr>
<td>Plant Breeding</td>
<td>PHD</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Poultry Science</td>
<td>MAGR</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Public Service and Administration</td>
<td>MPSA</td>
<td>College Station, TX</td>
<td>Both</td>
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<tr>
<td>Recreation &amp; Resources Development</td>
<td>MRRD</td>
<td>College Station, TX</td>
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<td>Safety Engineering</td>
<td>MS</td>
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<td>Special Education</td>
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<td>Special Education</td>
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<td>Sports Management</td>
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<td>Statistics</td>
<td>MS</td>
<td>Asynchronous</td>
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<tr>
<td>Wildlife Science</td>
<td>MWSC</td>
<td>Asynchronous</td>
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<tr>
<td>Military Land Sustainability</td>
<td>CERT</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Advanced International Affairs</td>
<td>CERT</td>
<td>College Station, TX; Houston, TX</td>
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</tr>
<tr>
<td>Agriculture E-Learning Development</td>
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<tr>
<td>Applied Behavior Analysis</td>
<td>CERT</td>
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<tr>
<td>Education for Health Care Professionals</td>
<td>CERT</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Energy</td>
<td>CERT</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Energy Sustainability Engineering</td>
<td>CERT</td>
<td>Asynchronous</td>
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<td>Forensic Health Care</td>
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<tr>
<td>Homeland Security</td>
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<td></td>
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<tr>
<td>Industrial Data Analytics</td>
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<td></td>
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<tr>
<td>National Security Affairs</td>
<td>CERT</td>
<td>College Station, TX; Livermore, CA; Sandia, NM</td>
<td>Both</td>
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<tr>
<td>Nonprofit Management</td>
<td>CERT</td>
<td>College Station, TX; Houston, TX</td>
<td>Both</td>
</tr>
<tr>
<td>Public Health</td>
<td>CERT</td>
<td>McAllen, TX</td>
<td>Both</td>
</tr>
<tr>
<td>Regulatory Science in Food Systems</td>
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<tr>
<td>Safety Engineering</td>
<td>CERT</td>
<td>Asynchronous</td>
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<tr>
<td>Applied Statistics</td>
<td>CERT</td>
<td>Asynchronous</td>
<td></td>
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</tbody>
</table>
5. Accreditation

<p>| Accreditation Council for Pharmacy Education | The pharmacy professional degree program | Last Review: April 2014 |
| American Council for Construction Education | The B.S. and M.S. curriculum in construction science | Last Review: 2011 (B.S.) and 2012 (M.S.) |
| American Psychological Association | The clinical psychology program in the Department of Psychology and the counseling psychology and school psychology program in the Department of Educational Psychology | Last Review: April/May 2015 |
| American Veterinary Medical Association Council on Education | The veterinary medicine degree program | Last Review: 2013 |
| Association to Advance Collegiate Schools of Business (AACSB) | The business baccalaureate, master’s, and doctoral programs in Mays Business School | Last Review: Fall 2012 |
| Commission on Accreditation for Dietetics Education | The dietetic track in the nutritional sciences curriculum and the dietetic internship program | Last review: January 2015 |
| Commission on Accreditation of Athletic Training Education (caATe) | Athletic Training (College of Education) | Last Review: 2013 |
| Commission on Accreditation of Healthcare Management Education | The Master of Health Administration | Last Review: Fall 2010 |
| Commission on Collegiate Nursing Education and the Texas Board of Nursing | The nursing degree programs | Last Review: July 2013 |
| Commission on Dental Accreditation. (CODA) | The degree programs in dentistry and dental hygiene and the certificate programs in the ten advanced dental graduate education programs | Last Review: August 2013 |
| Commission on English Language Program Accreditation (CEA) | The English Language Institute | Last review: 2013 |
| Computing Accreditation Commission of ABET | The computer science program | Last review: 2010 |
| Council of the Section of Legal Education and Admissions to the Bar of the American Bar Association | Texas A&amp;M University School of Law | Last review: 2010 |
| Council on Education for Public Health | The School of Public Health degree programs | Last Review: April 2011 |</p>
<table>
<thead>
<tr>
<th>Accreditation Organization</th>
<th>Programs Offered</th>
<th>Last Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Accreditation Commission of ABET</td>
<td>Undergraduate programs in aerospace, biological and agricultural, biomedical, chemical, civil, computer, electrical, industrial, mechanical, nuclear, ocean, petroleum and radiological health engineering</td>
<td>2010-2011 (College Station) and 2015 (Qatar)</td>
</tr>
<tr>
<td>Engineering Accreditation Commission of ABET</td>
<td>Maritime systems engineering (Offshore and Coastal Systems Engineering) – TAMU Galveston</td>
<td>Last review: 2010-11</td>
</tr>
<tr>
<td>Engineering Technology Accreditation Commission of ABET</td>
<td>The electronic systems engineering technology program, the manufacturing and mechanical engineering technology program,</td>
<td>Last Review: 2013-2014 (College Station) and 2015 (Qatar)</td>
</tr>
<tr>
<td>Engineering Technology Accreditation Commission of ABET</td>
<td>marine engineering technology – TAMU Galveston</td>
<td>Last Review: 2013-14</td>
</tr>
<tr>
<td>Forensic Science Education Programs Accreditation Commission (FEPAC)</td>
<td>The forensics and investigative sciences program</td>
<td>Last Site Visit: October 2011 Accreditation dates: 1/2012-1/2017)</td>
</tr>
<tr>
<td>Institute of Food Technologists</td>
<td>The food science and technology curriculum</td>
<td>Last Review: December 2011</td>
</tr>
<tr>
<td>Landscape Architectural Accreditation Board</td>
<td>The curriculum in landscape architecture</td>
<td>Last Review: July 2015</td>
</tr>
<tr>
<td>Liaison Committee on Medical Education</td>
<td>The medical education degree program</td>
<td>Last Review: August 2012</td>
</tr>
<tr>
<td>National Architectural Accrediting Board</td>
<td>The curriculum in architecture</td>
<td>Last Review: March 2013</td>
</tr>
<tr>
<td>Network of Schools of Public Policy, Affairs, and Administration</td>
<td>The Master of Public Service and Administration degree in the Bush School of Government and Public Service</td>
<td>Last review: April 2014</td>
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<tr>
<td>National Recreation and Park Association</td>
<td>The curriculum in recreation, park and tourism sciences</td>
<td>Last Review: June 2010</td>
</tr>
<tr>
<td>Planning Accreditation Board</td>
<td>The Master of Urban Planning curriculum</td>
<td>Last Review: 2013</td>
</tr>
<tr>
<td>Society for Range Management</td>
<td>The curriculum in rangeland ecology and management</td>
<td>Last Review: 2006</td>
</tr>
<tr>
<td>Society of American Foresters</td>
<td>The curriculum in forestry</td>
<td>Last Review: 2013</td>
</tr>
<tr>
<td>State Board of Educator Certification Texas Education Agency</td>
<td>Programs in professional education and degrees conferred by Texas A&amp;M University</td>
<td>Last review 2011</td>
</tr>
</tbody>
</table>

(2) If SACS Commission on Colleges is not your primary accreditor for access to USDOE Title IV funding, identify which accrediting agency serves that purpose.
(3) List any USDOE recognized agency (national and programmatic) that has terminated the institution’s accreditation (include the date, reason, and copy of the letter of termination) or list any agency from which the institution has voluntarily withdrawn (include copy of letter to agency from institution).

None.

(4) Describe any sanctions applied or negative actions taken by any USDOE-recognized accrediting agency (national, programmatic, SACSCOC) during the two years previous to the submission of this report. Include a copy of the letter from the USDOE to the institution.

None.

6. Relationship to the U.S. Department of Education.

Texas A&M University does not have any limitations or suspensions, nor have we been terminated by the U.S. Department of Education in regard to student financial aid or other financial aid programs during the previous three years. We are not on reimbursement nor do we have any other exceptional status in regard to federal or state financial aid.
Nancy M. Amato
http://parasol.tamu.edu/~amato

Parasol Lab, Dept. of Computer Science and Engineering
Texas A&M University
College Station, TX 77843-3112

office phone: (979) 862-2275
fax: (979) 458-0718
email: amato@tamu.edu

Professional Preparation

Ph.D. in Computer Science, University of Illinois at Urbana-Champaign, January 1995.
Ph.D. Thesis: *Parallel Algorithms for Convex Hulls and Proximity Problems*
Thesis advisor: Prof. Franco P. Preparata

M.S. in Computer Science, University of California at Berkeley, May 1988.
M.S. Thesis: *Reversing Trains: A Turn of the Century Sorting Problem*
Thesis advisor: Prof. Manuel Blum

B.S. in Mathematical Sciences, Stanford University, June 1986.

Appointments

Texas A&M University, College Station, TX (1/95–present)
Senior Director of Honors Programs, College of Engineering (9/14–present)
Interim Department Head, Department of Computer Science and Engineering (8/13–8/14)
Unocal Professor, Department of Computer Science and Engineering (9/11–present)
Professor, Computer Department of Science and Engineering (9/04–present)
Associate Professor, Department of Computer Science (9/00-8/04)
Assistant Professor, Department of Computer Science (1/95-8/00)
Co-Director, Parasol Laboratory (1998–present)
Deputy Director, Institute for Applied Mathematics and Computational Science (6/10–7/13)
Chair, Alliance for Bioinformatics, Computational Biology, and Systems Biology (8/07–7/13)
Past Chair (9/10-8/11), Chair (8/09-8/10), Council of Principal Investigators
Member, Molecular Biophysics Training Program Faculty (2001–2007)

Honors and Awards (selected)

Fellow, Association for Computing Machinery (ACM), 2015.
Distinguished Alumni Award, Dept. Computer Science, Univ. Illinois, 2015
Named to Robohub 25 Women in Robotics You Need to Know About – 2015.
Best Paper Award, 29th Int. Conf. on Supercomputing (ICS), 2015.
Best Paper Award, 23rd Int. Conf. Parallel Architectures and Compilation Techniques (PACT), 2014.
NCWIT Harrold and Notkin Research and Graduate Mentoring Award, 2014.
Fellow, American Association for the Advancement of Science (AAAS), 2013.
Betty M. Unterberger Award for Outstanding Service to Honors Education, Texas A&M, 2013.
AFS Distinguished Achievement Award for Teaching (University Level), Texas A&M, 2011.
Fellow, Institute of Electrical and Electronics Engineers (IEEE), 2010.
NSF Faculty Early Career Development (CAREER) Award, 1996.

Representative Publications ([1-5] most closely related + [6-10] other relevant)


Synergistic Activities (selected)


4. Student Research Supervision (selected): Graduated 21 PhD students as primary advisor or co-advisor (11 current) and 2 others as non-primary co-advisor; 10 went to faculty positions (University of Albany; GMU; UNM; Iowa State; WUSTL; Texas Wesleyan; U. Richmond; U. South-Sewanee; ITAM, Mexico; UDLAP, Mexico), 8 went to industry or government research labs (ABB; IBM TJ Watson; Google; JPL; LLNL; NRL; NSA; Qualcomm; ETRI, Korea), 2 went to industry, and 3 are currently postdocs. Supervised 22 masters students; 6 went on to PhD programs. Supervised more than 100 undergrads and more than 10 high school students, a majority from underrepresented groups.
Riccardo Bettati, Ph.D.

Professional Preparation
B.S.  Swiss Federal Institute of Technology, Zürich  Computer Eng.  1988
Ph.D. University of Illinois at Urbana-Champaign  Computer Science  1994
PostDoc University of California at Berkeley  Networking  1994-1995

Appointments
2010-2015  Director, Texas A&M Center for Information Assurance and Security
2007-  Professor, Computer Science, Texas A&M University
2001-2007  Associate Professor, Computer Science, Texas A&M University
1995-2001  Assistant Professor, Computer Science, Texas A&M University

Related Products

Other Significant Products
4. Yong Guan, Xinwen Fu, Riccardo Bettati, and Wei Zhao “A Quantitative Analysis of Anonymous Communications.” Second Place at the 2002 ACM International (Graduate) Student Research Contest.


Synergistic Activities
PROFESSIONAL PREPARATION

Ph.D. Computer Science, Georgia Institute of Technology
Dissertation: Tamper-Resilient Methods for Web-Based Open Systems
Advised by Ling Liu; Co-Advised by William B. Rouse (ISYE) 2007

M.S. Computer Science, Stanford University 2001

M.S. Engineering-Economic Systems & Operations Research, Stanford University
[Accepted to Ph.D. program] 2000

B.A. Economics, Duke University, Graduated magna cum laude 1996

APPOINTMENTS

Department of Computer Science & Engineering, Texas A&M University
Associate Professor (with tenure) 2013-present
Assistant Professor 2007-2013

Google (Mountain View)
Visiting Scientist 2015

FIVE MOST RELATED PRODUCTS (* = student under my supervision)


**Five Significant Products** (* = student under my supervision)


**Synergistic Activities**

I have organized a series of four “hackathons” targeted at the undergraduate population at Texas A&M. These hackathons -- informal collaborative programming environments meant to promote teamwork and creativity -- have attracted from 30 to 100 students for a full-day. The most recent hackathon in collaboration with the College of Architecture (http://www.arch.tamu.edu/diversity/events/buildday-2016/) focused on diversity, social justice, and inclusion within Texas A&M University and in its home cities of Bryan/College Station.

Creator of a first-year undergraduate small-group seminar series on the “Social Web” to encourage non-majors to engage with concepts in Computer Science, as well as advanced undergraduate and graduate courses on “Data Science” and “Internet-Scale Data Management”.

I have made a targeted outreach effort to underrepresented groups by speaking to visiting high school students (La Joya High School), participating in the Summer Transfer Engineering Workshop for attracting students from Texas A&M International University in Laredo, Texas and hosting local high school students as part of Bryan Collegiate Job Shadow Day.

Maintainer of multiple spam and social media datasets for use by the research community at-large, hosted at http://infolab.tamu.edu/data/.
PROFESSIONAL PREPARATION

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Major</th>
<th>Degree</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xi’an Jiaotong University</td>
<td>Xi’an, Shaanxi, China</td>
<td>Electrical Engineering</td>
<td>B.S.</td>
<td>1995</td>
</tr>
<tr>
<td>Chinese Academy of Science</td>
<td>Beijing, China</td>
<td>Computer Vision</td>
<td>M.S.</td>
<td>1998</td>
</tr>
</tbody>
</table>

APPOINTMENTS

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-2012</td>
<td>Assistant Professor, Department of Computer Science and Engineering, Texas A&amp;M University</td>
</tr>
<tr>
<td>Present</td>
<td>Associate Professor, Department of Computer Science and Engineering, Texas A&amp;M University</td>
</tr>
</tbody>
</table>

Publications

**Closely Related to the Proposal**


Other Significant Publications


**SYNERGISTIC ACTIVITIES**

[1]. Conference chair - Symposium on Computer Animation (SCA), 2013

[2]. Program chair - Computer Animation and Social Agents (CASA), 2011


CURRICULUM VITAE
Jianer Chen
Department of Computer Science & Engineering
Texas A&M University
College Station, TX 77843-3112
(979) 845-4259
chen@cse.tamu.edu

(a) Professional Preparation

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Major</th>
<th>Degree &amp; Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central-South University</td>
<td>Changsha, P.R.China</td>
<td>Computer Science</td>
<td>B.S. (1982)</td>
</tr>
<tr>
<td>Columbia University</td>
<td>New York, USA</td>
<td>Mathematics</td>
<td>M.Phil. (1990)</td>
</tr>
<tr>
<td>Columbia University</td>
<td>New York, USA</td>
<td>Mathematics</td>
<td>Ph.D. (1990)</td>
</tr>
</tbody>
</table>

(b) Appointments

2002–date: Professor, Department of Computer Science & Engineering, Texas A&M University
1996–2002: Associate Professor, Department of Computer Science, Texas A&M University
1990–1996: Assistant Professor, Department of Computer Science, Texas A&M University

(c) Publications

(i) Five most related publications

- Li, W., Cao, Y., Chen, J., and Wang, J., “Deeper local search for parameterized and approximation algorithms for maximum internal spanning tree,” Information & Computation, in press.

(ii) Five other significant publications

(d) Synergistic Activities

- **Selected Teaching and Research Awards:**
  - *Janet Fabri Award* for the Best Ph.D. Dissertation, New York University (1988);
  - *Amoco Faculty Award for Teaching Excellence*, Texas A&M University (1998);
  - *E. D. Brockett Professorship Award*, Texas A&M University (2005);
  - *Distinguished Faculty Achievement Award*, college-level, Texas A&M University (1998, 2006);
  - *Distinguished Faculty Achievement Award*, university-level, Texas A&M University (2007);
  - *Distinguished Lecturer*, Pacific Institute for Math. Sciences Distinguished Lecture Series (2009);
  - *ACM Distinguished Computer Scientist*, Association for Computing Machinery (2014);

- **Selected Journal Editorial Board:**
  - Associate Editor, *Journal of Computer and System Sciences* (2011–date)

- **Selected Conference Activities:**
  - Deputy Chair, Steering Committee, *International Frontiers of Algorithmics Workshop*, 2016–date;
  - Co-Chair, Program Committee, *The 23rd International Computing and Combinatorics Conference (COCOON 2017)*, Hong Kong, August 3-5, 2017;
  - Co-Chair, Program Committee, *The 8th International Frontiers of Algorithmics Workshop (FAW 2014)*, Zhangjiajie, China, June 28-30, 2014;
  - Co-Chair, Program Committee, *The 4th International Workshop on Parameterized and Exact Computation (IWPEC 2009)*, Copenhagen, Denmark, September 10-11, 2009;

- **Selected Funded Research Projects:**

- **Ph.D. Graduates (Total: 19)**
  - Saroja Kanchi (Ph.D. graduate, 1993), now Full Professor at Kettering University, USA
  - Liming Cai (Ph.D. graduate, 1994), now Full Professor at University of Georgia, USA
  - Chi-Chang Chen (Ph.D. graduate, 1995), now Associate Professor at I-Shou University, Taiwan
  - Sanjay Kamat (Ph.D. graduate, 1995), now Managing Partner at Bell Labs Consulting, USA
  - Jimmy Tirtawangsa (Ph.D. graduate, 1997), affiliation information is unknown
  - Antonio Miranda (Ph.D. graduate, 1998), now Associate Teaching Professor at Rutgers U., USA
  - Iyad A. Kanj (Ph.D. graduate, 2001), now Full Professor at Depaul University, USA
  - Tao Wang (Ph.D. graduate, 2002), now in industry in New York, USA
  - Eenseuk Oh (Ph.D. graduate, 2004), affiliation information is unknown
  - Xiuzhen Huang (Ph.D. graduate, 2004), now Full Professor at Arkansas State University, USA
  - Ge Xia (Ph.D. graduate, 2005), now Associate Professor at Lafayette College, USA
  - Nan Zhang (Ph.D. graduate, 2006), now Associate Professor at George Washington U., USA
  - Fenghui Zhang (Ph.D. graduate, 2008), now Tech Lead Manager at Google, USA
  - Yang Liu (Ph.D. graduate, 2009), now Associate Research Scientist at Texas A&M Univ., USA
  - Songjian Lu (Ph.D. graduate, 2009), now Assistant Professor at University of Pittsburgh, USA
  - Jie Meng (Ph.D. graduate, 2010), now Software Engineer at DoorDash, USA
  - Yixin Cao (Ph.D. graduate, 2012), now Assistant Professor at Hong Kong Polytechnic U., HK
  - Jia-Hao Fan (Ph.D. graduate, 2013), now Software Development Engineer 2 at Microsoft, USA
  - Shiuyu Hu (Ph.D. graduate, 2013), now Senior Software Engineer at Google, USA
Yoonsuck Choe

1 Professional Preparation

- The University of Texas at Austin, Computer Sciences, Ph.D. (2001)
- The University of Texas at Austin, Computer Sciences, M.A. (1995)
- Yonsei University, Seoul, Korea, Computer Science, B.S. (1993)

2 Appointments

- Professor, Dept. of Comp. Sci. and Eng., Texas A&M Univ. (9/2014–)
- Member, Faculty of Neuroscience, Texas A&M Institute for Neuroscience (9/2009–)
- Associate Prof., Dept. of Comp. Sci. and Eng., Texas A&M Univ. (9/2007–8/2014)
- Assistant Prof., Dept. of Comp. Sci., Texas A&M Univ. (9/2001–8/2007)

3 Products

3.1 Five Most Closely Related Products

The “∗” mark indicates students supervised by Yoonsuck Choe.


3.2 Five Other Significant Products

The “∗∗” mark indicates students supervised by Yoonsuck Choe.


4 Synergistic Activities

1. **Course Design:** Developed the curriculum for a graduate seminar course on Intelligent Neural Systems (CPSC 689-601; 689-603). The effort was recognized by the departmental *Graduate Teaching Excellence Award* in Spring 2004 and Spring 2012.


3. **Editorial Board:** (1) Neural Networks (2012–2017); (2) Springer Encyclopedia on Computational Neuroscience (2011–2013, topic editor); (3) Neural Info. Proc. – Letters and Reviews (2002–).


5. **Workshops, symposia, and exhibits:** (1) CNS*2010 Workshop on High-throughput 3D microscopy and high-performance computing for multi-scale modeling and simulation of large-scale neuronal circuits (Co-Chair, 2010); (2) Society for Neuroscience Minisymposium on High-Throughput Microscopy and Computational/Theoretical Challenges in the Analysis of Neural Circuit Structure (Co-Chair, 2008); (3) Lab exhibits at the Society for Neuroscience meeting (2011, 2012, 2014, 2015).
PROFESSIONAL PREPARATION

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Department</th>
<th>Degree</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of São Paulo</td>
<td>São Paulo, Brazil</td>
<td>Computer Science</td>
<td>B.S. 1986</td>
<td></td>
</tr>
<tr>
<td>University of São Paulo</td>
<td>São Paulo, Brazil</td>
<td>Computer Science</td>
<td>M.S., 1990</td>
<td></td>
</tr>
<tr>
<td>Georgia Institute of Technology</td>
<td>Atlanta, GA</td>
<td>Computer Science</td>
<td>Ph.D., 1997</td>
<td></td>
</tr>
</tbody>
</table>

APPOINTMENTS

- 2014-Present: Department Head and Holder of the Ford Motor Company Design Professorship II, Department of Computer Science and Engineering, Texas A&M University
- 2012-2014: Principal Engineer and Manager, Qualcomm Research
- 2010-2012: Manager (IBM TJ Watson) and PI (Exascale Group at IBM Ireland), IBM
- 2007-2010: Manager and Researcher (Advanced OS Group), IBM
- 2000-2006: Researcher Staff Member, IBM
- 1997-2000: Assistant Professor, University of São Paulo, Brazil
- 1995-1996: Senior Lecturer, University of São Paulo, Brazil
- 1987-1990: Lecturer, University of São Paulo, Brazil
- 1985-1987: Programmer, University of São Paulo, Brazil

PRODUCTS

Products Closely Related to the Proposal


Other Significant Products


SYNERGISTIC ACTIVITIES

1. Associate Editor, Journal of Parallel and Distributed Computing and IEEE Transactions on Cloud Computing
2. Guest Editor, Journal of Internet Services and Applications, special issue in Cloud Computing
3. PC co-chair: USENIX ATC’17; area co-chair ICDCS’16
4. Steering Committee Member: SOSP, VEE, HotCloud, IEEE IoTDI
Timothy Alden Davis. Email: davis@tamu.edu, Office: +1 979-845-4094, Fax: +1 979-458-0718. Department Computer Science and Engineering, 3112 TAMU Texas A&M University, College Station, TX 77843.

- **Professional Preparation:**
  - Purdue University, W. Lafayette, IN Electrical Eng. B.S., 1983
  - Univ. of Illinois, Urbana, IL Electrical Eng. M.S., 1987
  - Univ. of Illinois, Urbana, IL Electrical Eng. Ph.D., 1989
  - CERFACS, Toulouse, France Parallel Algorithms Group Postdoc, 9/89-12/90

- **Appointments:**
  - 2014 to date Full Professor CSE Dept, Texas A&M Univ
  - 2007 to 2014 Full Professor CISE Dept, Univ. of Florida
  - 2002 to 2003 Visiting Assoc. Professor Stanford Univ.
  - 2002 to 2003 Visiting Staff Member Lawrence Berkeley Natl. Lab.
  - 1996 to 2007 Assoc. Professor CISE Dept, Univ. of Florida
  - 1990 to 1996 Asst. Professor CISE Dept, Univ. of Florida

- **Relevant Products:**

- **Additional Products:**
• **Synergistic Activities:**

1. Associate Editor of three journals (ACM Transactions on Mathematical Software, the SIAM J. Scientific Computing, and the Journal of Parallel and Distributed Computing). These journals focus on the transfer of knowledge from the researchers who create it, to the practitioners that use it. For example, Davis plays a key role on the ACM TOMS editorial board in the review and publication of library-quality software by the journal. The editorial board ensures that the software is of high-quality and wide applicability to ensure maximal transfer of knowledge.

2. Davis’ software packages are widely used in commercial, academic, and government lab codes, and thus have a wide impact on science and engineering. MATLAB uses 7 packages authored or co-authored by Davis: CHOLMOD (sparse Cholesky), UMFPACK (sparse LU), SuiteSparseQR, CSparse (dmperm), AMD, COLAMD, and sparse-matrix multiplication. These codes are widely used in many other commercial packages (Google, Mathematica, NASTRAN, Cadence, IBM, etc,) and many academic/government lab packages (R, Octave, ARPACK, Trilinos, PETsc, DAESOL).

3. SuiteSparse Matrix Test Collection. Nearly all recent papers in the area of sparse matrix methods refers to this site as their primary source of test problems. This data set has become a key research tool in the development of sparse matrix algorithms, and is used world-wide. The impact of this collection was included in the recognition of Davis as a SIAM Fellow. (Citation: *For contributions to sparse matrix algorithms and software, including the University of Florida Sparse Matrix Collection.*)
Richard Furuta
Professor

PROFESSIONAL PREPARATION:
• B.A., Biology, Reed College, 1974.
• Ph.D., Computer Science, University of Washington, 1986.

APPOINTMENTS:
• Professor, Department of Computer Science, Texas A&M University, 2001-present; Associate Professor, 1993-2001.
• Director, Center for the Study of Digital Libraries, Texas Engineering Experiment Station, 2004-present; Associate Director 1995-2004.
• Director, Hypermedia Research Laboratory, Department of Computer Science, Texas A&M University, 1995-present; Co-Director, 1993-1995.
• Assistant Professor, Department of Computer Science and Institute for Advanced Computer Studies, University of Maryland, 1986-1993.

PRODUCTS:
Closely related to the proposed project

Other significant products
SYNERGISTIC ACTIVITIES

• Collaborative digital library building projects: The Ensemble Computing Portal, a digital library providing educational resources for all areas of computing (joint with Villanova, Virginia Tech, Portland State, Pitt, Berkeley, and Drexel). ELISQ: Electronic Library Institute – SeerQ (Qatar), which developed a digital library centered around the needs of academic researchers in Qatar (joint with Virginia Tech and Penn State).

• Texas A&M University digital library building projects: Nautical Archaeology Digital Library. Focuses particularly on wooden ships and ship reconstruction. Cervantes Project. Provides a resource on the works and life of Miguel de Cervantes Saavedra (1547-1616), as well as a regularly-updated bibliography of scholarly works discussing his writings. Includes an “electronic virtual variorum edition” of his best-known work, Don Quixote, using images of the editions published during his lifetime. Also a digital presentation of the textual iconography of the Quixote—based on an extensive set of editions obtained specifically for the project.


• Establishing a Digital Humanities Initiative on the Texas A&M University campus. Member of the steering board directing this initiative. Chairing the working group drawn from the campus.


COLLABORATORS AND CO-EDITORS (19)
Nabil Adam, Rutgers University; Ergun Akleman, Texas A&M University; Paul Bogen, Google; James Caverlee, Texas A&M University; Lillian Cassel, Villanova University; Luis Vieira de Castro, Texas A&M University; Lois Delcambre, Portland State University; Edward Fox, Virginia Tech; Luis Francisco-Revilla, University of Texas; Ricardo Gutierrez, Texas A&M University; Greg Hislop, Drexel University; Hao-Wei Hsieh, University of Iowa; Unmil Karadkar, University of Texas; Laura Mandell, Texas A&M University; Erich Neuhold, University of Vienna; Frances Quek, Texas A&M University; Frank M. Shipman III, Texas A&M University; Gary Stringer, Texas A&M University; Eduardo Urbina, Texas A&M University

GRADUATE (PH.D.) ADVISOR (1): Alan Shaw, University of Washington

POSTDOCTORAL ADVISOR: None.

THESIS ADVISOR AND POSTGRADUATE-SCHOLAR SPONSOR:
Shueh-Cheng Hu, consultant Carlos Monroy, Rice University
David Kingery, Boeing Yungkin Park, Texas A&M University
Vijay Kumar, consulting in Austin Youngjoo Park, Texas A&M University
Marlo Nordt, Chevron Tolga Ciftci, Texas A&M University
Jie Deng, CGG Veritas Neal Audenaert, Texas A&M University
Sheiyao Augustine Su Paul Bogen, Oak Ridge Natl. Lab.
Jin-Cheon Na, Nanyang Technological Omar Álvarez, Texas A&M University
University Hamed Alhoori, Northern Illinois University
Unmil Karadkar, U. Texas, Austin Luis Davi Meneses Macchiavello, University of Victoria

Total number of graduate students advised is 51. Total number of postdoctoral scholars sponsored is 0.
BRUCE S. GOOCHE
Texas A&M Computer Science
301 Bright Building, College Station, TX 77843
gooch@cse.tamu.edu
(801) 828 5037

EDUCATION & TRAINING
06/00 - 06/03 Ph.D., Department of Computer Science, University of Utah
  Discipline: Computer Science, specializing in Computer Graphics
06/98 - 06/00 M.S. University of Utah
  Discipline: Computer Science, specializing in Image Processing
08/88 - 06/93 Bachelor of Science University of Utah
  Major: Mathematics

RESEARCH & PROFESSIONAL EXPERIENCE
06/14 - Associate Professor Texas A&M University
07/09 - Chief Executive Officer Insatiable Genius, LLC.
08/06 - 06/14 Associate Professor University of Victoria
07/06 - 06/14 Chief Executive Officer Toon-FX, LLC. 06/03 -
09/08 Assistant Professor Northwestern University
06/98-06/03 Research Assistant, Alpha1 Research Group University of Utah

CONFERENCE COMMITTEE CHAIRS
General Co-Chair: Expressive 2017 (July 2017 Los Angeles)
General Chair: Eurographics Workshop on Computational Aesthetics (June 2008 Lisbon, Portugal)
Program Chair: ACM Interactive 3D (I3D) (February 2008 Redwood City)
General Chair: ACM Non photorealistic Rendering and Animation (July 2007 San Diego)
General Chair: ACM Interactive 3D (I3D) (April 2007 Seattle)
Organizer: Dachstuhl Seminar on Computational Aesthetics (June 2006 Frankfort Germany)
Organizer: Eurographics Workshop on Computational Aesthetics (May 2005 Girona Spain)
Organizer: Midgraph (November 2004 Chicago)

CONFERENCE COMMITTEES
Steering Committee: Graphics Interface (2006 – Present)
Program Committee: Non-Photorealistic Rendering and Animation (2005 – Present)
Steering Committee: Computational Aesthetics (2005 – Present)
Program Committee: GraphiCon2010 International Conference on Computer Graphics and Vision
Program Committee: Eurographics 2007 (2007)
Program Committee: Interactive 3D (April 2005 Washington D.C.)

RELATED PUBLICATIONS
An AR application for Wheat Breeders. Kaitlyn Becker, Fredric Parke and Bruce Gooch.
  HCI International, June 2017.
An Interactive Diagnostic Application for Food Crop Irrigation. Nicolas Bain, Nythia Ranjan and
  Bruce Gooch. HCI International, June 2017.
Color transfer between images. Erik Reinhard, Michael Ashikhmin, Bruce Gooch, and Peter S. Shirley.
Retargeting images and video for preserving information saliency. Vidya Setlur, Tom Lechner, Marc...


**SOFTWARE DEVELOPED**

Bruce Gooch and Amy Gooch. ToonPAINT mobile application on Windows, iPhone, iPad, Android, Samsung, July 2011. Over 6 million users, over 500 million images processed and uploaded. (Version 1.0 to 2.7) [Computer software].

Bruce Gooch, Sahand Saba, Amy Gooch, Brendan Clement, Annie O’Brien, Sydney Barnes, Travis Gorbahn, Noel Feliciano, Matt Fikowski, Angela Jeske, and Dan Potts. PencilFX iPhone and iPad application, August 2012. Over 100 thousand users on iPhone. (Version 1.0 to 1.4) [Computer software, Apple App Store].

Bruce Gooch, Amy Gooch, Sydney Barnes, Travis Gorbahn, and Noel Feliciano. Comic Tycoon iPhone and iPad app, May 2013. (Version +1.0) [Computer software, Apple App Store].

Bruce Gooch and Brendan Clement. GeniusSDK iPhone API, March 2012 Secure image upload and 3rd party Credit Card Transactions, over 5 million users on iPhone. (Version 1.0 to 1.1.4) [Computer software, InsatiableGenius.com].

Bruce Gooch and Chris Batt. Android Fast Image Processing API, April 2012 A framework for speeding up image processing on android devices by taking advantage of shaders on the GPU. (Version 1.0 to 1.0.2) [Computer software, GitHub].

Bruce Gooch and Rob Kelly. MyBudlite, May 2012 Budweiser Facebook application able to move between 1 and 1 million simultaneous users with no observable interruption. (Version 1.0+) [Computer software, FaceBook].

Bruce Gooch and Tommy Pallotta. Paramount Pictures Facebook application, December 2012 Mission Impossible Facebook application that produces customized videos. Over 6 million users. (Version 1.0+) [Computer software, FaceBook].

**COLLABORATORS**

P. Shirley, U of Utah and nVidia  A. Gooch, U of Utah  A. Sheffer, U of British Columbia
R. Riesenfeld, U of Utah  B. Wyvill, U of Victoria  Nythia Ranjan Texas A&M
E. Cohen, U of Utah  J. Tumblin, Northwestern  J. Poland, Kansas Stat

**GRADUATE ADVISORS**

R. Riesenfeld and P. Shirley (University of Utah)
Dr. Guofei Gu
Dept. of Computer Science & Engineering
Texas A&M University
College Station, TX 77843
Tel: (979) 845-2475
Email: guofei@cse.tamu.edu
http://faculty.cse.tamu.edu/guofei/

Professional Preparation
Ph.D. Computer Science, Georgia Institute of Technology, Atlanta, Georgia 2008
M.S. Computer Science, Fudan University, Shanghai, China 2003
B.E. Computer Science, Nanjing Univ. of Posts and Telecoms, Nanjing, China 2000

Appointments
9/2014 – present, Associate Professor, Computer Science & Engineering, Texas A&M University
8/2008 – 8/2014, Assistant Professor, Computer Science & Engineering, Texas A&M University

Five Products Related to the Proposed Research

Five Additional Selected Products

Synergistic Activities


Professional award: Young Investigator Award, Air Force Office of Scientific Research (AFOSR-YIP), 2013; NSF Faculty Early Career Development (CAREER) Award, 2010; Google Faculty Research Award, 2014

Paper award: Best Student Paper Award, IEEE Symposium on Security and Privacy (Oakland'10), 2010; Best Paper Award, The 35th IEEE International Conference on Distributed Computing Systems (ICDCS'15), 2015

Software release: TopoGuard (fixing several previously unknown topology poisoning vulnerabilities in widely used mainstream SDN controllers); BotHunter (with more than 370,000 downloads and more than 45,000 officially registered BotHunter users all over the world)
Ricardo Gutierrez-Osuna

Department of Computer Science and Engineering
Texas A&M University
3112 TAMU, College Station, TX 77843-3112
Tel: (979) 845-2942
Email: rgutier@cse.tamu.edu
URL: http://psi.cse.tamu.edu

Education

Polytechnic University of Madrid (Spain)  Electrical Engineering  BS, 1992
North Carolina State University  Computer Engineering  MS, 1995
North Carolina State University  Computer Engineering  PhD, 1998

Appointments

Professor  Computer Science, TAMU  09/12-present
Associate Professor  Computer Science, TAMU  09/06-08/12
Research Fellow  Informatics, University of Edinburgh  07/09-12/09
Assistant Professor  Computer Science, TAMU  07/02-08/06
Assistant Professor  Computer Science, Wright State Univ. (OH)  09/98 -06/02

Five relevant publications


* denotes students under my direct supervision

Five other significant publications


**Synergistic Activities**


**Professional service.** From 2006 to 2013 I served as Associate Editor for the IEEE Sensors Journal. In 2014 I co-organized (with Michael Johnson at Marquette U.) a special session on “non-native speech processing” at ICASSP. I am currently a member of the Steering Committee for the International Society for Olfaction and Chemical Sensing (2011-present), where I have twice served as program chair for its main conference (2011, 2015) and I am currently serving as General Chair for the 2017 edition ([http://isoen2017.org/](http://isoen2017.org/)). I am also serving as Local Chair for the 2017 edition of the International Conference on Affective Computing and Intelligent Interaction (ACII).

**Development of curricular materials.** I have developed two graduate courses at Texas A&M University, one on pattern recognition (decision theory, density estimation, dimensionality reduction, clustering, classification) and one on speech processing (speech production and perception, speech coding, speech recognition and synthesis). I have also redesigned the capstone design class (URL) to place strong emphasis on the design process, design tools and professional skills; since 1999 I have supervised more than 100 capstone design projects involving 350+ undergraduate students.

**Cross-disciplinary research.** As exemplified by the current proposal, my research has a strong cross-disciplinary component. At present I am involved in the development of remote-therapy tools for childhood apraxia of speech, mobile games to promote self-regulation of stress, chemical micro-sensors for breath analysis, and computer-assisted pronunciation training tools for adult second-language learners. I am also involved in a large research project that seeks to develop wearable biosensors, prediction algorithms, infrastructure and behavior modification interventions for remote management of chronic diseases (diabetes, cardiovascular disease) in underserved populations. This is a collaborative effort between TAMU, Rice University, UCLA and Florida International University.
Dr. Tracy Hammond, PhD

Department of Computer Science & Engineering, Texas A&M Engineering Experiment Station
Texas A&M University, College Station, TX 77843-3112
e-mail: hammond@tamu.edu, tel:

(a) Professional Preparation

Columbia University, New York, NY; Columbia College, Mathematics; B.A., 1997
Columbia University, New York, NY; School of Engineering and Applied Science (SEAS), Applied Physics and Applied Mathematics; B.S., 1997
Columbia University, New York, NY; School of Engineering and Applied Science (SEAS), Applied Physics and Applied Mathematics; B.S., 1997
Columbia University, New York, NY; School of Engineering and Applied Science (SEAS), Computer Science; M.S., 2000
Columbia University, New York, NY; Graduate School of Art and Sciences (GSAS), Anthropology; M.A., 2001
Massachusetts Institute of Technology (MIT), Cambridge, MA; Sloan School of Management, Finance Technology; F.T.O., 2003
Massachusetts Institute of Technology (MIT), Cambridge, MA; School of Engineering, Artificial Intelligence Lab & Computer Science and Artificial Intelligence Lab (CSAIL), Electrical Engineering & Computer Science; Ph.D., 2007

(b) Appointments

2016–present: Professor (tenured), Department of Computer Science & Engineering, Texas A&M University, College Station, TX
2014–present: Director, TAMU Coalition for Healty Active Living, Texas A&M University, College Station, TX
2013–present: Vice President, Treasurer, and Co-Founder, Wired Youth, Inc. (Non-Profit), College Station, TX
2012–present: CEO, Sketch Recognition Group, Inc., College Station, TX
2011–2016: Associate Professor (tenured), Department of Computer Science & Engineering, Texas A&M University, College Station, TX
2010–present: Charles H. Barclay Jr. ’45 College of Engineering Faculty Fellow, College of Engineering, Texas A&M University, College Station, TX
2006–present: Director, Sketch Recognition Lab, Texas A&M Engineering Experiment Station (TEES), Texas A&M University, College Station, TX
2006–2011: Assistant Professor (untenured), Department of Computer Science & Engineering, Texas A&M University, College Station, TX
2002–2002: FIE Faculty Fellow, Frontiers in Education
2000–2006: Research Assistant, Artificial Intelligence Lab & Computer Science and Artificial Intelligence Lab (CSAIL), Electrical Engineering & Computer Science, School of Engineering, Massachusetts Institute of Technology (MIT), Cambridge, MA
1999–2004: Instructor, Computer Science, School of Engineering and Applied Science (SEAS), Columbia University, New York, NY
(c) Products

(c).1 Most Closely Related to the Proposed Project:

1. Folami Alamudun, Hong-Jun Yoon, Kathleen B Hudson, Garnetta Morin-Ducote, Tracy Hammond,
   and Georgia D Tourassi. Fractal analysis of visual search activity for mass detection during mammogra-
   phic screening. *Medical Physics*, 2017
2. Seth Smitherman, Daniel Goldberg, Tracy Hammond, and Jennifer Horney. Developing a survey to
   assess the prevalence of risk factors for neglected tropical diseases in Texas using the Casper method.
   *Journal of Health Security*, 2017
4. Vijay Rajanna, Patrick Vo, Jerry Barth, Matthew Mjelde, Trevor Grey, Cassandra Oduola, and Tracy
   Hammond. Kinohaptics: An automated, wearable, haptic assisted, physio-therapeutic system for post-
5. Manoj Prasad, Murat Russell, and Tracy A. Hammond. Designing vibrotactile codes to communicate

(c).2 Other Significant Products:

1. Stephanie Valentine and Tracy Hammond. An Analysis of Social Engagement, Identity Conversations,
   and Activities Designed To Promote Participation On an Online Social Network for Children. *Journal
   of Media Innovation*, 2016
2. Stephanie Valentine, Francisco Vides, George Lucchese, David Turner, Hong-hoe Kim, Wenzhe Li,
   Julie Linsey, and Tracy Hammond. Mechanix: A sketch-based tutoring and grading system for free-
3. Daniel Dixon, Manoj Prasad, and Tracy Hammond. icandraw: Using sketch recognition and corrective
   feedback to assist a user in drawing human faces. In *Proceedings of the SIGCHI Conference on Human
4. Brandon Paulson and Tracy Hammond. PaleoSketch: Accurate primitive sketch recognition and beau-
   tification. In *Proceedings of the 13th International Conference on Intelligent User Interfaces*, IUI ’08,
   pages 1–10, New York, NY, USA, 2008. ACM

(d) Synergistic Activities

- Regularly teach classes on machine learning, activity recognition, HCI, wearables, and senior cap-
  stone.
- Students have won over 60 awards on research performed with Hammond.
- Hammond’s Sketch Recognition Mechanix software integrated into the curriculum at 3 universities
  (Georgia Tech, LeTourneau, TAMU) and 3 Texas high schools.
- 4 best paper awards and an award winning paper on STEM diversity
- Editor of three 300+ page books on education and technology.
Xia “Ben” Hu

330B H.R. Bright Building
College Station, TX 77843-3112
http://faculty.cs.tamu.edu/xiahu/

Office: (979) 845-8873
E-mail: hu@cse.tamu.edu

a. Professional Preparation

2006 B.S. in Computer Science, Beihang University, Beijing, P.R.China
2009 M.S. in Computer Science, Beihang University, Beijing, P.R.China
2015 Ph.D. in Computer Science, Arizona State University, Tempe, Arizona, USA

b. Appointments

Aug. 2015-Present Assistant Professor, Department of Computer Science and Engineering,
Texas A&M University, College Station, Texas
Apr.-Aug. 2015 Postdoctoral Researcher, Department of Computer Science and Engineering,
Arizona State University and Phoenix VA Health Care System, Phoenix, Arizona

c. Products

c.1 Five Related Publications


c.2 Five Significant Publications

• Senzhang Wang, Xia Hu, Philip S. Yu, and Zhoujun Li. MMRate: Inferring Multi-aspect Diffusion Networks with Multi-pattern Cascades. In Proceedings of the ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), Pages 1246–1255, August 24-27, 2014.


d. Synergistic Activities

• **Associate Editor**: Frontiers in Disaster Communications

• **Social Networking Chair** of KDD 2017

• **Session Chair** of AAAI 2016, SDM 2016, and AAAI 2017

• Best Paper Shortlist, WSDM 2013
  • Best Paper Award, IJCAI BOOM Workshop, 2016

• **Journal and Conference Referee**:  
  IEEE Transactions on Knowledge and Data Engineering  
  ACM Transactions on Knowledge Discovery from Data  
  ACM Transactions on Intelligent Systems and Technology  
  ACM Transactions on Information Systems  
  IEEE Journal of Biomedical and Health Informatics  
  ACM Transactions on the Web, etc.

Biographical Sketch

Jeff Huang
Assistant Professor
Computer Science and Engineering
Texas A&M University

PROFESSIONAL PREPARATION
National University of Defense and Technology, China, Electrical Engineering, B.E., 2008
Hong Kong University of Science and Technology, Hong Kong, Computer Science, Ph.D., 2013
University of Illinois at Urbana-Champaign, Postdoctoral Researcher, 2013-2014

APPOINTMENTS
Assistant Professor, Texas A&M University (2014/08 – present)

FIVE PRODUCTS RELATED TO THE PROPOSED RESEARCH

FIVE ADDITIONAL SELECTED PRODUCTS


**SYNERGISTIC ACTIVITIES**

- Organization Committees:
  - 2018: PPoPP (Publicity Chair)
  - 2017: PPoPP, ASE (Publicity Chair), WODA (Co-Chair)
  - 2016: SPLASH POSTER (Co-Chair)
  - 2015: SPLASH POSTER (Co-Chair)
- Technical Program Committees:
  - 2018: CGO
  - 2017: PLDI, PPaPP, ICSE-SRC, ICSE-DEMO, ISSTA-TOOL, CREST
  - 2016: FSE, PACT, LCPC, SOAP, ISEC
  - 2015: ICSE-SRC, ISEC
- Artifact Evaluation Committees:
  - 2014: PLDI
  - 2013: OOPSLA
- Designer and Co-Implementer of Open Source Tools:
  - Dynamic race detection system: RVPredict.
  - Dedeterministic replay and debugging systems: CLAP, LEAP, and PECAN.
  - Runtime verification system for the Robotic Operating System: ROSRV.
- Professor Samuel Chanson Best Teaching Assistant Award, HKUST (2010).

**COLLABORATORS AND CO-EDITORS(18)**

Nancy Amato (TAMU), Yunji Chen (Chinese Academy of Sciences), Zhenyu Chen (Nanjing University), Julian Dolby (IBM Research), Xiaobing Feng (Chinese Academy of Sciences), Guofei Gu (TAMU), Yong Guan (Capital Normal University), Feifei Ma (Chinese Academy of Sciences), Lawrence Rauchwerger (TAMU), Grigore Rosu (UIUC), Wei Song (Nanjing UST), Aravind Sundaresan (SRI International), Cheng-gang Wu (Chinese Academy of Sciences), Baowen Xu (Nanjing University), Xue Yang (TAMU-Kingsville), Pen-Chung Yew (UMN), Charles Zhang (HKUST), Jian Zhang (Chinese Academy of Sciences)

**THESIS ADVISOR AND POSTDOC SPONSOR (2):**

Grigore Rosu (University of Illinois at Urbana-Champaign, Postdoc advisor)
Charles Zhang (Hong Kong University of Science and Technology, PhD Thesis advisor)

**GRADUATE ADVISEES (7):**

Postdoc (at TAMU): Qiuping Yi
PhD (at TAMU): Shiyou Huang, Bowen Cai, Bozhen Liu, Gang Zhao
MS (at TAMU): Arun Krishnakumar, Sungkeun Kim
RUIHONG HUANG

Professional Preparation

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Field</th>
<th>Year</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shandong University</td>
<td>Shandong, China</td>
<td>Computer Science</td>
<td>2005</td>
<td>BE</td>
</tr>
<tr>
<td>Chinese Academy of Sciences</td>
<td>Beijing, China</td>
<td>Computer Science</td>
<td>2008</td>
<td>MS</td>
</tr>
<tr>
<td>University of Utah</td>
<td>Salt Lake City, UT</td>
<td>Computer Science</td>
<td>2014</td>
<td>PhD</td>
</tr>
<tr>
<td>Stanford University</td>
<td>Stanford, CA</td>
<td>Natural Language Processing (NLP)</td>
<td>8/2014 – 8/2015</td>
<td>Postdoc</td>
</tr>
</tbody>
</table>

Appointments

9/2015 – Current  Assistant Professor. Department of Computer Science & Engineering. Texas A&M University, College Station.

Publications Relevant to Proposal:


Selected Other Publications:


Synergistic Activities

**Conference Area Chair:** EMNLP 2016: Conference on Empirical Methods in Natural Language Processing.


**Teaching:** has taught an advanced seminar on Natural Language Processing (NLP) focusing on information extraction topics. Has taught and is currently teaching the regular NLP class. Both graduate and undergraduate students took the classes.

**Advising and Mentoring:** advising in the past nine months includes four Ph.D. students, three masters students and six undergraduate researchers. Organized the first mentoring workshop series in the department for new Ph.D. students covering various topics including how to find a research topic and how to improve presentation skills, among others.

**Outreach:** presented most recent research progresses to local high school students on a regular basis, actively participated in women in engineering program in Texas A&M University.
Thomas Richard Ioerger

Professional Preparation

<table>
<thead>
<tr>
<th>Institution</th>
<th>Field</th>
<th>Degree</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>Pennsylvania State University</td>
<td>Molecular and Cell Biology</td>
<td>B.S.</td>
<td>1990</td>
</tr>
<tr>
<td>University of Illinois</td>
<td>Computer Science</td>
<td>M.S.</td>
<td>1992</td>
</tr>
<tr>
<td>University of Illinois</td>
<td>Computer Science</td>
<td>Ph.D.</td>
<td>1996</td>
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</table>

Professional Appointments

Associate Professor, Department of Computer Science, Texas A&M University, 2002-present
Assistant Professor, Department of Computer Science, Texas A&M University, 1996-2002
Academic Editor for PLOS ONE, 2014-present

Expertise Related to Proposed Research

Machine Learning, Bioinformatics

Publications Related to the Proposal


Other Significant Publications


Synergistic Activities

I work in the area of drug discovery and understanding of drug resistance for infectious diseases like tuberculosis. I develop bioinformatic methods to try to understand how resistance arises and transmits through populations, taking into account the fitness cost of mutations, and also possibly compensatory mechanisms. I do whole-genome sequencing and comparative analysis of SNPs in clinical isolates to identify drug resistance mechanisms. I sequence isogenic mutants selected for resistance to high-throughput screening compounds to identify novel drug targets. Some of this work is done in collaboration with the Tuberculosis Drug Accelerator (TBDA), funded by the Bill and Melinda Gates Foundation. I also collaborate with structural biologists and medicinal chemists to do follow-up on targets - solve crystal structures, screen for inhibitors, model protein-inhibitor interactions.

I do whole-genome sequencing and comparative analysis of SNPs to identify drug resistance mechanisms in clinical isolates of *M. tuberculosis* from many regions of the world. My group has developed algorithms for comparative genome assembly, which is combined with phylogenetic analysis (e.g. to look for homoplasy). I sequenced the XDR-TB strain from KZN, the HN878 representative of the Beijing strain, and I have done studies of clinical isolates from outbreaks in other areas like Cape Town, Panama, and Lima, Peru. To date, we have contributed over 100 bacterial genome sequences to Genbank. I am currently collaborating on an NIH CETR project to develop new TB diagnostics, led by Megan Murray at Harvard.

One of my largest efforts is with an NIH U19 project led by Eric J. Rubin at Harvard, which focuses on characterizing the functions of unannotated genes in the *M. tuberculosis* genome. I do a lot of sequencing for this project, including RNAseq, WGS to look for suppressor mutants, and sequencing of transposon mutant libraries (TnSeq) to identify essential genes under various conditions, and infer functions through genetic interactions. I am responsible for the Data Management Core of the project, for each we maintain a public repository (web-site) of data collected (RNAseq, TnSeq, metabolomics) in the project, combined with other TB data, as a resource for the community (http://orca2.tamu.edu/U19/). We also maintain a genome browser (http://saclab.tamu.edu/genomeDB/). I participate in an NIH Functional Genomics Data Analysis working group that studies issues of gene annotation in public databases.

One of my primary research emphases is in developing statistical methods for analyzing TnSeq data. High-throughput sequencing is used to assess a library of transposon insertion mutants. There is a great deal of noise in the read counts at insertion sites (including missing data in less-saturated datasets). My group has developed various algorithms (e.g. Bayesian, HMM) for analyzing TnSeq data, and developed appropriate resampling and normalization methods. We have recently put these together in a publicly-available software package called Transit (http://saclab.tamu.edu/essentiality/transit), which is being used by the community. We have been involved in a number of studies, including one of the most widely-used resources in the TB community, the dataset of essential genes in *M. tuberculosis* by Griffin et al (2011), *PLoS Path*.

I teach Artificial Intelligence, Intelligent Agents, and Machine Learning in the Department of Computer Science at Texas A&M. I teach both graduate and undergraduate courses, and I advise both graduate students and undergraduate honors students on research projects in these areas. I teach my classes in a project-oriented way, having the students implement various learning and decision-making algorithms as programs and test them on real-world problems and datasets, which is a good way to really learn how they work.
ROOZBEH JAFARI

Texas A&M University  
rjafari@tamu.edu
TAMU 3120  
https://jafari.tamu.edu/rjafari/
College Station, TX 77843

Professional Preparation

<table>
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<tr>
<th>Institution</th>
<th>Department</th>
<th>Degree</th>
<th>Year</th>
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<tr>
<td>Sharif University of Technology</td>
<td>Electrical Engineering</td>
<td>B.S.</td>
<td>2000</td>
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<tr>
<td>University of California, Los Angeles</td>
<td>Computer Science</td>
<td>M.S.</td>
<td>2004</td>
</tr>
<tr>
<td>University of California, Los Angeles</td>
<td>Computer Science</td>
<td>Ph.D.</td>
<td>2006</td>
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<tr>
<td>University of California, Berkeley</td>
<td>EECS</td>
<td>Post-doc</td>
<td>2007</td>
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Appointments

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<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
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<tbody>
<tr>
<td>2015-present</td>
<td>Associate Professor, Biomedical Engineering, Computer Science and Engineering, Electrical Engineering</td>
<td>Texas A&amp;M University</td>
</tr>
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<td>2013-2015</td>
<td>Associate Professor, Electrical Engineering, University of Texas at Dallas</td>
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</tr>
<tr>
<td>2007-2013</td>
<td>Assistant Professor, Electrical Engineering, University of Texas at Dallas</td>
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Products

Related Products (from over 140 publications - http://jafari.tamu.edu/)

- Viswam Nathan, Roozbeh Jafari, Design Principles and Dynamic Front End Reconfiguration for Low Noise EEG Acquisition with Finger Based Dry Electrodes, *IEEE Transactions on Biomedical Circuits and Systems (T-BioCAS)*, Accepted for publication.

Other Significant Products


**Synergistic Activities**


*Guest Editor:* IEEE Transactions on Information Technology in BioMedicine, ACM Transactions on Embedded Computing, IEEE Transactions on Emerging Topics in Computing

*General Co-Chair:* Wireless Health 2013.


**Collaborators and Other Affiliations**

*Graduate Advisers:* M. Sarrafzadeh (UCLA), R. Bajcsy (UC Berkeley)

*Collaborators:* R. Bajcsy (UC Berkeley), M. Chi (UCSD), Y. Chiu (UT Dallas), N. Kehtarnavaz (UT Dallas), E. Lee (UC Berkeley), K. Nahrstedt (UIUC), B. Prabhakaran (UT Dallas), S. Pourkamali (UT Dallas), C. Ray (UT Arlington), M. Spong (UT Dallas).

*Recent Advisees:* H. Ghasemzadeh (Ph.D., 2010, now Assistant Professor at Washington State University, Pullman, WA), V. Loseu (Ph.D., 2011, now at Texas Instruments, Dallas, TX), O. Dehzangi (Post-doctoral scholar, now Assistant Professor at Univ. of Michigan-Dearborn), Y. Zou (Ph.D. 2014), M. Reager (Post-doctoral scholar), T. Bennett (Ph.D. student), J. Birjandtalab (Ph.D. student), V. Nathan (Ph.D. student), student), J. Wu (Ph.D. student), C. (Paul) Zong (Ph.D. student), Qingxue Zhang (Ph.D. student).
Anxiao (Andrew) Jiang

Computer Science and Engineering Department
Texas A&M University
College Station, TX 77843-3112

Email: ajiang@cse.tamu.edu
http://faculty.cse.tamu.edu/ajiang

Professional Preparation

<table>
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<th>Institution</th>
<th>Discipline</th>
<th>Degree</th>
<th>Years</th>
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<tr>
<td>Tsinghua University, Beijing, China</td>
<td>Electronic Engineering</td>
<td>B.E.</td>
<td>1994-99</td>
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<tr>
<td>Caltech, Pasadena, CA</td>
<td>Electrical Engineering</td>
<td>M.S.</td>
<td>1999-00</td>
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<tr>
<td>Caltech, Pasadena, CA</td>
<td>Electrical Engineering</td>
<td>Ph.D.</td>
<td>2000-04</td>
</tr>
<tr>
<td>Caltech, Pasadena, CA</td>
<td>Data storage and networks</td>
<td>Postdoc</td>
<td>04—05</td>
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Appointments

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<th>Year</th>
<th>Position</th>
<th>Department</th>
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<tr>
<td>2011—present</td>
<td>Associate Professor, Computer Science &amp; Eng. Dept., TAMU</td>
<td></td>
</tr>
<tr>
<td>2005—2011</td>
<td>Assistant Professor, Computer Science &amp; Eng. Dept., TAMU</td>
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Five Most Related Publications


Five Other Significant Publications


**Synergistic Activities**

Developed new graduate course at TAMU, *Frontiers in Storage Systems*, which covers the new NSF research studies led by the PI, offered in 2009 and 2010.

Advised undergraduate student won 1st place prize in TAMU Undergraduate Research.

Seminar talk “Exploring New Coding Theories for Data Storage: Nonvolatile Memories and Redundancy Mining,” 1st IEEE Seminar on Future Directions in Information Theory and Communications, South Africa, August 2015. (The main audience were students and professors in African countries)

“Making Error Correcting Codes Work for Flash Memory,” 3-Hour Tutorial at Flash Memory Summit, jointly with Steven R. Hetzler and Lara Dolecek, Santa Clara, CA, August 2014. (The main audience were from industrial companies)

“Channel Coding Methods for Emerging Data Storage and Memory Systems: Opportunities to Innovate Beyond the Hamming Metric,” 3-Hour Tutorial at IEEE International Symposium on Information Theory (ISIT), jointly with Lara Dolecek, Honolulu, Hawaii, June 2014. (The main audience were students and colleagues from international and domestic universities and industrial companies)
Daniel A. Jiménez

Professional Preparation

- Ph.D. in Computer Sciences, The University of Texas at Austin, 2002.

Appointments

- Professor, Dept. of Computer Science & Engineering, Texas A&M University, 2015 – current.
- Associate Professor, Dept. of Computer Science & Engineering, Texas A&M University, 2013-2015.
- Associate Professor and Department Chair, Dept. of Computer Science, The University of Texas at San Antonio, 2011 – 2012
- Associate Professor, Dept. of Computer Science, The University of Texas at San Antonio, 2007–2011
- Associate Professor, Dept. of Computer Science, Rutgers University, 2008
- Assistant Professor, Dept. of Computer Science, Rutgers University, 2002-2007
- Instructor/Research, Dept. of Rehabilitation Medicine, The University of Texas Health Science Center at San Antonio, 1996-1999.

Five Relevant Products


Five Other Products


Synergistic Activities

• Continuing involvement in organizing the IEEE International Symposium on High-Performance Computer Architecture (HPCA) as Program Chair for HPCA 2017 in Austin, Texas, General Chair for HPCA 2011 in San Antonio, Texas, and Steering Committee Member for 2012 and 2013. For HPCA 2011, supervised all aspects of conference organization, raised funds from industrial and government partners, cooperated with co-located PPoPP conference organizers resulting in a successful event. Planning for HPCA 2017 is underway.

• Department Chair, Department of Computer Science, The University of Texas at San Antonio, August 2011 – August 2012. Oversaw 22 tenured/tenure-track faculty members, 560 undergraduate majors, 74 master’s students, and 81 doctoral students. Major initiatives included increasing the participation in computing research of women and under-represented minorities both at the undergraduate, graduate, and tenure-track faculty level.

• Organized, co-organized, and spoke at several mentoring workshops through CRA-W/CDC. These workshops mentor women and under-represented minority early- and mid-career faculty, graduate students, and undergraduate students to help them on their journey through research careers in computing and providing them valuable networking opportunities.

• Chaired the 2nd JILP Championship Branch Prediction Competition, co-located with MICRO-2006. Contestants entered papers and simulator code for branch predictors; finalists presented their predictors at the workshop and winners were announced. Simulation infrastructure remains a valuable contribution to the research community.

• Collaborated with Mateo Valero and his team of professors and graduate students during sabbatical leave at the Technical University of Catalonia (UPC) in 2005 and again in 2010. Helped develop the design as well as philosophy for a large instruction window microprocessor.

Collaborators (14) Emery Berger (U. of Mass), Paul Gratz (Texas A&M), Somesh Jha (Wisconsin), Gabriel Loh (Georgia Tech), Onur Mutlu (CMU), Karu Sankaralingam (Wisconsin), Mateo Valero (Technical University of Catalonia), Yuan Xie (UCSB).

Graduate Advisors (2) Calvin Lin (University of Texas at Austin), Hugh Maynard (University of Texas at San Antonio)

Thesis Advisor (8) Sangam Jindal (Texas A&M), Samira Mirbagher (Texas A&M), Elvira Teran (Texas A&M), Yingying Tian (AMD), Zhe Wang (Intel Labs), Samira M. Khan (University of Virginia), Ravi Batchu (EMC), Chunling Hu, (Intel Labs)
Biographical Sketch

Andruid Kerne

Professional Preparation
Ph.D. Computer Science (Multimedia), NYU, 2001 [committee: Ken Perlin, Richard Schechner].
M.A. Music / Composition, Wesleyan University, 1993 [advisors: Alvin Lucier, Anthony Braxton].

Academic and Professional Appointments
Professor, Texas A&M University. Department of Computer Science & Engineering, 2016-present.
Associate Professor, Texas A&M University. Department of Computer Science & Engineering, 2008-16.
Sabbatical Fellow, University of Nottingham. Department of Computer Science, 2002-08.
Assistant Professor, Texas A&M University. Horizon Digital Economy Research Institute / Department of Computer Science, 2013.
Senior Software Engineer, NASA-JPL. Develop object-oriented real time embedded system to perform multi-resolution pyramid video filtering in computer vision subsystem for the Mars Pathfinder.

Five Relevant Publications

Five Significant Publications
Synergistic Activities

Chair / Editor

ACM CHI Art 2017 Co-Chair.

ACM Creativity and Cognition 2015: Papers Chair.

JCSCW: Co-Editor, Special Issue on Crisis Informatics and Collaboration, August 2013.


ACM Multimedia Interactive Art Program Co-Chair 2010 2009 2008.

Select Program Committees


ACM TEI 2012 2011.

Exhibitions + Residencies

University of Nottingham Mixed Reality Lab residency, Spring 2013.


Research Press and Awards


2011: Time, Discovery News, New Scientist, Slashdot, Popular Science, MSNBC.


Kerne, A., Kofi, F., Lang, M., Coded Messages: CHAINS, Honorary Mention, Prix Ars Electronica, 1996.
John Keyser

Professional Preparation

- Ph.D., Computer Science, University of North Carolina at Chapel Hill, 2000.
- B.S., Computer Science, Abilene Christian University, 1994.
- B.S., Engineering Physics, Abilene Christian University, 1994.

Appointments

- Associate Department Head for Academics, Department of Computer Science and Engineering, Texas A&M University, September 2011 – Present
- Professor, Department of Computer Science and Engineering, Texas A&M University, September 2012 – Present
- Associate Professor (with tenure), Department of Computer Science, Texas A&M University, September 2006 – August 2012
- Assistant Professor, Department of Computer Science, Texas A&M University, September 2000 – August 2005

Products

Five Most Closely Related Publications

The * mark indicates students supervised by John Keyser


Five Other Significant Publications (within last 10 years)

The * mark indicates students supervised by John Keyser


Synergistic Activities

1. **Teaching:** Developed new undergraduate Programming Studio course, and oversaw revision of multiple undergraduate courses and undergraduate curriculum. Recipient of multiple teaching awards at the Department, College, and University levels.


4. **Book:** *Foundations of Physically-Based Modeling and Animation*. Co-author with D. House (Clemson University), AK Peters. (in final production; release date 12/13/16).

5. **Video Instruction:** *How to Program: Computer Science concepts and Python Exercises*. Video course through “The Great Courses” series by The Teaching Company (released summer 2016).
Professional Preparation

- Pohang University of Science and Technology, Korea, Computer Science and Engineering, M.S., 1994.
- Korea Advanced Institute of Science and Technology, Korea, Computer Science and Engineering, B.S., 1992.

Appointments

- 2010-present Associate Professor, Computer Science & Engineering, Texas A&M University.
- 2003-2010 Assistant Professor, Computer Science & Engineering, Texas A&M University.
- 1994-1997 Member of Technical Staff, Research & Development Group, Korea Telecom, Korea.

Five Related Products


**Five Significant Products**


**Five Synergistic Activities**

- Program Chair of the 12th IEEE International Conference on Networking, Architecture, and Storage (NAS 2017).
- Program Committee of ICCD 2017 (35th IEEE International Conference on Computer Design).
- Founder and Organizer of the first Workshop on Hardware/Software Techniques for Minimizing Data Movement to be held in conjunction with PACT 2017.
- NSF CAREER Award, 2009.
Biographical Sketch

Andreas Klappenecker
Professor
Department of Computer Science  Tel:  (979) 458 0608
Texas A&M University  Fax:  (979) 847 8578
College Station, TX 77843-3112  URL:  www.cs.tamu.edu/faculty/klappi/

Professional Preparation
Ph.D.  Computer Science, University of Karlsruhe, February 1998
Diplom  University of Karlsruhe, September 1995,
Major:  Computer Science, Minor:  Mathematics

Appointments
09/11–now  Professor, Department of Computer Science, Texas A&M University
09/06–08/11  Associate Professor, Department of Computer Science, Texas A&M University
11/00–08/06  Assistant Professor, Department of Computer Science, Texas A&M University
05/00–10/00  Research Associate, University of Karlsruhe, Germany
01/99–05/00  Visiting Assistant Professor, Department of Mathematics, Texas A&M University

Five Related Publications


Five Other Publications


**Synergistic Activities**

- Since 2000, I have organized the interdepartmental interdisciplinary Quantum Computing Seminar at TAMU.

- I have created with Hyunyoung Lee the Discrete Math Club that focuses on problem solving for undergraduate students.

- I have created in 2001 a course on quantum algorithms that discusses methods of quantum crytography. I regularly teach this course.

- I have create with Hyunyoung Lee a distance education course on discrete mathematics.

- In 2013, I have mentored the winning team of two high school students from Brenham. Their research was on quantum error correcting codes.

- I received a National Science Foundation CAREER award and a TEES Select Young Faculty award in 2004, was named Halliburton Faculty Fellow in 2007, and Fellow-at-Large of the Santa Fe Institute in 2000, and received highest distinction for his Ph.D. thesis. In 2005, I received an Undergraduate Faculty Teaching Excellence Award. I received the 2014 Distinguished Achievement Award for teaching (the highest honor for teaching awards at Texas A&M University).
Dr. Jyh-Charn (Steve) Liu  
Department of Computer Science and Engineering,  
Texas A&M Engineering Experiment Station  
Tel: 979-845-8739; FAX: 979-845-1420; E-mail: liu@cse.tamu.edu  

Professional Preparation  
Cheng Kung University, Taiwan Electrical Engineering B. Sc. 1979  
Cheng Kung University, Taiwan Electrical Engineering M. Sc. 1981  
University of Michigan, Ann Arbor Electrical Engineering Ph. D. 1989  

Appointments  
2008-Present Professor, Computer Science and Engineering Department, Texas A&M University.  
1995-2008 Associate Professor with tenure, Computer Science Department, Texas A&M University.  
1989-1995 Assistant Professor, Computer Science Department, Texas A&M University.  
1983-1984 Field engineer, Siantek Co. Taipei, Taiwan  

Products Related  

Other  
Aditya Belsare, Steve Liu and Sunil Khatri, “GPU Implementation of a Scalable Non-Linear Congruential Generator for Cryptography Applications”, Great Lakes Symposium on VLSI (GLSVLSI) 2013  
Xing Wang, Jason Lin, S. George, J.-C. Liu, “DT-GIS system for tactical pattern exploration in asymmetric conflicts”, 20th International Command and Control Research and Technology Symposium, 2015  
Synergistic Activities

1. As a Principal Investigator, GNSS timing is PI’s most current research initiative as he continues his pursuit of disruptive research opportunities. He took a Cyber Physical Systems (CPS) approach to identify the missing links between GNSS signals and computing systems that led to the birth of the OOP model and an anticipated wide range of new opportunities to integrate GNSS timing and positions as an integrated computing system fabric, rather than an application level information. He has led 49 sponsored projects in a wide range of interdisciplinary research projects with funding of $7 M from a wide range of sponsors (NSF, NIH, DOT, DOD, DOI, Texas state, companies.) He has led development of multiple software products. MECH (monitoring, emplacement of device and control in a Halo) predicts the risk levels of insurgent attacks. PorDITS supports portable medical information gateway in the battlefield. The diabetic retinopathy screen algorithm and networking tools delivered remote data acquisition and centralized screening capability. CREAT is a learning tool for crypto algorithms. Wavelet toolware is a software tool to learn the principles of continuous and discrete wavelets. DataLink is the first of its kind to demonstrate the data warehouse architecture for traffic stream data in the intelligent transportation systems (ITS).

2. As an Academic Supervisor and Educator, he is passionate about guiding students of all levels. He has supervised 26 PhD students. He has published widely in fields related to distributed systems, computer system modeling, algorithms and architectures. He has over 110 peer reviewed papers in various leading conferences and journals/transactions. He has 30+ MS students. He spearheads the development of capstone design lab in the CSE department, and an Internet testbed learning environment deployed to a TAMU outreach program. He mentored 6 students with ADHD disability to accomplish academic goals and secure strong R&D jobs.

3. He has contributed to the professional activities. He co-chaired the Real-time and Embedded Technology and Applications Symposium (2006), and co-chaired the workshop on embedded systems in the real-time systems symposium (2001). He has served on the program committee of different roles (publicity, tracks, technical committee) of the RTAS conference. He served on the technical committees of various conferences and journals (ICDCS, DATE, RTAS, RTSS, FTCS, IEEE Trans Comput., IEEE Trans. Of Image Processing, Journal of Systems architecture, etc.) He was an active contributor for the NSF Cyber Physical Systems (CPS), and Smart Health initiatives during their inception time. He served on NSF proposal review panels regularly (CPS, smart health, system core, education). He was awarded TAMU International Excellence Award for his work in diabetic retinopathy screening in Mexico. He was nominated for the ACM Eugene Lawler Award for Humanitarian Contributions within Computer Science and Informatics. As an executive committee member of the TAMU Geoscience and Technology center (GEOSAT), he is responsible the cyberinfrastructure development computing resource development. The center has just set up a 40 node high performance CPU-GPU cluster, a petabyte storage system, and 3 distributed visualization hubs. A GEOSAT market place is being developed to support collaborative research and sharing of research data, similar to the research being proposed in this project. The university level center has over 80 faculty members in participating cross disciplinary research related to geoscience and remote sensing research.
Dmitri Loguinov

Computer Science and Engineering Department
Texas A&M University
College Station, TX 77843-3112

Email: dmitri@cse.tamu.edu
http://engineering.tamu.edu/cse/people/dloguinov

Professional Preparation

<table>
<thead>
<tr>
<th>Location</th>
<th>Degree</th>
<th>Year</th>
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<tbody>
<tr>
<td>Moscow State University, Moscow, Russia</td>
<td>Computer Science BS (w/Honors)</td>
<td>1995</td>
</tr>
<tr>
<td>City University of New York, New York, NY</td>
<td>Computer Science PhD</td>
<td>2002</td>
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</table>

Appointments

<table>
<thead>
<tr>
<th>Year</th>
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<th>Department</th>
<th>Institution</th>
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<tbody>
<tr>
<td>2011—present</td>
<td>Professor, Computer Science &amp; Eng. Dept., TAMU</td>
<td>Computer Science &amp; Engineering</td>
<td>TAMU</td>
</tr>
<tr>
<td>2007—2011</td>
<td>Associate Professor, Computer Science &amp; Eng. Dept., TAMU</td>
<td>Computer Science &amp; Engineering</td>
<td>TAMU</td>
</tr>
<tr>
<td>2002—2007</td>
<td>Assistant Professor, Computer Science &amp; Eng. Dept., TAMU</td>
<td>Computer Science &amp; Engineering</td>
<td>TAMU</td>
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Products


Other:

## Synergistic Activities

<table>
<thead>
<tr>
<th>Year</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Created a new graduate class on scalable data computing</td>
</tr>
<tr>
<td>2004-2015</td>
<td>Engaged 9 undergraduate students under REU grants</td>
</tr>
<tr>
<td>2011</td>
<td>Created an honors section of CSCE 313 “Introduction to Computer Systems”</td>
</tr>
<tr>
<td>2008, 2009</td>
<td>Advised students who received first-place summer REU poster awards</td>
</tr>
<tr>
<td>2005-2007</td>
<td>Four patents in the area of video streaming</td>
</tr>
</tbody>
</table>
Biographical Sketch
Rabi N. Mahapatra
http://faculty.cs.tamu.edu/rabi/

PROFESSIONAL PREPARATION
Ph.D., Computer Engineering, Indian Institute of Technology, Kharagpur, 1992
M.Sc., Engineering (Electrical), Sambalpur University, India, 1984
B. Sc., Engineering: (Honors) Electronics & Telecommunication, Sambalpur University, India. 1979

APPOINTMENTS
• Sept. 2010 – present: Professor, Dept. of Computer Science and Engg., Texas A&M University, College Station, TX.
• Sept. 2001 – Aug. 2010: Associate Professor, Department of Computer Science and Engineering, Texas A&M University, College Station, TX.
• June-August 2001: Academic Visitor, IBM T.J Watson Research Center (ARL, Austin)
• Sept. 2000- May 2001: Associate Research Professor, Texas A&M University.
• Aug. 95 - Aug. 2000: Visiting Asst. Professor, Dept. of Computer Science, Texas A&M University, College Station, TX.
• April 1992 - Aug. 1995: Assistant Professor, Computer Engineering Group, E&ECE Dept., Indian Institute of Technology, Kharagpur, India.

PRODUCTS

RELATED RECENT PUBLICATIONS

Other Publications


SYNERGISTIC ACTIVITIES

- Associate Editor, ACM Transactions on Embedded Computing, 2009-14
- Associate Editor, EUROSIPI Journal on Embedded Systems, since 2010
- Associate Editor, Intl. Journal on Communication and Information Technology, since 2008

Collaborators and other Affiliations: (11)
Jiang Hu, Gwan Choi, Saraju Mohanty, Elias Kounganos, Wei Zhao, Ricardo Bettati, Thomas Chen, Laxmi Bhuyan, Raktim Bhattacharya, Partha Gutur and Sunil Khatri

Collaborators and Co-editors:
Q. Li, G. Venkataraman,

Graduate Advisors:
B. N Chatterji, G. Panda

Graduate Students Advised: (20)
Robin R. Murphy
Biographical Sketch

Professional Preparation:

Georgia Institute of Technology Atlanta, GA Mechanical Engineering B.M.E 8/1980
Georgia Institute of Technology Atlanta, GA Computer Science M.S. 6/1989
Georgia Institute of Technology Atlanta, GA Information and Computer Science Ph.D. 9/1992

Appointments:

Aug 2012 – current: Founding Director, Center for Emergency Informatics, Texas A&M Engineering Experiment Station, Texas A&M University
Aug 2008 – current: Raytheon Professor of Computer Science and Engineering, Texas A&M University
Jun 2003 – Dec 2006: Founding Director, NSF I/UCRC Safety, Security, Rescue Research Center, and Site Director at University of South Florida
Aug 2003 – Aug 2008: Professor, Computer Science and Engineering and joint appointment with Cognitive and Neural Science, University of South Florida
Jan 2002 – current: Director, Center for Robot-Assisted Search and Rescue
Aug 1998 – Jul 2003: Associate Professor, Computer Science and Engineering and joint appointment with Cognitive and Neural Science, University of South Florida

Products:

5 Most Closely Related Products

5 Other Significant Products

Synergistic Activities:

1. Emergency Response and Field Robotics. I am a co-founder of the field of Disaster Robotics, holding the first US National Science Foundation grant on search and rescue robotics (1996) and have inserted ground, aerial, and marine vehicles through the Center for Robot-Assisted Search and Rescue into
21 disasters, starting with the 9/11 World Trade Center and most recently the Fukushima Daiichi nuclear accident and Tohoku Tsunami and the SR530 Mudslides, near Oso, Washington. I created the Roboticists Without Borders program to enable the latest technologies and expertise to be donated to responders at no charge. I am a recipient of the ACM Eugene Lawler Humanitarian award as well as the Motohiro Kiso (Japan) award.

2. Broadening Participation of Underrepresented Groups. As a woman, I am passionate about diversity and encouraging underrepresented groups to go into the sciences and graduate school. Disaster robotics is particularly motivating because of the high societal value, which has been shown to increase underrepresented group recruitment. These are examples of my efforts:

- Mentoring through Computing for Disasters Research Experiences for Undergraduates (REU) and CRA-W Distributed REU. I have been the PI for two NSF REU site grants focusing on exposing women and minorities to computer science. These grants have supported 23 women, 1 disabled woman, 3 African-Americans, 4 Hispanics, and 1 Native American.
- PhD students. I have graduated three women to date, two of whom were NSF Graduate Fellows, and have two women and a Hispanic student in progress who is funded by Louis Stokes Alliance for Minority Participation (LSAMP) Graduate and a NSF Bridge to the Doctorate Fellowship.
- Demonstrations and keynotes. My group averages 3 demonstrations a year (e.g., Expanding Your Horizons, FIRST robotics, etc.) and I give at least 1 keynote each year for a diversity initiative (e.g., Advancing Robotics Technology for Societal Impact (ARTSI) Alliance of historically black colleges and universities). Our work was the focus of the first years SciGirls (Public Broadcasting System) episode Robots to the Rescue which followed me as I mentored 4 middle school girls on robotics, first showing April 14, 2010. The first season of SciGirls won a daytime Emmy.
- Robot Petting Zoo. The Petting Zoo refers to our interactive presentation of each robot as if it were an animal that had its own unique habitat (work envelope) and survival behaviors (programming). The Petting Zoo was debuted at the 2012 Grace Hopper Celebration for Women and was featured at the 2014 DARPA Robotics Challenge Expo with over 3,000 attendees, and the 2015 South By Southwest (SXSW) where we had over 2,000 people come through the exhibit.
- Museums. I co-created an exhibit on rescue robots for the Museum of Science and Industry in Tampa; am featured in the Perot Museum in Dallas and the National Museum of Emergency Science and Innovation in Tokyo, and the traveling MathAlive! Exhibition; and conducted 3 days of interactive displays for the Smithsonian.

3. Outreach to the Research Community. I am a co-founder of the IEEE Robotics and Automation Society’s Technical Committee on Safety, Security, and Rescue Robotics and the annual international conference. I have enabled researchers to work in unstructured environments in three creative ways: i) creating 18 exercises designed for robot experimentation and arranging for researchers to work with responders or use fieldable rescue robots at 17 responder exercises, 2) obtaining research instrumentation and robots to loan to 45 universities and research institutions for experimentation or responses in 18 states and 8 countries, and 3) shepherding the creation of the RESPOND-R mobile, distributed test instrument. Beyond my 150 publications, I have promoted interest in, and knowledge about, working in unstructured environments through 5 workshops; 6 tutorials with over 2,300 people in attendance; over 100 keynotes, plenaries, or invited talks; and 3 international European Union advisory boards.
Biographical Sketch
Daniel J. Ragsdale, Ph.D.

A) Professional Preparation

<table>
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<tr>
<th>Institution</th>
<th>Location</th>
<th>Major/Area</th>
<th>Degree</th>
<th>Year</th>
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<tbody>
<tr>
<td>United States Military Academy</td>
<td>West Point, NY</td>
<td>General Engineering</td>
<td>BS</td>
<td>1981</td>
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<tr>
<td>Naval Post Graduate School</td>
<td>Monterey, CA</td>
<td>Computer Science</td>
<td>MS</td>
<td>1990</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>College Station, TX</td>
<td>Computer Science</td>
<td>Ph.D</td>
<td>2001</td>
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</table>

B) Appointments

2015-Present  Director, Texas A&M Cybersecurity Center and Professor of Practice, Texas A&M Engineering Experiment Station and the Texas A&M Department of Computer Science and Engineering, College Station TX


2009 – 2010  Fellow, American Council on Education (ACE) Fellow’s Program, President’s Office, Rice University (Sabbatical)

2006-2009  Vice Dean for Education, US Military Academy, West Point NY

2005- 2006  Deputy Commanding Officer, Task Force Thunderbolt, 17th Field Artillery Brigade, Multi-National Corps-Iraq, Victory Base, Baghdad, Iraq

2003-2005  Program Director, Information Technology (IT) Program, Department of Electrical Engineering and Computer Science, US Military Academy, West Point, NY

C) Products (10 total)

Most Relevant Educational Projects (2)


Most Relevant Publications (3)


Other Significant Publications (5)


D) Synergistic Activities (5 Total)

Journal Editing and Review Activities


National and International Committees and Boards

3. Advisory Board Member, National Cybersecurity Student Association, 2016


Conference, Workshop, and Colloquium Service

Lawrence Rauchwerger

Department of Computer Science and Engineering
Texas A&M University
College Station, TX  77843-3112
USA

phone: (979) 845-8872  
fax: (979) 847-8578  
rwerger@tamu.edu

Professional Preparation

**Ph.D. in Computer Science**, University of Illinois at Urbana-Champaign, 1995.  
Thesis advisor: Prof. David Padua

M.S. Research Area: Manufacturing Science and Technology for VLSI (Equipment Modeling).

**Engineer in Electronics and Telecommunications**, Polytechnic Institute,  
Department of Electronics & Telecommunications, 1980, Bucharest, Romania.  
Diploma Project: Design and Implementation of an Alphanumeric and Graphic Display.

Appointments (selected)

**Texas A&M University**, Department of Computer Science and Engineering, College Station, TX.  
*Eppright Professor* (since 2014), *Professor* (since 2006), *Associate Prof.* (2006), *Assistant Prof.* (1996).  
*Co-Director*, PARASOL Laboratory (since 1998).  
*Deputy Director*, Inst. for Applied Mathematics and Computational Science (IAMCS) (since 2013)  
*Assistant Director*, Center for Large Scale Scientific Simulations (CLASS) (since 2012)

**INRIA Saclay**, Orsay, France.  

**Varian Associates Inc.**, Thin Film Technology Division, R&D, Palo Alto, CA.  

**Beckman Instruments Inc.**, Scientific Instruments Division, Irvine, CA.  

Representative Publications or Other Products (first 5 most closely related, next 5 also relevant)


Harshvardhan, A. Fidel, N. M. Amato, L. Rauchwerger, “KLA: A New Algorithmic Paradigm for Parallel Graph Computations”, in *Proc. of the Int. Conf. on Parallel Architectures and Compilation Techniques (PACT)*, Edmonton, AB, Canada, Aug. 2014, *Best Paper Award*


Mani Zandifar, Mustafa Abduljabbar, Alireza Majidi, Nancy Amato, Lawrence Rauchwerger and David Keyes, “Composing Algorithmic Skeletons to Express High-Performance Scientific Applications” in the Proc. 26th Int. Conf. on Supercomputing (ICS), 2015, **Best Paper Award**.


**Synergistic Activities (selected)**

**Editorial Activities (selected)**

**Editorial Board Member**

- ACM Books, Area Editor for Parallel Computing, since 2017.

**Guest Editor**


**Service on Conference Steering, Organizing and Program Committees (selected)**

**Steering Committee Member**: ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP), Int. Conf. on Parallel Architectures and Compilation Techniques (PACT), Int. Conf. on Supercomputing (ICS), Workshop on Languages and Compilers for Parallel Computing (LCPC).

**Vice-Chair**, WG 3.10, Int. Federation of Information Processing (IFIP), 2013.

**General Chair**: 20th Int. Conf. on Parallel Architectures and Compilation Techniques (PACT), 2011.


**Program Vice-Chair**: Int. Symp. on Computer Architecture and High Performance Computing (SBAC-PAD), 2010.


VIVEK SARIN  
Associate Professor and Undergraduate Advisor  
Department of Computer Science and Engineering, Texas A&M University  
Tel: 979-458-2214; FAX: 979-847-8578; E-mail: sarin@tamu.edu

PROFESSIONAL PREPARATION

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<tr>
<th>Institution</th>
<th>Degree</th>
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<tr>
<td>Indian Institute of Technology, Delhi</td>
<td>Computer Science and Engineering</td>
<td>B.S. 1990</td>
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<tr>
<td>University of Minnesota</td>
<td>Computer Science</td>
<td>M.S. 1993</td>
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<tr>
<td>University of Illinois at Urbana-Champaign</td>
<td>Computer Science</td>
<td>Ph.D. 1997</td>
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APPOINTMENTS

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<th>Position</th>
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<th>Location</th>
<th>Timeframe</th>
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<tr>
<td>Undergraduate Advisor</td>
<td>Computer Science &amp; Engr., Texas A&amp;M University</td>
<td>TX</td>
<td>2001-present</td>
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<tr>
<td>Associate Professor</td>
<td>Computer Science &amp; Engr., Texas A&amp;M University</td>
<td>TX</td>
<td>2005-present</td>
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<tr>
<td>Assistant Professor</td>
<td>Computer Science &amp; Engr., Texas A&amp;M University</td>
<td>TX</td>
<td>1999-2005</td>
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<tr>
<td>Research Associate</td>
<td>Computer Science, Purdue University</td>
<td></td>
<td>1997-1999</td>
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AWARDS AND HONORS

1. NSF Faculty Early Career Development (CAREER) Award, 2000–2004
2. IBM Faculty Partnership Award, 2002
3. Texas Engineering Experiment Station (TEES) Select Young Faculty, 2002
4. Texas Engineering Experiment Station (TEES) Special Research Fellow, 2001

SIGNIFICANT PUBLICATIONS


Books and Authoritative References


Synergestic Activities

- NSF panelist and reviewer
- Past committee membership for conferences: *Intl. Conf. on Parallel Processing*, *Intl. Conf. on High Performance Computing*, *Supercomputing*
- Creation of multidisciplinary graduate courses on high performance computing and its application to various scientific and engineering disciplines
- Member of SIAM and IEEE

Advising

Current

Ph.D.: Emil Thomas

Past

Ph.D.: Fahad Alrashed (Saudi Aramco), Thomas George (IBM), Kasturi Kannan (NYU), Hemant Mahawar (Microsoft), Juan G. B. Saldana (National Polytechnic Institute, Mexico), Meiqiu Wang (Microsoft), Shu Yan (Freescale Semiconductor), Le Zhang (Facebook)

M.S.: Radhika Gupta (Microsoft), Sreekanth Juttu (Xilinx), Sreekanth Sambavaram (Insomniac Games), Xue Wang
Biographical Sketch: Scott D. Schaefer

Professional Preparation
- Trinity University, San Antonio, TX, Computer Science, Mathematics, B.S. 2000
- Rice University, Houston, TX, Computer Science, M.S. 2003
- Rice University, Houston, TX, Computer Science, Ph.D. 2006

Appointments
- Professor, Texas A&M University, 9/2016–present
- Associate Professor, Texas A&M University, 9/2012–8/2016
- Assistant Professor, Texas A&M University, 8/2006–8/2012

Related Publications (available online at http://faculty.cs.tamu.edu/schaefer/research)

Other Publications
Synergistic Activities
Program Co-Chair of Geometric and Physical Modeling (GDSPM) 2015
Program Co-Chair of Shape Modeling International 2012
Program Co-Chair of the Symposium on Geometry Processing 2011
Associate Editor of Graphical Models, 2010-present
Associate Editor of The Visual Computer, 2010-present

Collaborators
Hart, John. University of Illinois, Urbana-Champaign
Hormann, Kai. University of Lugano
Keyser, John. Texas A&M University
Li, Kuiyu. Intel
Loop, Charles. Microsoft Research
Petrova, Guergana. Texas A&M University
Wang, Wenping. The University of Hong Kong
Yuksel, Cem. University of Utah

Graduate Advisor
Joe Warren – Department of Computer Science, Rice University

Thesis Advisor and Postgraduate-Scholar Sponsor
Kuiyu Li (postdoc), Intel;
Mayank Singh, University of Wisconsin La Crosse;
Eric Landreneau, Blizzard Entertainment;
Josiah Manson, Activision;
Lei He, Microsoft;
Jason Smith, Texas A&M University

Total Number of graduate students advised: 5
BIOGRAPHICAL SKETCH

Dylan A. Shell

Education

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<th>Institution</th>
<th>Field</th>
<th>Degree</th>
<th>Year</th>
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<tr>
<td>University of the Witwatersrand</td>
<td>Computational &amp; Applied Math. and Comp. Sci.</td>
<td>BSc</td>
<td>2000</td>
</tr>
<tr>
<td>University of the Witwatersrand</td>
<td>Computer Science</td>
<td>BSc (Hons)</td>
<td>2001</td>
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<tr>
<td>University of Southern California</td>
<td>Computer Science</td>
<td>MSc</td>
<td>2006</td>
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<tr>
<td>University of Southern California</td>
<td>Comp. Sci.: “Macroscopic Approaches to Control”</td>
<td>PhD</td>
<td>2008</td>
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<td>University of Southern California</td>
<td>Robotics</td>
<td>PostDoc</td>
<td>2009</td>
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Professional appointments

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<th>Position</th>
<th>Field</th>
<th>Year</th>
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<tr>
<td>Texas A&amp;M University</td>
<td>Assistant Professor</td>
<td>Computer Science &amp; Engineering</td>
<td>Fall 2009–2015</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>Associate Professor</td>
<td>Computer Science &amp; Engineering</td>
<td>Fall 2015–present</td>
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</table>

Research publications/products most closely related to the proposed project


Other research publications/products


Synergetic Activities


- I actively participate in local programs that focus on public discussion and involvement in science, including lectures given at the Subversive Manifesto for Underground Technology (Robot Demos: Sep. 2010, Speaker: Aug. 2010); Discover Engineering (Lab Tour and Talk, Oct. 2010), Rock the Republic (Oct. 2010), Bryan Science Café (Jan. 2011), Houston Skeptics (May, 2013). My work on robotic theatre (publication 3 above) included a production which drew large (sold out audiences), and included outreach talks and discussions. (Public coverage of the work appeared in the Wired blog (18 Nov 2009), Engadget blog (18 Nov 2009), and Autonomous Robots blog (8 Dec 2010).) I also make an effort to lecture (and attend lectures) outside of my immediate discipline. For example, I gave a seminar to the Department of Recreation, Park and Tourism Sciences (Apr. 2010).

- I serve K-12 education by participating in local science activities, for example, Texas Junior Science and Humanities Symposium (Judge, Jan. 2010), Texas Junior Academy of Science (Judge, Apr. 2010), CS High School Contest (Judge: “Computational Thinking”, Oct. 2009, “Texting”, Oct. 2010). Over the 2014 Summer, I hosted two High School Teachers in my laboratory as part of an RET experience: Tami Dudo (College Station ISD) and Sarah Kostroun (Midway ISD) worked on curricular materials on the topic of “Graph Theory in Everyday Life.”

- In addition to associate editor and reviewer duties, I organized the AAAI Spring Symposium entitled “Multi-Robot Systems and Physical Data Structures” (with J. McLurkin); I served on the student travel awards committee for IEEE IROS 2011; I was the Publicity Chair for Robotics Science and Systems (RSS) 2012, Area Chair for RSS 2013 & 2014, and Local Organization Chair for the IEEE International Symposium on Safety, Security, and Rescue Robotics (2012). I am one of the organizers of IEEE IROS 2014 workshop on the future of multiple-robot research, and one of the organizers of the NSF-funded AAAI & IEEE Workshop on “Research Issues at the Boundary of AI and Robotics.”

- In my courses (e.g., CSCE-689, CS–584) and research, I emphasize use of open-source software. I have included laboratory experience in which contributions are made upstream to the projects, for example, ROS. I am a registered developer and have contributed code for the PATH solver library to the Moby simulator, drivers to the player project, and various bug-fixes.
Frank M. Shipman, III

Professional Preparation

<table>
<thead>
<tr>
<th>Institution</th>
<th>Major</th>
<th>Degree</th>
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<tbody>
<tr>
<td>Rice University, Houston, Texas</td>
<td>Electrical Engineering</td>
<td>B.S., 1988</td>
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<tr>
<td>University of Colorado at Boulder</td>
<td>Computer Science</td>
<td>M.S., 1990</td>
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<tr>
<td>University of Colorado at Boulder</td>
<td>Computer Science</td>
<td>Ph.D., 1993</td>
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</tbody>
</table>

Appointments

2004 - present, Associate Director
Center for the Study of Digital Libraries, Texas A&M University, College Station, Texas

Department of Computer Science, Texas A&M University, College Station, Texas

1999 - present, Visiting Scientist & Consultant
Fuji-Xerox Palo Alto Laboratory, Palo Alto, California

1992 - 1994, Consultant
Xerox Palo Alto Research Center, Palo Alto, California

Five Relevant Products


Five Other Products


Synergistic Activities

Visualizing and Navigating Video. Visualizations of video features, e.g. faces, motion, and audio, and are valuable when authoring interactive video and analyzing security video. Such visualizations can convey information about video content such that navigation to high-value portions of video is supported. This work combines signal processing with visualization and user interface design. A particular emphasis is on techniques to generate and present navigational opportunities that are expected to be of value. Navigation within video is important in the context of training and educational video as it allows the same (interactive) video content to be valuable to viewers with a broader range of existing knowledge. Results have been published in ACM Multimedia, ACM Hypertext, and ACM Advanced Visual Interface Conferences.

Intellectual Property Rights for Social Media Content. This research explores beliefs and practices in the area of intellectual property rights for social media content. This work has examined reactions to scenarios of saving, editing, reusing, and deleting user-authored content from Twitter, Flickr, YouTube, Amazon, MMOGs, and Facebook. The results have implications for the design of new technologies (e.g. personal information archives) and policies (e.g. new copyright law). Papers on the individual studies have been published at the CHI, CSCW, ICWSM, JCDL, and WWW Conferences. An outcome of this project was the development of a method for data gathering via crowdsourcing. The paper on this method won the best paper award at ACM Conference on Web Science 2013.

Workspaces for Information Analysis and Visual Expression. Designed, developed, and evaluated a series of software environments supporting human expression of interrelations between information object via visual and spatial cues. The earliest of these, which were called spatial hypertext systems to emphasize that the representation of relationships was via visual arrangement rather than links, were VIKI (while at Xerox PARC) and VKB (at Texas A&M University). These systems acknowledge cognitive issues that arise when people are asked to express relations via explicit links. Papers on this line of work won the Douglas Engelbart Best Paper Award at ACM Hypertext 1999 and the best student paper award at ACM USER Interfaces Software and Technology (UIST) 2002, with several others nominated for best paper awards. Later systems have focused on workspaces for particular types of information (e.g. PerCon for scientific data, MusicWiz for music).

Multi-Application Interest Modeling. While many applications attempt to infer user interests based on user behavior (e.g. time spent in web browser on each page), these inferred models are generally limited by the fact that often people use multiple applications to perform interrelated activities during analysis. This research activity has shown that gathering user activity across a variety of applications when building interest models (e.g. multi-application user interest modeling) is more robust than single-application interest modeling. His group has developed the Interest Profile Manager, a service that monitors user activity in content consumption applications (web browser and pdf reader) and content authoring applications (Microsoft Word and PowerPoint) to infer user interests. Results have been published at ACM IUI, JCDL, and CHIIR conferences.

Identifying and Visualizing Document Change. Observations of the use of web-based collections for education motivated a line of work looking at how to support management of distributed digital libraries. Central to this work, published in ACM & IEEE Joint Conference on Digital Libraries and the ACM Conference on Hypertext, has identified algorithms for detecting, classifying and visualizing change to documents over time to support collection managers in focusing their limited attention on the most problematic portions of their collections.
Dezhen Song
Dept. of Computer Science and Engineering, Texas A&M University
3112 TAMU
College Station, TX 77843-3112
Tel: (979) 845-5464
Fax: (979) 847-8578
Email: dzsong@cse.tamu.edu
URL: http://faculty.cs.tamu.edu/dzsong/

Professional Preparation

<table>
<thead>
<tr>
<th>University</th>
<th>Industrial Engineering and Operations Research</th>
<th>PhD, 2004</th>
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<tr>
<td>University of California, Berkeley</td>
<td></td>
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<tr>
<td>Zhejiang University (China)</td>
<td>Control and Automation</td>
<td>BS 1995, MS 1998</td>
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Appointments

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<tr>
<th>Position</th>
<th>Department/University</th>
<th>Date</th>
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<tbody>
<tr>
<td>Professor</td>
<td>Computer Science and Engineering, TAMU</td>
<td>09/16-present</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>Texas A&amp;M University (TAMU), College Station, TX 77843</td>
<td>09/10-08/16</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>College Station, TX 77843</td>
<td>08/04-08/10</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>University of California, Berkeley</td>
<td>05/01-08/04</td>
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</table>

Five products most closely related to the proposed project


D. Song and Y. Yu, *A Low False Negative Filter for Detecting Rare Bird Species from Short Video Segments using a Probable Observation Data Set-based EKF Method*, IEEE Trans. on Image Processing (T-IP), vol. 19, no. 9, Sept. 2010, pp. 2321-2331


Five other significant products


D. Song, C. Kim, and J. Yi, *Simultaneous Localization of Multiple Unknown and Transient Radio Sources Using a Mobile Robot*, IEEE Transactions on Robotics (T-RO), vol. 28, no. 3, June 2012, pp. 668-680


**Synergistic Activities**

| Panel reviewer | National Science Foundation, NIH |
| Curriculum development | New courses: Computer System Design (08/09-present), Introduction to Computer Systems (01/15-present), Networked Robotics (08/04-present), Computer Vision on Multiple View Geometry (01/07-present), |
| Minorities | N/A |
Radu Stoleru

Texas A&M University       Tel: (979) 862-8349
Department of Computer Science and Engineering Fax: (979) 847-8578
311C H.R. Bright Building Email: stoleru@cse.tamu.edu
Mail Stop 3112 TAMU http://faculty.cse.tamu.edu/stoleru
College Station, TX 77843-3112

PROFESSIONAL PREPARATION

University of Bucharest, Romania           Physics          BS, 1993
Central Michigan University                 Computer Science, Physics MS 1998, MS 1997
University of Virginia                     Computer Science            PhD, 2007

APPOINTMENTS

Associate Professor, Texas A&M University Sept. 2013 - present
Assistant Professor, Texas A&M University Sept. 2007 - 2013
Graduate Research Assistant, University of Virginia 2002-2007
Senior Analyst, Broadslate Networks/Divx            1997-2002
Graduate Research Assistant, Central Michigan University 1995-1997
Research Physicist, National Institute for Laser,
                    Plasma and Radiation Physics (Romania) 1993-1995

PRODUCTS

Related to the Proposed Project


Other Publications


SYNERGISTIC ACTIVITIES


Awards: NSF CAREER Award, 2013; Best Student Paper Award, IEEE Embedded and Ubiquitous Computing (EUC), 2011; Outstanding Graduate Research Award, University of Virginia, 2007; National Merit Scholarship, Ministry of Education, Romania, 1991.

COLLABORATORS and CO-EDITORS
W. Magnussen (Texas A&M University), H. Chenji (Ohio U), E. Nikolova (UT Austin), G. Xie (Naval Postgraduate School), J.A. Stankovic (Univ of Virginia), P. Barooah (Univ of Florida), T. Abdelzaher (UIUC), A. Bayen (UC Berkeley), M. Branicky, (Univ of Kansas), C. Lu (Washington Univ in St. Louis), M. Won (U. of North Dakota), B. Shihada (King Abdullah Univ of Science and Technology), P.R. Kumar (Texas A&M Univ), H. M. Ammari (Univ of Michigan – Dearborn), T. Sookor, David Bruno (Army Research Labs)

GRADUATE and POSTDOCTORAL ADVISORS
J. A. Stankovic (U. of Virginia)

THESIS ADVISOR and POSTGRADUATE-SCHOLAR SPONSOR
PhD – Completed (Texas A&M Univ): J. Chen, M. Suresh, H. Chenji, M. Won, A. Hassanzadeh; MS - Completed (Texas A&M Univ): S. Mandal, Q. Ning, H. Chenji, R. Chandanala, J. George, Y. Feng; PhD – In progress (Texas A&M Univ): A. Altaweel, M. Cao, W. Gong, C. Yang, W. Zhang; MS – In progress (Texas A&M Univ): J. Chen; Post Doc – L Smith (Blinn College); The total number of graduate students advised (past 5 years): 25. Number of postdoctoral scholars sponsored (past 5 years): 1
Shinjiro Sueda

PROFESSIONAL PREPARATION

University of British Columbia (Vancouver, BC), Computer Science B.Sc. (Honours), 2002.
University of British Columbia (Vancouver, BC), Computer Science, Ph.D., 2011.
University of British Columbia (Vancouver, BC), Postdoc, Computational Biomechanics, 5/2011-8/2012

APPOINTMENTS

9/2016–present, Assistant Professor, Texas A&M University, College Station, TX.
8/2014–8/2016, Assistant Professor, California Polytechnic State University, San Luis Obispo, CA.

PUBLICATIONS

Most Closely Related


Other

SYNERGISTIC ACTIVITIES
Teaching: (i) Taught Computational Fabrication at Texas A&M, covering the computational techniques and algorithms behind geometric design, 3D printing, and 3D scanning. (ii) Taught freshman (102) and senior (471, 474) classes at Cal Poly.
Mentoring: (i) Advising 2 Ph.D. students and 3. M.S. students (ii) Supervised over two dozen senior projects at Cal Poly. (iii) Thesis committee member for 2 Ph.D. students at Texas A&M, and 2 M.S. students at Cal Poly.
University service: (i) Committee member for the graduate program, Computer Science & Engineering, Texas A&M University, 2016-present. (ii) Committee member for the graduate program, Computer Science, California Polytechnic State University, 2014-2015.
Sing-Hoi Sze
Department of Computer Science and Engineering,
Texas A&M University, College Station, TX 77843-3112
(979) 845-5009 shsze@cse.tamu.edu

Professional Preparation

<table>
<thead>
<tr>
<th>Institution</th>
<th>Degree</th>
<th>Year</th>
</tr>
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<tbody>
<tr>
<td>Chinese University of Hong Kong</td>
<td>computer science</td>
<td>B.Sc.</td>
</tr>
<tr>
<td>Pennsylvania State University</td>
<td>computer science</td>
<td>M.S.</td>
</tr>
<tr>
<td>University of Southern California</td>
<td>computer science</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>University of California at San Diego</td>
<td>computational biology</td>
<td>Postdoc.</td>
</tr>
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Appointments

2008-present: Associate Professor, Department of Computer Science and Engineering, Department of Biochemistry & Biophysics, Texas A&M University
2002-2008: Assistant Professor, Department of Computer Science, Department of Biochemistry & Biophysics, Texas A&M University

Most Related Products


Other Products


**Synergistic Activities**


*Proposal Reviewer: Plant Genome Research Program, Biological Infrastructure, National Science Foundation, 2011.*


*Organizer: National Science Foundation Biotechnology Workshop for Middle School Students, Texas A&M University, 2005.*


**Collaborators within Last 48 Months**

Jianer Chen (Texas A&M University), Jorge Cruz-Reyes (Texas A&M University), Martin Dickman (Texas A&M University), Jianhua Huang (Texas A&M University), Craig Kaplan (Texas A&M University), Sergey Nuzhdin (University of Southern California), Xiaoning Qian (Texas A&M University), James Sacchettini (Texas A&M University), Maxwell Scott (North Carolina State University), Aaron Tarone (Texas A&M University), Michael Thon (Universidad de Salamanca), Steven Xu (U.S. Department of Agriculture), Gangman Yi (Gangneung-Wonju National University), Byung-Jun Yoon (Texas A&M University), Hongbin Zhang (Texas A&M University), Xiuren Zhang (Texas A&M University), Lan Zhou (Texas A&M University).

**Graduate and Postdoctoral Advisors**


**Graduate Students**

*Doctorate: Mu-Fen Hsieh, Ye Yuan, Shuhua Fu (graduated 2015), Jia-Hao Fan (graduated 2013), Gangman Yi (graduated 2011), Xiaoyan Zhao (graduated 2010), Songjian Lu (graduated 2009), Yue Lu (graduated 2008), Qingwu Yang (graduated 2007).*

*Master’s: Yu Zhang, Gangman Yi (graduated 2006), See-Loong Chin (graduated 2003).*
PROFESSIONAL PREPARATION

Kamla Nehru Institute of Technology  Sultanpur, India  Electronics and Communication  B.Tech. 1987
University of Louisiana  Lafayette, LA  Computer Engineering  M.S. 1989
University of Louisiana  Lafayette, LA  Computer Engineering  Ph.D. 1993

APPOINTMENTS

2014-Present  Professor of Practice, Department of Computer Science and Engineering, Texas A&M University
2010-2014  Senior Director and CPU Project Manager, Server Development Group, Intel Corporation
2009-2010  Senior Director and Silicon Execution Manager, Visual Computing Group, Intel Corporation
2006-2009  Director and Design Manager, Visual Computing Group, Intel Corporation
2003-2006  Principal Engineer, Enterprise Products Group, Intel Corporation
1994-2003  Staff Engineer, Portland Technology Development, Intel Corporation
1993-1994  Assistant Professor, Department of Electrical and Computer Engineering, University of Louisiana, Lafayette

PRODUCTS


SYNERGISTIC ACTIVITIES

North America Functional Verification Lead, Cadence Academic Network, Cadence Inc.
Curriculum Advisory Board, Synopsys Inc.
Duncan Moore Henry Walker
Department of Computer Science and Engineering
Texas A&M University
College Station, TX 77843-3112
Tel: (979) 862-4387
Email: walker@cse.tamu.edu

PROFESSIONAL PREPARATION

<table>
<thead>
<tr>
<th>Institution</th>
<th>City, State</th>
<th>Major</th>
<th>Degree</th>
<th>Year</th>
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<tbody>
<tr>
<td>California Institute of Technology</td>
<td>Pasadena, CA</td>
<td>Engineering</td>
<td>BS with Honors</td>
<td>June 1979</td>
</tr>
<tr>
<td>Carnegie Mellon University</td>
<td>Pittsburgh, PA</td>
<td>Computer Science</td>
<td>MS</td>
<td>May 1984</td>
</tr>
<tr>
<td>Carnegie Mellon University</td>
<td>Pittsburgh, PA</td>
<td>Computer Science</td>
<td>PhD</td>
<td>April 1986</td>
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APPOINTMENTS

Graduate Advisor, 2015-present, Professor, 2006-present, Ford Motor Company Design Professor II and Department Head, 2011-2013, Graduate Advisor, 2006-2011, Associate Head, 2000-2003, Associate Professor, 1993-2006, Dept. of Computer Science and Engineering, Texas A&M
Academic Visitor, CAD Department, IBM Austin Research Laboratory, 6/1997-7/1997.

PUBLICATIONS

Publications Most Closely Related to the Proposed Project


Other Significant Publications


D. Gope and D. M. H. Walker, “Maximizing Crosstalk-Induced Slowdown during Path Delay Test,” *IEEE Int’l Conf. on Computer Design*, Montreal, Quebec, Canada, October 2012, paper 3.1.3.

**SYNERGISTIC ACTIVITIES**

Organizing Committee, IEEE Texas Workshop on Integrated System Exploration, 2012-present
Steering Committee, IEEE Int’l Workshop on Defects, Adaptive Test & Data Analysis, 2005-present
Associate Editor, IEEE Transactions on Computer-Aided Design of Circuits and Systems, 2010-2011
Application of KLPG test vectors to AMD multi-core microprocessor, 2006-2009
Fault counting metrics at Freescale, Philips, TI, Intel and LSI Logic, 2005-2008
Jennifer Lundelius Welch — Biographical Sketch

Regents Professor, Chevron Professor II
Department of Computer Science and Engineering
tax: (979) 847-8578
Texas A&M University
College Station, TX 77843-3112

phone: (979) 845-5076
email: welch@cse.tamu.edu
web: https://parasol.tamu.edu/people/welch

Professional Preparation

- The University of Texas at Austin, Plan II, B.A., 1979.

Appointments

- Professor, Department of Computer Science and Engineering, Texas A&M University, College Station, TX, 2002 to present. Interim Department Head, 2001 to 2002. Associate Professor, 1996 to 2002. Assistant Professor, 1992 to 1996.
- Assistant Professor, Department of Computer Science, University of North Carolina at Chapel Hill, Chapel Hill, NC, 1989 to 1992.
- Member of Technical Staff, Intelligent Database Systems Department, GTE Laboratories Incorporated, Waltham, MA, 1988 to 1989.
- Scientific Programmer, Tracor, Inc., Austin, TX, 1980 to 1981.

Ten Publications


**Synergistic Activities**

- Editor of *ACM SIGACT News* Distributed Computing Column, 2013 to present.
- Supervised research by several undergraduate women through NSF Research Experience for Undergraduates and CRA-W Distributed Mentor Program (DMP) / Distributed Research Experience for Undergraduates (DREU) programs; one in 2013; two in 2009, each resulting in a publication; one in 2007, resulting in a publication.
- Editorial board member, *Distributed Computing* journal.

**Collaborators and Other Affiliations**

- *Collaborators in Last 48 Months*: Hagit Attiya (Technion, Israel), Bernadette Charron-Bost (Ecole Polytechnique, France), Jianer Chen (Texas A&M University), Hyun Chul Chung (Epoch Labs), Alejandro Cornejo (Harvard), Faith Ellen (University of Toronto, Canada), Matthias Fuegger (Vienna University of Technology, Austria), Antoine Gaillard (Ecole Polytechnique, France), Rebecca Ingram (Trinity University), Andreas Klappenecker (Texas A&M University), Saptaparni Kumar (Texas A&M University), Hyunyoung Lee (Texas A&M University), Tsvetomira Radeva (MIT), Srikanth Sastry (Google), Patrick Shields (Adzerk), Edward Talmage (Texas A&M University), Saira Viqar (self-employed), Jennifer Walter (Vassar College), Jiaqi Wang (Oracle), Josef Widder (Vienna University of Technology, Austria).
- *Graduate Advisor*: Nancy Lynch (MIT).
- *Graduate Students and Postdoctoral Scholars in Last 5 Years*:
  - PhD students: Saptaparni Kumar (in progress), Edward Talmage (in progress), Hyun-Chul Chung (Epoch Labs), Saira Viqar (self-employed), Total 11.
  - Master’s students: Keishla Ortiz-Lopez (in progress), Sanat Pandey (Ansys Inc.), Total 22.
  - Postdoctoral scholars: Hyun Chul Chung (Epoch Labs). Total 6.
Dr. Tiffani L. Williams  
Department of Computer Science and Engineering,  
Texas A&M University  
Tel: 979- 845-7977; FAX: 979- 845-8578; E-mail: tlw@cse.tamu.edu

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<th>PROFESSIONAL PREPARATION</th>
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<tr>
<td>Marquette University</td>
<td>Milwaukee, W</td>
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<tr>
<td>University of Central Florida</td>
<td>Orlando, FL</td>
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<tr>
<td>Computer Science</td>
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<td>Computer Science</td>
<td>B.S. 1994</td>
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<td>Ph.D., 2000</td>
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<tbody>
<tr>
<td>2011-2017</td>
<td>Associate Professor, Department of Computer Science and Engineering, Texas A&amp;M University</td>
</tr>
<tr>
<td>2010-2017</td>
<td>Applications Researcher, Institute for Applied Mathematics and Computational Science (IAMCS), Texas A&amp;M University</td>
</tr>
<tr>
<td>2005-2011</td>
<td>Assistant Professor, Department of Computer Science and Engineering, Texas A&amp;M University</td>
</tr>
<tr>
<td>2008-2017</td>
<td>Affiliate Faculty, Interdisciplinary Research Program in Ecology and Evolutionary Biology, Texas A&amp;M University</td>
</tr>
<tr>
<td>2004-2005</td>
<td>Edward, Frances, and Shirley Daniels Fellow, Radcliffe Institute for Advanced Study, Harvard University</td>
</tr>
<tr>
<td>2001-2004</td>
<td>Postdoctoral Research Fellow, Department of Computer Science, The University of New Mexico</td>
</tr>
<tr>
<td>1996-2001</td>
<td>Instructor/Visiting Lecturer, Department of Computer Science, University of Central Florida</td>
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