

Accomplishments as Department Head

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During my tenure as CS Department Head (August 2009 to June 2020), the CS department made tremendous progress in every aspect: in quantity as well as quality. We tried to innovate in every aspect pertaining to the CS Department—*research, education, service, outreach, and inreach*—and collectively achieved a lot. The BS, MS and PhD programs became stronger and bigger in the last few years. Excellent tenure track and teaching faculty members have joined the CS Department and the Department ranks well in many quantitative rankings. Some of the rankings where the CS Dept has done well are listed below.

- #37 nationally in research expenditure among CS Departments (ASEE 2016 data).
- #51 nationally for papers published in top conferences 2010-2020 (csrankings.org)
- #21 nationally for “Best Universities for Software Developers” (LinkedIn.com 2014)
- #9 nationally for “Earning Potential of Grad Students” (Gradereports.com 2020)
- #5 nationally for “Best Colleges for Undergraduate AI” (Greatvaluecolleges.com 2019).

The department has recruited top notch research and teaching faculty in my watch (I have recruited 18 tenure-track and 40+ teaching faculty). My greatest achievement, I believe, was to develop a sense of community among the faculty members, staff and students, who want to do their best to make the CS Department, in turn, one of the best in the nation. As a department head my goal was to reach a stage where the “whole is greater than the sum of its parts.” I think we reached that stage a long ago. There has been more collaboration among faculty members (e.g., starting of the UT DIISC institute bringing together about 10 CS faculty members; center for machine learning research, IUCRCs, etc.), student groups are extremely active, and students are applying in record numbers. Students *want* to join UT Dallas CS, which has allowed us to raise the admission bar significantly higher.

Research funding has increased significantly and we are respected enough to get multi-million dollar grants from DARPA and DOD. CS Department is home to 15 NSF CAREER award winners and 3 Air Force Young Investigators. Of the 15 assistant professors recruited during my tenure, 8 have won the CAREER award. Of the remaining seven, three are brand new while four still have attempts remaining.

Many highly successful initiatives were taken by the CS Department during my time as department head, initiatives that I have supported, funded and championed. Details of these initiatives are given below. Note that many of the programs above required significant funds. These funds were raised through programs that we initiated in the CS Department (executive MS in software engineering, industry workshops, K-12 outreach). Of course, it should be emphasized that none of these efforts would have borne fruit without the help of CS Department’s outstanding faculty, staff, and students (and the administration).

1. **Center for Applied AI and ML:** With Dr. Doug DeGroot as the director, the goal is to leverage the popularity of AI/ML to garner industry projects not only to help industry but also to increase department’s research expenditure totals. First project for \$330K for 9 months was won in February 2020. Many more prospects are in the pipeline.

2. **BS and MS in Data Science:** Oversaw start of BS and MS in Data Science degrees, jointly with the Mathematical Sciences Department. The MS degree was started in 2017, and the BS degree started in 2019.
3. **Significant Increase in CS/SE Enrollment:** During my tenure, enrollment in Computer Science grew from about 1,400 students in 2009 to nearly 4,600 students today. For the graduate programs, where the department has control, the acceptance rates went down while number of applications more than tripled. Specifically, CS Master's enrollment has gone from a little over 400 to more than 1,000, while the number of applications went from around 1,400 per year in 2009 to nearly 5,000 per year today. The story for the CS PhD program enrollment and applications is very similar: the percent of admitted students has gone from 80% to 30% in 10 years, the yield has gone from 15% to 60%, while the PhD student population has doubled. Quality of students in both the MS and the PhD programs has gone up *significantly*. The CS Department is the largest in UT Dallas (more than 16% of the students at UT Dallas belong to the CS Department) and, as of today, it is the 3rd largest department in the nation.
4. **Increased Graduate Admission Standards:** Invested efforts to raise the quality of the MS and PhD program significantly by raising admission standards; this resulted in significant increase in applications (to nearly 5,000 per year) and more than doubling of the MS student population (to more than 1,000 students).
5. **Increased Extramural Funding:** Lead efforts to increase external funding. From 2003 onward, the CS Department had a good start in bringing the funding levels up with Project Emmit. Project Emmit lasted till 2009 or so. However, once Project Emmit's funds waned, the CS department faculty continued to garner funding. Since 2009, CS department has averaged \$9 Million in new grants every year (mostly from Federal agencies), and around \$8 Million in research expenditure each year. My effort was focused on making the faculty aware of the opportunities available at NSF and other funding agencies, while publicizing UTD CS Department's capabilities to NSF and DARPA.
6. **Encouraging High Quality Research:** Started the PEPTOC program (Program to Encourage Publication in TOp Conferences), where faculty members publishing in top conferences get a reward of \$1,500 towards conference expenses. CS Department now ranks in top 50 in csrankings.org (rankings that are based on publications in top conferences). One of the biggest success has been in developing a strong software engineering group that ranks #5 on csrankings.org.
7. **Executive MS in Software Engineering:** Oversaw creation of the Executive MS in Software Engineering Program with Dr. Rym Wenkstern as the founding director. The program has been highly successful, and is in its 9th year with Dr. Stephen Perkins as its director. Visit emse.utdallas.edu.
8. **CS K-12 Outreach Program:** Oversaw creation of the K-12 CS Outreach Program (since 2013) with Dr. Jey Veerasamy as the founding director. Today, the UT Dallas CS

Outreach program is the largest University-based CS outreach program in the nation touching several thousand K-12 students each year. The program is highly successful.

9. **The CS² Honors Program:** Oversaw creation of the Computer Science Computing Scholars (CS²) Honors program (since 2013) with Dr. Ivor Page as the founding director. The program is highly successful and is in its 7th year.
10. **Creation of the Mentor Center:** Oversaw the establishment of the Computer Science Mentor Center where students can get tutoring in discrete math and programming courses, so as to ensure that they have strong foundations (since 2013). The Mentor Center operates from 11AM to 9PM during weekdays and 12 noon to 6pm weekends. Staffed by about 35 Senior Students managed by a faculty member and a PhD student. It's been a highly successful program. Dr. Linda Morales is the founding director of the Mentor Center.
11. **Establishment of the Competitive Programming Team:** Oversaw establishment of a competitive programming team with a head coach, assistant coaches, and scholarships. Dr. Ivor Page is the head coach, assisted by Dr. Balaji Raghavachari (now Dr. Chalam Chitturi). Also, encouraged and supported efforts towards organizing programming competitions for both our own students and high school students.
12. **Revitalized Student Organizations:** Oversaw the effort to organize all student groups (student organizations) as special interest groups (SIGs) under the umbrella of the student chapter of the ACM. This effort has resulted in nearly a dozen extremely active student organizations in Computer Science (visit <http://acmutd.co>) that organize a large number of events, as well as multiple hackathons a year. Appointed Prof. John Cole as the faculty advisor to these groups to ensure continuity in leadership of these students orgs. Got the HackAI hackathon event started when the AI Society was founded.
13. **Entrepreneurship Education:** Introduced mandatory entrepreneurship education in the undergraduate program. Every CS undergraduate gets 2 weeks of education on entrepreneurship as part of the capstone project course (the capstone project course also includes modules on leadership). This has been true since 2010. Also, launched the Software Entrepreneurship Track for CS undergraduates.
14. **Improved Marketing Efforts:** Established the department's own web-development, social media and marketing infrastructure. Website was revamped and social media presence significantly increased for the CS Department (visit <http://cs.utdallas.edu>). Marketing campaign launched to better educate the rest of the world about UT Dallas CS Department. CS writer was recruited in 2015 to document CS Department activities (visit <https://cs.utdallas.edu/NEWS/>) and manage its web content.
15. **Increased Faculty Engagement with Students:** Organized efforts to put in place programs that significantly increased faculty engagement with students: (i) faculty assist and greet students and parents during freshman move-in, (ii) faculty organize an information session for parents during move-in, (iii) organize freshman dinner where

faculty members, student leaders and I speak to *every* freshman student in groups of about 80. Initiated the organization of weekly Faculty-PhD student mixers (since 2014) to bring Faculty and PhD students together.

16. **Encouraging Women and Minority Students:** Ramped up efforts to engage minority and women students. Significantly increased participation in the Grace Hopper Conference (UT Dallas CS contingent numbered about 30 students; CS is a conference sponsor). Facilitated the start of the CS Grace Lecture series that has successful women in the technology field visit, speak and inspire CS women students. Helped support various high school camps for girls. Provided financial support to various engineering societies of minority groups. CS Department ranks #11 nationally in number of women students, #11 nationally for number of Hispanic students, and #14 for African Americans. Helped become an active member of NCWIT. All these activities are led by Dr. Janell Straach, Dr. Linda Morales, and Dr. Pushpa Kumar are faculty advisors responsible for lot of these activities.
17. **Improved Student Engagement:** Set up an attendance policy that encourages students to not miss classes (improved student performance has been observed after the policy came into effect). Supported incentive programs such as exam re-evaluation at the mentor center to increase student engagement.
18. **Increased Recognition of Student Success:** Oversaw establishment of graduation luncheon for graduate and undergraduate students on commencement day to recognize outstanding students; instituted the Kurt Holmes prize for the top undergraduate student and the Doctor Family prize for the top graduate student. Prof. Shyam Karrah has directed these efforts.
19. **Increased Undergraduate Research:** Made significant investments to promote undergraduate research, including starting the UT Dallas CS Undergraduate Research Expo, a national mini-conference where undergraduate students can present their research (visit <http://cs.utdallas.edu/csrex/>). The 3rd Expo was held in Spring 2017 (now discontinued). Helped start undergraduate student and faculty speed matching event for research.
20. **Marketing to Funding Agencies:** Established the informational postcard mailing to other department heads, NSF and DARPA. I believe that these informational postcards have raised the profile of UT Dallas CS at NSF and DARPA resulting in increase in funding from NSF and DARPA.
21. **Establishment of the PhD Research Excellence Scholarship:** Established the *Research Excellence Scholarship* program to attract top quality PhD students. PhD student numbers have increased to more than 170 in recent years. The admission bar for PhD is significantly higher. Number of applications for the PhD program has reached more 200. Goal is to reach 400+, and an international campaign was launched in 2019.

22. **Strengthened Participation in Existing Programs:** Took initiative within the CS Department to get heavily invested into the University's Living Learning Community program (in which freshman students in the same major stay together). Took initiative within the CS Department to get heavily invested into the Engineering School's UTDesign Senior Capstone Project Program started by Dean Spong (in the UT Design program student teams work on capstone projects provided by industry; under Dr. Miguel Razo's leadership, the program has been very successful as, generally, till recently there were more industry projects than students teams to do them; the CS UT Design produces significant revenue for the school).
23. **Improved Academic Programs:** Invested effort in significantly improving the graduate and undergraduate curriculum, including overseeing the addition of a freshman problem solving course (CS 1200), several new tracks in the MS program, and seeing the department successfully through the 2011 & 2017 ABET accreditation cycles under the direction of Dr. Neeraj Mittal.
24. **Increased Number of Centers and Institutes:** Helped start a number of institutes and centers in which CS faculty play an important role (UT Dallas Institute for Interactive Computing [UT DIISC], Institute for Data Analytics, Center for CS Outreach, Center for Software Testing, two additional NSF I/UCRC Centers, and UT Dallas Cyber Security Research and Education Institute [earlier it was just a center]), a Center for Machine Learning Research, and the Center for Applied AI and Machine Learning.
25. **Creating Collaborative Programs with Universities Overseas:** Established dual PhD programs with a number of Universities in China, in Greece, Brazil and Mexico. Established dual MS program in software engineering with Univ. of Xiamen, China. Established summer internship program with IIT Kanpur, India. However, none of these panned out over the long run, showing the difficulty of international collaboration.
26. **Increased Alumni Engagement:** Organized meetings with alumni 3 years in a row that were quite successful. More recently, together with the alumni relations office and several alumni, the Dept has launched a CS alumni chapter.

Finally, it should be noted that because of achieving such great excellence, CS Department grew more than 1.5 times faster than other CS departments in the nation as well as in the DFW region. Given the abundance of activities outside the classroom, the number of student clubs, student activities, and student events, mentoring of undergraduate students, excellent instruction and care that we provided to students, in my opinion, students are getting an education that is as good as a private school education but at public school costs. Another sign of our excellence is that while other Universities and departments within UTD are seeing a drop in MS student applications and admissions, our CS Dept has had double digit increases in applications and admissions year over year. Similarly, wrt research, the quality and quantity of PhD students has significantly increased in the last few years.