Greetings from the CSE Chair - February 11, 2010

Dear Colleagues and Friends,

This is our Spring 2010 “REACHING OUT” CSE Department newsletter, a quarterly letter that showcases achievements and shares news with the academic community at large. And while the academic calendar says “spring”, outside today it looks more like a New England wintry scene, with beautiful white snow covering each and every branch of our expanding campus. Classes were canceled and this gave some of us the opportunity to huddle together in our labs and brainstorm new ideas and work on our research. We are happy to get a taste of real winter in Texas and also confident that spring will come back to sunny Arlington next week.

Our aim is to reach Tier One status as soon as possible and this is actually the aim of the University as a whole. To this end, concerted efforts and changes are being planned and made in the department both bottom up and top down at all fronts. One change is a stronger focus on undergraduate teaching quality, with several of our tenure track faculty wanting to teach entry-level courses. This will help us build better links with our undergraduates and attract them to our graduate programs. Faculty are heavily involved in REU projects and the department now offers funding for lab internship projects.

This fall, our undergraduate program has grown both in quantity (about 20%) and quality. With Engineering Week around the corner, our students are feverishly preparing posters and demos to show and tell about. More and more UTA undergraduates are becoming interns and playing an important role in our many research labs in CSE on technical projects that have social, economic and energy challenges (http://cse.uta.edu/research/labs/). We are very proud of this cultural shift.

To parallel undergraduate efforts and successes, the quality and number of our incoming Ph.D. students is also significantly higher than last year. Emphasis is being placed on students advancing towards their Ph.D. degree as soon as possible and more and more students are being supported by faculty research grants. Our aim is to double
the rate of our Ph.D. student output and to raise the stipend of new incoming students by about 30% in order to attract top students.

Retention and strong mentoring are very important to us and we are putting into place new mechanisms for Ph.D. student oversight and support.

Recent emphasis has been placed in increasing enrollments for our Masters students, many of whom are foreign and impacted by the state of the economy. Through proactive department actions and faculty contributions, we have created the CSE Masters Degree Scholarships which will enable more than 20 qualified new MS students receive in-state tuition and other benefits.

UTA is a very vibrant and active research environment where interdisciplinary research is the norm and faculty work together across departments and colleges. Faculty have been very successful in receiving external funding and especially from the National Science Foundation (NSF). There are at least 7 CSE faculty who hold multiple (2-4) concurrent NSF grants. Since August alone, the department received over 20 grants (totalling $6.1M) on projects that include research in machine learning, computational biology and embedded systems. We have received a GAANN award (PI- Dr. Ahmad) to attract US citizens and Permanent Residents to computer science, an NSF CAREER award on privacy and security (Dr. Wright), and an NSF MRI award (PI- Dr. Makedon) on visualization. Interdisciplinary grants included a joint project with biomedical engineering on software and hardware for cerebral palsy a project to treat apnea (lack of sleep) and one to develop software to manage the elderly or persons with disability in their home environment.

Our department is indeed reaching out and tries to build affiliations with various research centers around the world. Recently, we had two exciting speaker visitors, Dr. Chris Greer, Director of the National Coordination Office on Networking and Information Technology Research and Development (NITRD) and now on assignment to the Office of the President for Science and Technology, and Dr. Jeannette Wing, Assistant Director, Directorate for Computer and Information Science and Engineering (CISE), at NSF. In February we have several visitors from Europe as part of our interdisciplinary Computational Science Program (ICOMPS.UTA.EDU), led by Professors Chris Ding, Jianping Zhu and myself.

We are now in the midst of faculty recruiting and graduate student admissions. As we strive to reach Tier-One status, we ask you to please spread the good word about us and feel free to send us your input. Please visit (http://www.cse.uta.edu/) to learn more about us.

Fillia Makedon
Professor and Chair
Computer Science and Engineering Department
University of Texas at Arlington

Snowy Campus
Professor **Jeff Lei** (PI) has received an award from NIST for his proposal entitled, “Advanced Combinatorial Testing Techniques”, with a total amount of $248K. Combinatorial testing is a specification-based software testing approach that systematically samples the input space of a software application to satisfy a well-defined combinatorial coverage criterion. It has been shown very effective in fault detection for practical applications. This project will develop advanced combinatorial testing techniques in several areas. These techniques will be integrated and disseminated in a combinatorial testing tool, called ACTS, that currently has a user base of more than 200 academic and corporate users.

Professor **Fillia Makedon** (PI) and **Vassilis Athitsos**, **Heng Huang**, **Zhengyi Le** and **Dan Popa** (Co-PIs) have been awarded a $720K NSF grant for their proposal “MRI/Dev.: Next Generation Multimodal Data Management Human-Sensing Instrument for Trustworthy Research Collaboration and Quality of Life Improvement”. The purpose of this project is to develop an instrument (zScope) that serves as an interactive personal care and human activity monitoring center, aims to keep a person with high quality life and safe at home as long as possible. The instrument enables privacy-preserving and secure data sharing through wireless connection with remote users in an assistive living environment.

Professor **Alexandrakis, Georgios** (PI) and **Fillia Makedon** (co-PI) have been awarded for their proposal “A Breakthrough Probe Technology for Translating Near-Infrared Brain Imaging into a Routine Clinical Tool for Assessing Motor Deficits in Children with Cerebral Palsy” under the UTA/UTD/Thre Medical Technology Research Program.

Professor **Ishfad Ahmad** (PI) and **Vassilis Athitsos** (co-PI) have been awarded for their proposal “Wireless Home-based Sleep Apnea Detection and Sleep Quality Monitoring” under the UTA/UTD/Thre Medical Technology Research Program.

Professor **Nate Nystrom** received an X10 Innovation Award from IBM. The X10 Innovation Awards recognize academic research and curricular development activities in the area of computing at scale on cloud computing platforms based on the X10, a concurrent object-oriented programming language. Dr. Nystrom was awarded $20000 to perform research on concurrent compilation techniques using the X10 concurrency model.
PETRA’10 Received Two NSF Grants

Professor Fillia Makedon (PI), Heng Huang, Vassilis Athitsos and Dr. Zhengyi Le have received prestigious NSF awards for The 3rd International Conference on PErvasive Technologies Related to Assistive Environments (PETRA’10) and the associated workshop on Privacy and Security in Pervasive e-Health and Assistive Environments (PSPAE). These NSF grants will support graduate students in the United States to participate in the conference.

$2 million NSF grant to boost freshman science, engineering retention rates

The College of Engineering and the college of Science have been awarded about $2M to develop an interdisciplinary program to boost the retention rates for the first and second-year undergraduate students. This program, called AURAS (Arlington Undergraduate Research-based Achievement for STEM), will implement ESP for certain courses. This program won’t change the content and student exception, it targets students who need help in succeeding their classes. Through this program, selected freshman students have the opportunities to become paid research assistants and participate research activities. This program expects to boost the retention rates for engineering and science majors by 15 percent during the first 5 years.

Lynn Peterson, Senior Associate Dean of engineering and professor in computer science and engineering department, leads the program in partnership with mathematics professor James Epperson, physics professor Ramon Lopez and chemistry professor Kevin Schug. Carter Tiernan, Assistant Dean of engineering for student affairs and senior lecturer of computer science and engineering department is also part of this program.

More information can be found at http://www.uta.edu/ucomm/mediarelations/press/2009/09/AURAS-grant-from-NSF.php

Dr. Matthew Wright Wins CAREER Award

CSE Assistant Professor Matthew Wright recently received a five-year, $499,880 Faculty Early Career Development (CAREER) award from the National Science Foundation (NSF) for his research project entitled, “anon.next: Privacy-Enabled Routing in the Next-Generation Internet.” The award recognizes and supports junior faculty who “exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.”

Dr. Wright's project aims to design a new anonymity system that takes advantage of ongoing research in new Internet architectures. By embedding anonymizing proxies in the network backbone, the network itself can provide efficient and effective privacy protection in a way that existing designs cannot. According to Dr. Wright, “Developing anon.next will require addressing several major challenges in network privacy and distributed systems design. We need to construct fast, privacy-protecting paths in the network, build a robust, distributed directory service, and determine how to measure privacy in a systematic way so we can compare proposed designs.” The project will help network designers provide personal privacy as well as censorship resistance and protection for whistle-blowers, journalists, and intelligence services.
Department Events and Conferences

White House Official Visits CSE Department

Dr. Chris Greer, assistant director from the Office of Science and Technology Policy, visits CSE Department at UTA.

Dr. Greer was the November speaker in the College of Engineering’s 50th anniversary speaker series. He discussed how computer science transcends the physical plane and includes a fifth dimension - cyberspace itself during his talk on November 18, 2009. For more information, please visit: http://www.theshorthorn.com/content/view/18307/265/.

The 3rd International Conference on PErvasive Technologies Related to Assistive Environments - PETRA'10 (WWW.PETRAE.ORG)

The 3rd International Conference on PErvasive Technologies Related to Assistive Environments (PETRA'10) should be held in Samos Island, Greece, Jun 23-25, 2010. (Chaired by Professor Fillia Makedon)

PETRA Conference brings together different researchers to study how to best provide healthcare for @home and @work humans using sensor network technologies, robotics, imaging, improved interfaces and non-interventional monitoring.

PETRA'10 has been awarded with prestigious NSF funding to support graduate student authors to participate in the conference.

Dr. Jeannette Wing Visits CSE Department

Dr. Jeannette Wing, who directs Computer & Information Science and Engineering (CISE) at NSF visited the CSE Department on January 20, 2010, and gave a Distinguished Lecture “Computational Thinking”.

Dr. Wing began her position at NSF in 2007. Prior to this appointment, she was President's Professor and head of the Computer Science Department at Carnegie Mellon University's School of Computer Science (SCS).

TO CSE ALUMNI

Please send us your news! We want to hear how you are doing, your latest accomplishments, family news, travel and events you are organizing so that we can add it into our next newsletter issue. Perhaps you know that Alumni of the Department of Computer Science and Engineering at UTA, rank as top professionals in their fields. They work in America's leading corporations and in small enterprises and are advancing the field of computer science and engineering through research and development, leadership, technical management, teaching excellence and in other ways. We appreciate the support from alumni that is helping us build a stronger CSE program and we highly value relationships with our alumni. Please send your news to rongz@uta.edu. We want to hear from you!
The 1st International Green Computing Conference - IGCC’10
The International Green Computing Conference sponsored by IEEE addresses key issues and topics related to energy efficiency in computing and promoting environmentally friendly computer technologies and systems. The conference aims to provide a forum to a wide audience for discussing, sharing and investigating the state-of-the-art for all aspects of green computing, Professor Ishfaq Ahmad is serving as general chair. The conference should be held in Chicago.

Workshop on State-space Exploration for Automated Testing
Professor Christoph Csaliner, together with researchers from other universities are organizing a workshop on State-space Exploration for Automated Testing, which is Co-located with ISSTA 2010 (International Symposium on Software Testing and Analysis). This workshop will be July 16 in Trento, Italy. More information can be found at https://sites.google.com/site/sseatws/

Computational Science Seminar (ICOMPS)
ICOMPS is an interdisciplinary effort to bring together the sciences with engineering and to identify project-driven and data-driven synergies that require computational methods to solve hard problems. It is currently a joint venture between the College of Engineering and the College of Science, but it welcomes participation from other departments and colleges where data intensive problems exist.

The aim is to promote research and educational collaborations that can share a common computational infrastructure, tools, storage, funding, students, postdocs and other resources.

This effort is being led by Professors Chris Ding in CSE, Jianping Zhu in Math, Victoria Chen in Industrial Engineering, and Fillia Makedon in CSE.

More information can be found at http://icomps.uta.edu

CALENDAR

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“Physicists break things apart and look deep inside to understand the fundamental building blocks of matter and the forces between them” says Professor Jaehoon Yu of the Department of Physics at UTA, and for ten years physicists and computer engineers at UTA have been working together to do so. Professors Yu and Kaushik De, along with researchers Mark Sosebee, Pat McGuigan and Aaron Thor and others in Physics are working together with Computer Science and Engineering (CSE) Department to discover minute patterns in smashed protons and anti-protons, remnants of collisions resulting in high power collider accelerators where sensor data is collected in petabyte quantities and analyzed on tens of thousands of computers worldwide via computing grid.

Working with scientists at Fermi National Accelerator Laboratory and Brookhaven National Lab as well as CERN, European Center for Nuclear and Particle Physics, UTA CSE students have had the unique opportunity to take part in frontier science by designing and building software that assists scheduling job workflow encompassing billions of jobs that take hours each to run, monitoring and measuring performance, assisting instrument calibration, adjusting network flows and placing and retrieving petabytes and petabytes of data.

A unique program has allowed dozens of UTA computer science students to spend one or two semesters at US National Labs, working closely with lab physicists, computer scientists and faculty from many universities and visiting scholars throughout the world to create software systems needed by science to deal with huge data and jobs. Many traditional methods of scheduling and monitoring are inadequate to handle such large scale processing across the network and platforms on the worldwide computing grid. When these students have graduated they have gone on to universities, research labs, companies and even back to the same National Labs that they previously worked with.

As the LHC, Large Hadron Collider, at CERN starts colliding at the rate of every 12 nanoseconds, collecting data from millions of sensors, the data (and the complex chain of computer jobs associated with it) will flow worldwide, with an important part coming to UTA to be stored and analyzed on many thousand computer nodes in petabytes of storage and the results then shared with the physics community in the US and world. And, hidden behind the equipment and the computing jobs that make all this possible, UTA physicists and computer scientists will be in the middle of it all.

INDUSTRY NEWS ADVISORY BOARD MEETING (MARCH 05, 2010)

If you are interested in participating in our next CSE Industrial Advisory Board Meeting, scheduled for March 05, please send email to Pam McBride (mcbride@UTA.EDU) with your contact information to send you the schedule. It will be a fun half-day, with discussions, poster session and a delicious breakfast and lunch! You will also have the chance to meet members from other nearby industries and make great contacts.

In spring of 2009 we organized our annual Industrial Advisory Board (IAB) meeting which had great success. A student poster session attracted a lot of attention.
CSE Babies

Our faculty and staff have not only been very active and productive in the workplace, but have been part of creating a new "CSE" generation.

Congratulations to Andreia Braga and Gutemberg Guerra-Filho for the arrival of their daughter Luiza. Luiza was born on September 10th, 2009 in the Mansfield Methodist Hospital. (Picture on right: Luiza and C programming language)

Congratulations to Zhengyi Le and Yi Ouyang for the arrival of their daughter Alicia. Alicia was born on January 21, 2010.

Congratulations to Fillia Makedon for the arrival of her second grandson, who was born on January 28th in Athens.

Congratulations to Sherri Gotcher for the arrival of her third grandchild. The baby’s name is Rain and she weighed 7lbs 4oz and was 18 ½ inches long at birth. (Picture on the right: Rain is dancing at 2 month old)

Congratulations to Christoph Csallner and his family on the birth of his son, Tim, weighing in at 7 lbs, 4.2 oz. and a length of 20”

Congratulations to Fen Lu and Changkai Li for the arrival of their son Jingtu Oscar Li. Oscar was born on December 5th, 2009 at 2:30pm.

Our faculty and staff have not only been very active and productive in the workplace, but have been part of creating a new “CSE” generation.
RoPro, the CSE@UTA High School Robot Programming Contest

Little yellow robots buzzed around the Nedderman Hall atrium at the University of Texas at Arlington on Saturday, February 6th, 2010. The robots were programmed and built by high school students to compete in the High School Robot Programming Contest, RoPro, sponsored by the Computer Science and Engineering Department at UTA (CSE@UTA).

Twenty-two teams from Dallas- and Fort Worth-area high schools competed in this annual outreach and recruiting event. New teams competed in the speed-based beginning maze competition where the robot does not know the course beforehand. More experienced teams competed in the advanced maze competition where “virtual” walls, made of colored tape on the floor, had to be treated just like the wooden walls and in the object finding competition where robots must locate, identify and move colored golf balls within the maze. Every Lego robot was programmed by the students to work autonomously in its event. Once started, the robot was under its own control following the instructions programmed into it. No remote controls here!

RoPro has become a tradition for many of the teachers who coach these teams. The RoPro competition gives these great teachers an opportunity to practice concepts learned in class and then apply them in the competition. The results are both fun and instructive. The RoPro competition will also be able to help some of these students in the future.

Engineering Week Awards

The College of Engineering Awards Banquet (Feb 19th, 2010) is an Annual Engineering Week that is the culmination of a week of fun and festivities celebrating all the exciting things going on in engineering. At the Banquet, scholarship winners and donors meet to network and share their experiences.

The CSE students who have received awards are:

- Outstanding CSE, Junior: **Paul Sassaman**
- Outstanding CSE Senior: **Kapil Vyas**
- Outstanding CSE Sr Design Team: **Tim Dockins, Robyn Johnson and Brandon Skinner**
- Outstanding CSE GTA: **Chris McMurrough**
- Outstanding CSE PhD Student: **Jun-Won Ho**
- Outstanding CSE Sophomore: **Juan Placencia**
- Outstanding CSE Master’s Thesis: **Robert Walls**

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