

Department Highlights



From the Chair

Congratulations to Cheryl Hayes for her promotion to Administrative Associate position and welcome to Yolanda Fifer, the new Secretary of the Department. Brad Montgomery is

transitioning to a FedEx fellowship to work on research projects in Augmented Reality while continuing his doctoral studies in the Department. It is a pleasure to see the escalating popularity of our programming challenge, this time with a larger number of participants. Congratulations to our ACM programming team for their recent win.

The roster of companies offering internships and jobs to our graduates has expanded considerably. All CS students wanting internships have found suitable positions this semester.

The declining trend in enrollment in undergraduate CS programs locally and nationally seems to have stopped. There is a visible increase in demand for graduates. While additional efforts are needed to attract students to our programs, our mentoring processes have been well received by students on board.

Newer collaborations among the faculty within and outside the department have been formed in sensor networks, robotics, system testing and other areas. It is a pleasure to see another successful semester coming to an end!

Dr. Sajjan Shiva

2007 Computer Science Research Day



The 3rd Annual Research Day was hosted by the Computer Science department. At this forum, students presented their current research, which covered a wide spectrum of research being conducted in the department.

The research areas that were presented included Artificial Intelligence, Computational Neurodynamics, Computer Security, Databases, DNA Computing, Natural Language Processing, Network Routing, Neural Networks, Random Number Generation, Robotics, Search, Security, Wireless Sensor Networks, and Visualization.

Presentations were divided in two categories – oral presentations and poster presentations each of which included a first place prize of \$100 and a second place prize of \$50. Some of the poster presentations were accompanied by live demonstrations making the presentations even more exciting.

A total of 20 students participated in the CS Research Day that included students at all levels (undergraduate, Masters, and Ph.D.). It was a well attended

event that included among its audience the CS Faculty, the Department Chairman, Dean of the College of Arts and Sciences, and Provost of the University.

In the Oral Presentation Category, First Prize was awarded to Roman Ilin whose presentation was titled "Efficient Learning in Cellular Simultaneous Recurrent Neural Networks – Solution of the Generalized Maze Navigation Problem". The runner up in this category was Andrew Neel who presented his research titled "DNA Based Methods for Semantics Entailment".

In the Poster Category, First prize was awarded to the team of Bhagavathy Krishna and Mahesh Satharla who presented their research titled "Towards Creating A Self Defending Wireless Sensor Network". Their team also demonstrated a basic version of their working system with wireless sensor nodes.



Runner up in this category was Jose Rodriguez who presented his research titled "Phase Synchronization in Electroencephalogram Mesoscopic Arrays".



Dr. Shiva speaks with the 1st place poster winners.

A special prize in this category was awarded to Roy Elton Crowder, the first undergraduate student to participate in the CS Research Day. Roy presented a poster titled "Sender Datagram Buffer Management for Peak Link Utilization Transport over Dedicated Channels".

STEP at the University of Memphis

The first workshop on Advances and Innovations in Systems Testing was held on May 7-8 at the FedEx Institute of Technology. The organizing committee consisted of Dr. Shiva (general Chair), Dr. Rus (Program Chair) and Dr. Sherrell (Registration Chair) with additional faculty from the MIS department. The annual workshop aims to bring together leading researchers and practitioners in the area of Systems Testing.



The workshop was organized by the Systems Testing Excellence Program - **STEP** at The University of Memphis. **STEP** is an interdisciplinary program under the auspices of the Departments of Computer Science, Management Information Systems, Computer Engineering, and FedEx Institute of Technology. The corporate sponsors of the workshop included FedEx, Cook Systems, and Cisco.

The workshop was a mixture of presentations and open discussions. Two renowned scholars delivered keynote speeches, and vendor exhibitions and industry presentations were also part of the program.

STEP has funded ten research projects this year with faculty members from CS, MIS and ECE participating. Drs. Rus, Sherrell and Wang from CS have been working on various issues related to system testing, particularly process improvement, knowledge management, and infrastructure testing.

Faculty Kudos



Dr. Dipankar Dasgupta

This semester's featured Computer Scientist is Dr. Dipankar Dasgupta who received the College of Arts and Sciences Distinguished Research Award (CASDRA) in the Engaged Scholarship category for 2006-07.

Dr. Dasgupta offered a tutorial on "Computational Intelligence (CI) in Cyber Security" at IEEE Symposium Series on Computational Intelligence, Honolulu, Hawaii, April 1-5, 2007. This tutorial highlighted how CI-based technologies (fuzzy systems, evolutionary computation, genetic programming, neural networks and artificial immune systems) play critical roles in various computer and information security problems.

He also chaired a session and presented a research paper at the event. For more details visit: <http://ieeesci.org/CICStutorial>

In addition, Dr. Dasgupta's Center for Information Assurance activities were exhibited during Faculty Scholarship Week during April 17-19 at University Library and Annual Faculty Convocation at Rose theater. Among the showcasing were TAF Innovation Grant activities on Computer Forensics and a DHS funded project on Adaptive Cybersecurity Training (ACT) Online. For more information, visit <http://cfia.memphis.edu>



Dr. Santosh Kumar was inducted into the Technical Program Committee (TPC) of INFOCOM 2008, IEEE's flagship conference in the area of Computer Networks. He is a TPC member of several other leading conferences including IEEE BROADNETS and IFIP Networking.

Dr. Qishi Wu was appointed to the editorial board of the Journal of The Franklin Institute, one of the leading journals in the field of engineering and applied mathematics with focus on information and communication systems, computer and communication networks, control theory, and sensor fusion.

In addition Dr. Wu was awarded \$50,000 from Oak Ridge National Laboratory to support his continual collaboration with ORNL on several ongoing research projects including the Design of Control Plane and Transport Protocols for UltraScience Net. Dr. Wu was also part of the large-scale scientific project "Multi-Dimensional Simulations of Core-Collapse Supernovae," which was recently recognized as a FY2007 INCITE project, Oak Ridge National Laboratory: Phoenix - 300,000, Jaguar - 7,000,000.

Dr. Kozma's Neuropercolation research recently appeared in Science News. The article, entitled "Net Heads", discusses the measurement and interpretation of brain network activity, and writes extensively on research conducted by Dr. Kozma in conjunction with Dr. Bollobas and Dr. Freeman (UC, Berkeley).

Dr. Linda Sherrell was the moderator of the panel session entitled, "NSF-DGE GK-12 Teaching Fellowships: Changing Student Perceptions about Computer Science" at the 38th SIGCSE Technical Symposium on Computer Science Education on March 10 in Covington, Kentucky.

In addition, Dr. Sherrell was also a panelist for the panel session "How Are Your Enrollments?" at the Fifth Annual CCSC Mid-South Conference on March 30 in Monroe, Louisiana.

Dr. Max Garzon and A. Neel headed the online SGA elections for the third consecutive year. Student turnout has increased nearly 10-fold since 2005 and interesting results on e-democracy have been learned. Next year, SGA may require candidates to apply online and so hold the entire election electronically. The election is sponsored by the CFIA and The CS department. The election website can be found at <http://electsga.memphis.edu>

Dr. Vasile Rus was named Systems Testing Research Fellow of the FedEx Institute of Technology, and he received a grant called STES: Systems Testing Expert Systems from the Systems Testing Excellence Program (STEP) at The University of Memphis. He also presented a position paper entitled 'Evaluation in Natural Language Generation: The Question Generation Task' at the NSF-sponsored workshop on Shared Tasks and Comparative Evaluation in Natural Language Generation. The workshop was held in Arlington, VA on April 20-21, 2007.

Dr. Vinhthuy Phan was awarded a Donovan Travel Enrichment Fund of \$500 to travel to Orlando Florida, July 9-12 to attend the International Conference on Enterprise Information Systems and Web Technology. Dr. Phan will be presenting a paper entitled, "How to build a System that Manages Bioinformatics Content" which was co-authored with Allen Thomas, a Masters student in the Computer Science/Bioinformatics program.

Dr. Lan Wang received an NSF REU (Research Experience for Undergraduates) supplement grant to her existing NSF CRI grant. The REU project is entitled "Enabling Efficient Real-Time Delivery of Routing Data". "Undergraduate students interested in networking research can contact Dr. Wang at lanwang@memphis.edu. Dr. Wang received an NSF WISE fellowship to attend WISE 2007: Women's Institute in Summer Enrichment program at UC Berkeley, and she is also serving on the Technical Program Committees for IEEE Broadnets 2007 and IEEE INFOCOM Student Workshop.

Dr. Lih-Yuan Deng's "Design and Analysis of Experiments (DAE) Conference 2007" has been selected for funding by the National Security Agency in the amount of \$15,000. For more information visit <http://www.msci.memphis.edu/DAE2007>

Dr. Shiva was a panelist with Dr. Sherlis of Carnegie Mellon University, and representatives from FedEx, Autozone and Cook Systems International, at the Innovation in System Testing workshop held May 7-8. The topic was "Challenges in Global Software Development".

View Recent Publications and Professional Activities at
www.cs.memphis.edu/spring2007

CS Students Shine!



Michael Lee, Jonathan Chan, and Thomas Hilton (left to right) from COMP 3825 class with a Tmote Invent.



Jason Hall (left) and Thomas Sellers (right) from COMP 3825 class working with wireless motes.

2007 Spring Graduates

Geetha Aradhyula
Rukhsana Azeem
Sarah Bowen
LaTroy Francisco
James Greer
Shalini Janamma - Intel
Adithya Kamineni
Pavan Karnam
Ashish Karnavat
Vinay Maddi
David Mills
Sita Pulavarti
Jose Rodriguez-Borbon
Serge Salan
Krishna Velidi
Srividya Vemulakonda - CISCO
Shekhar Vemuri
Jason Watkins
Jie Wu

CS Student wins 1st at FIT Business Plan Competition

Rajesh Ramanand, a Ph.D student working with Dr. David Lin, won the First Prize at the 2007 FedEx Institute of Technology Business Plan Competition. His company, Impulsys Corporation, caters to the impulse of consumers by developing software applications for the mobile user. By meeting the demands of today's impulsive consumers for information and shopping when they need it, Impulsys introduces a new brand of commerce called "Impulsive Commerce." In addition to the \$25,000 Grand Prize amount, he received a package of other prizes, including several months of free rent in business incubator Emerge Memphis. For more details, visit <http://fedex.memphis.edu/BizPlan/>

Wireless Sensor Network projects in CS courses

As part of a TAF Innovation grant that was awarded to Dr. Santosh Kumar (PI), Dr. Lan Wang, and Dr. Qishi Wu, wireless sensor network projects are being introduced in several CS courses (COMP 3825, COMP 4270/6270 and COMP 7311/8311). Several innovative projects were undertaken by undergraduate and graduate students.

In one project, students worked towards building a system that will make a wireless sensor mote (a matchbox sized wireless computer) self-defending. With this software, a mote can immediately detect (and shout for help) if someone attempts to steal it. Another team worked towards a system that will let visitors entering a parking garage know how many vacant spots are available at each level. A third project aimed at protecting food and drugs from getting spoiled during transportation, while a fourth project built a system that can be used to quickly obtain the temperature profile of a building so as to quickly pinpoint heating/cooling problem spots. A fifth project routed physiological data collected from patients to a central server. All of these projects were demonstrated to students and faculty in FIT on May 3rd.



"Students, staff, and faculty pose after participating in the 'Wonders of Smart Dust' demonstration event where students showcased their wireless sensor network class projects."

ACM Programming Team wins Third Place.



The ACM Programming Team won a trophy for finishing in third place at the Student Programming Contest held at the Consortium for Computing Sciences in Colleges Mid-South Conference on March 30, 2007 in Monroe Louisiana.



The team, consisting of Brian Kennedy and Douglas James O'Brien competed against other teams of three students to get the trophies.

WiSe MANet Labs: Enabling Wireless Sensor Networks Research

The newly established Wireless Sensors and Mobile Ad Hoc Networks (WiSe MANet) Labs provides students an opportunity to work on exciting research projects related to wireless sensor networks. In one ongoing project called "AutoWitness," three graduate students, Bhagavathy Krishna, Maheshbabu Satharla, and Vasudha Koya are designing software that when installed on wireless sensors will enable not only immediate detection of theft of university property, but will also enable real-time tracking of fleeing burglars. Bhagavathy and Mahesh won first prize in the CS Research Day for their poster describing their preliminary work on the AutoWitness project. A prototype of AutoWitness is planned for deployment in the University of Memphis campus with an aim of reducing crime in the campus.

WiSe MANet Labs is looking for new ambitious students (high school, undergraduate, M.S., and Ph.D.) to work on exciting new and ongoing projects. For additional information, contact Dr. Santosh Kumar (skumar4@memphis.edu).

Programming Challenge

On Saturday, April 28th, over 100 high school students from all over Tennessee and Arkansas converged at the FedEx Institute of Technology to compete in the annual University of Memphis Programming Challenge. This year's challenge was to create an original arcade game for the modern age. 32 teams and a total of 112 high school students worked on their games for seven weeks and presented them to judges from local industry and academia. Among the judges were representatives from Microsoft, FedEx, Brother Industries, Lenny's Corp., and the University of Memphis Department of Computer Science. Also in attendance were many UM Graduate and Undergraduate students who provided additional help.



This was the fifth year that the University of Memphis Department of Computer Science has hosted this unique event. With an emphasis on teamwork and good software coding practices, the Programming Challenge is unique in its format. The students came away from the day with a great sense of pride, a cool t-shirt, and many walked away with one of several door prizes. For the second year in a row a team from Rogers High School from Rogers, Arkansas won the competition's "Best of Show" award with a game that featured Bill Gates on a jet powered Segway™.

For more information about this event, contact Lee McCauley at mccauley@memphis.edu.

Mihai Lintean, a PhD student in Computer Science, presented the paper "Naive Bayes And Decision Trees For Function Tagging" at the 20th International Conference of the Florida Artificial Intelligence Research Society.

Jie Wu received First Prize under Math and Computer Sciences at the University's 19th Annual Student Research Forum held in the Rose Theatre April 2. Wu, a Computer Science graduate student presented a poster entitled, "Latent Semantic Space Comparison."

A paper by Kriangsiri Malasri and Dr. Lan Wang entitled, "Addressing Security in Medical Sensor Networks," was accepted to the HealthNet '07 workshop. The workshop will be held during the ACM MobiSys conference in San Juan, Puerto Rico, in June.

Malasri also accompanied Dr. Wang for a talk at the Society of Women Engineers meeting held in the UofM Engineering school on Mar. 2nd, 2007. Their talk focused on the design and implementation of their SNAP (Sensor Network for Assessment of Patients) prototype.

CS Roundup

CS Colloquium

This semester's CS Colloquium Series ran from January to April. During this time we enjoyed talks from outstanding academic researchers and industry leaders including Douglas S. Blank from Bryn Mawr College, Dawn Wilkins from University of Mississippi, Ken Brame CIO at Autozone, Glenn Blank from Lehigh University, Alexander Repenning from University of Colorado, and Denise Ferebee, Senior Systems Architect at FedEx Services.

In addition we also enjoyed talks from our own Drs. Lih-Yuan Deng, Vasile Rus, and Vinhthuy Phan from the Department of Computer Science at the University of Memphis.

CS Internships

Have you considered an internship to earn some real-world experience (and perhaps some money?) Internship positions are available this coming Summer and Fall. Full details on requirements and procedures can be found at www.cs.memphis.edu/internships. Contact internship coordinator Dr. Max Garzon as early as possible if you are interested in doing a project this Summer or in the Fall. Graduate students can now also select a specialty area such as e-Commerce, cognitive science, or multimedia. Several other specialties are being defined as well. Stay tuned for details on the CS web site and please spread the word to potential candidates!

Upcoming Events

DNA13

The University of Memphis will host the 13th International Conference on DNA Computing, DNA13, which will be held June 4-8, 2007. The conference is expected to attract over 150 participants to the FIT. Andrew Neel and Derrel Blain have provided tremendous support to host Max Garzon as main organizers of the event. More information concerning this conference can be found at: <http://dna13.memphis.edu>

Cyber Security Meeting

The Center for Information Assurance will host DHS/G&T Cyber Security Training Partners' meeting on May 21-22, 2007 at FedEx Institute of Technology, Bell South Room.

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