

## From the Chairman



We have had two good problems this semester: we've been kept busy by growth in enrollment in computer science classes, as well as funded research grants!

Over the 2011-2012 academic year, our undergraduate classes enjoyed a total enrollment of 390

students, the highest level since we became an independent Department in 2006. This caps a six-year trend of increasing B.S. enrollment. Our Ph.D. enrollment is also on the rise, while M.S. enrollment has remained steady.

Our faculty have obtained a total of just under \$3M in new research funding in 2012, the highest annual level since 2007. The newly funded grants cover diverse topics, including sensors, pervasive computing, and cyber security.

Meanwhile, I am happy to announce that we had a successful ABET accreditation visit for our undergraduate program this fall, with no deficiencies noted in the preliminary report. We are looking forward to receiving ABET's full report in the near future.

Happy holidays to all!

*Dr. Sajjan Shiva*

## Open House for High School Students



The Department joined the celebration of Computer Science Education Week across the country with a series of interactive demonstrations to showcase computing. About 100 students from four area high schools were present. This year's demos covered topics ranging from artificial intelligence to molecular computing. **Dr. Qishi Wu** also showed the use of the university's visualization cluster to render 3D scenes for video games.

## Faculty Achievements

**Dr. Dipankar Dasgupta** was the commencement speaker at the U of M's Summer 2012 ceremony.

A renowned cyber security expert and the recipient of the 2012 Willard R. Sparks Eminent Faculty Award, Dr. Dasgupta spoke to the graduates about the role of technology in shaping our future. His speech can be viewed on YouTube at

<http://www.youtube.com/watch?v=PrwOlqHHgVo>



In August, Dr. Dasgupta was awarded a one-year grant for \$853,289 (with John R. Williams at MIT) to develop a biologically inspired way to secure computer information and networked systems. The funding from the Intelligence Advanced Research Projects Activity (IARPA) will support development of a novel "Negative Authentication System," which is expected to immunize password-protected information systems from cyber-attacks.

## Department News

### Successful Collaboration with Smith & Nephew

The Computer Science Department had a very successful collaboration with Smith & Nephew. Led by Ph.D. student **Serge Salan** and **Dr. David Lin**, our research group worked on a project to apply clustering techniques to help the company design and develop knee implants that better satisfy patient needs. The Smith & Nephew team, led by Jim Wiebe, Ryan Landon, and Brian McKinnon, are very happy with the results of the collaboration. We are grateful to have developed this relationship and look forward to more in the future.



### Cyber Security Expo

The University of Memphis Center for Information Assurance hosted the 5th Annual Cyber Security Expo at the FedEx Institute of Technology on October 19. This year's theme was Providing Business Security: New Issues. Over 120 people from different organizations attended the event. The speakers included Ron Ross from NIST, Abel Sanchez from MIT, Nik Puri from FedEx Services, Gary Osland from Cisco, and Robert Abercrombie from ORNL. There was also a workshop on SCADA security, and a panel focusing specifically on recruiting women to cyber security careers. Details on this event and lecture notes are available at [cyberexpo.memphis.edu](http://cyberexpo.memphis.edu)

### CS Department Moves!

Over the summer, the Computer Science Department moved its main office to the third floor of Dunn Hall, in room 375. All faculty offices are now on the third floor, with the second floor reserved for labs. The Department held an Open House on August 24 to celebrate the new facilities, with then-Provost Ralph Faudree and College of Arts and Sciences dean Henry Kurtz joining department chair Sajjan Shiva for a ribbon cutting.



### Top 10 Reasons to Study Computer Science (Compiled by the ACM)

Computing drives innovation in the sciences (human genome project, AIDS vaccine research, environmental monitoring and protection just to mention a few), so if you want to make a positive difference in the world, study computing.

Computing majors will provide you with a foundational knowledge of problem solving and logical thinking that will be helpful to you no matter what you choose to do in life.

Computing technology is part of just about everything that touches our lives: from the cars we drive, to the movies we watch, to the ways banks and governments deal with us. Understanding computer science is part of the necessary skill set for an educated person in this century. Whether you want to be a scientist, develop the latest killer application, or just know what it really means when someone says "the computer made a mistake," studying computing will provide you with valuable knowledge.

Computing jobs are among the highest paid and have the highest job satisfaction.

Contrary to popular belief there are more, and not fewer jobs. Computing has great potential for new jobs through 2014.

Contrary to what some people believe, computer scientists are real people. They have lives. They have friends. They do not sit in a cubicle pounding out code 18 hours per day.

You do not have to be a nerd to be a computer scientist. You do not have to live, eat, and breathe computing to be a good computer scientist. You can have a life, relationships, a family.

Computing is not about being a lone wolf. It is about being part of a team that requires people with many different kinds of skills.

An increasing number of universities and employers see successful completion of a computer science course as a sign of academic well-roundedness.

Computing is one of those fields where it is almost impossible to predict what will happen next. This is why we cannot even begin to imagine all the ways that you can make a contribution to it, and it can make your life's work exciting and real.

**Dr. Max H. Garzon** delivered an invited talk on "Theory and Applications of DNA Codeword Design" at the first International Conference on the Theory and Practice of Natural Computing held in Tarragona, Spain in October. He also delivered an invited talk at DNA18, the International Conference on DNA Computing and Molecular Programming, at Aarhus University in Denmark in August.

Over the semester Dr. Kumar was invited to give several presentations, including a keynote speech at the 10th IEEE/IFIP International Conference on Embedded and Ubiquitous Computing in Cyprus, and invited talks at the University of Illinois at Urbana-Champaign and Auburn University. Dr. Kumar was also elevated to Senior Member at both IEEE and ACM.

**Dr. Santosh Kumar** is a PI or co-PI on three new multi-university research grants from national funding organizations. "Predicting Smoking Abstinence via Mobile Monitoring of Stress and Social Context" is a three-year, \$1.3M grant from the National Institute on Drug Abuse (NIDA) and NIH. This grant will study the prediction of abstinence in newly abstinent smokers from the AutoSense project. "EasySense: Contact-less Physiological Sensing in the Mobile Environment Using Compressive Radio Frequency Probes" is a three-year, \$600,000 grant from NSF that aims to develop a contactless physiological sensor. "Enabling Privacy-Utility Trade-offs in Pervasive Computing Systems" is a two-year grant from NSF that will study privacy in mobile health. The U of M share of this grant is \$95,000.



# Student and Alumni Highlights

## Featured Alumnus: Dr. Javier Snaider

**Dr. Javier Snaider** (Ph.D. 2012) is working at Google, Inc. in Mountain View, CA. He is developing new API services for several platforms, including the Web and Android mobile operating system. He also continues to do research with **Dr. Stan Franklin's** Cognitive Computing Research Group.

Javier's primary research interests are cognitive architectures, their internal representations, memory and learning algorithms, and their cognitive processes. He developed a new Integer Sparse Distributed Memory, which replaces the original binary vectors of SDM with modular integer vectors. He also created the Modular Composite Representation, a high-dimensional vector representation that is able to represent complex structures using single vectors. Javier has worked with several aspects of the LIDA cognitive architecture, including time perception and production, its memory system, its main representation model, and the LIDA computational framework, a highly customizable Java implementation of the LIDA architecture.



Javier has also worked as a computer software consultant, particularly for Java projects. He is a certified Java instructor and has taught advanced Java courses for enterprises such as Sun and Oracle.

## ACM Student Chapter News

The ACM student chapter has hosted several events this semester, including a game night, Linux Q&A, and two guest lectures (by U of M alumnus **Jim Greer** of FedEx, and Midsouth Makers).



## Student Achievements

Ph.D. students **Syed Monowar Hossain** and **Amin Ahsan Ali** were awarded NSF student travel grants to attend the prestigious ACM SenSys 2012 conference and its accompanying mHealthSys workshop. The conference was held November 6-9 in Toronto, Canada. Both Syed and Amin are research assistants in **Dr. Santosh Kumar's** Wireless Sensors and Mobile Ad Hoc Networks (WiSe MANet) Lab.



Ph.D. candidate **Yaoqing Liu** from **Dr. Lan Wang's** Networking Research Lab presented "FIFA: Fast Incremental FIB Aggregation" to 600 attendees at the NANOG 56 (North American Network Operators' Group) conference held in Dallas this October. The same work was also accepted to INFOCOM 2013 and has been submitted for a provisional patent application.

Moreover, Yaoqing's joint work with postdoctoral fellow **Syed Obaid Amin** and Prof. Wang (entitled "Efficient FIB Caching using Non-overlapping Prefixes") was accepted by ACM SIGCOMM Computer Communication Review (CCR).

## Alumni News

**Dr. Sidney D'Mello** (Ph.D. 2009) had his work on emotion-sensitive tutoring systems featured in a September article in the *New York Times* entitled "The Machines Are Taking Over." Sidney is currently an assistant professor of psychology and computer science at the University of Notre Dame.

**Dr. Evan Drumwright** (B.S. 1999) is now an assistant professor of computer science at George Washington University in Washington, D.C. He leads the robotics lab with four Ph.D. students and a \$400K robot funded by NSF and Willow Garage grants. Evan was a visiting assistant professor at the U of M from 2007-2010, when he led efforts to create an Honors program in Computer Science. In his undergraduate days, he was a major contributor to the development of AutoTutor 1.0 under the direction of **Dr. Max Garzon**.

**Dr. David F. Dufty**, a former postdoctoral fellow with the U of M's Institute for Intelligent Systems, was featured in the *New York Times* Sunday Book Review for his book *How to Build an Android*. The book recounts the IIS's efforts (including U of M alumnus **Dr. Andrew Olney**, Ph.D. 2006) to build a talking android of celebrated science-fiction writer Philip K. Dick.

**Dr. Usef Faghihi**, a postdoctoral fellow with **Dr. Stan Franklin's** Cognitive Computing Research Group, has accepted an assistant professor position at Sul Ross State University in Texas.

**Dr. Karen Hovsepian**, a postdoctoral fellow with **Dr. Santosh Kumar's** WiSe MANet Lab, has joined Troy University as a tenure-track assistant professor.

**Adam Geminn** (B.S. 2012) and **Forrest Williams** (B.S. 2011) are now employed as software engineers at FedEx's World Technology Center in Collierville.

## CS Social 2012

The traditional CS Social was held on November 9. Students, faculty, and alumni gathered at the University Center for an evening of food, fun, and games.



## Fall 2012 Graduates

### Ph.D.

Sujoy Roy

### M.S.

Harish Kumar Chaziyotil  
Sri Harsha Madamanchi  
Somnath Mitra  
Siddhartha Poreddy  
Kuldeep Sharma  
Abhijit H. Thakur

### M.S. Applied Computer Science

John "Bert" Godwin

### B.S.

Kameishea N. Bigham  
Jason C. Buck  
Justin B. Cantor  
Adam S. Malkin  
Shawn E. Mercado  
Gus Sanders  
Hart M. Simha

## CS Colloquium

This semester's CS Colloquium series included talks from distinguished visiting researchers and industry professionals as well as University of Memphis faculty and students. For abstracts and speaker bios, see [www.cs.memphis.edu/colloquium](http://www.cs.memphis.edu/colloquium)

"Information Visualization: A Security Storm Map"  
**Dr. Denise Ferebee**, FedEx Services

"FIFA: Fast Incremental FIB Aggregation"  
**Yaoqing Liu**, Ph.D. Candidate, Department of Computer Science, University of Memphis

"Capturing Disease-Symptom Relations using Higher-Order Co-Occurrence Algorithms"  
**Vivek Datla**, Ph.D. Candidate, Department of Computer Science, University of Memphis

"Reliable and Energy-Efficient Data Collection in Wireless Sensor Networks"  
**Dr. Feng Wang**, Department of Computer and Information Science, University of Mississippi

"Computer Aided Engineering - Knee Technology Lunges Forward"  
**Ryan Landon**, Smith & Nephew

"Semantic Similarity via Quadratic Assignment"  
**Dr. Vasile Rus**, Department of Computer Science, University of Memphis

"Adaptive Forwarding in Named Data Networking"  
**Dr. Lan Wang**, Department of Computer Science, University of Memphis

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