

Fall 2014 Newsletter

Chair's Message



Computer Science at U of M became a Department in 2005. As we complete our first semester after our first decade, it is a pleasure to see that our dedicated and highly motivated faculty have engaged

in world-class research and top quality education in several aspects of computer science. We have been leaders in establishing a mobile health research center with an \$11M grant from NIH (the first for U of M at this level). Our research activities have continued to be funded by NSF, NIH, DOE, and other organizations; and our collaborations with other universities and Industry is at peak levels. We have received several prestigious awards including the elevation of one of our members to the Fellow rank by IEEE (joining yours truly with that rank). We have the first batch of students enrolled in our accelerated BS/MS program. Our undergraduate enrollment has crossed 240 and our Ph.D. production rate has more than doubled.

This is only half the story. The other half is from our alumni who are making a difference through their professional contributions to computer science and technology and the community. I wish to thank them for their trust in us and for continuing to hold our flag high. We are truly dreamers, thinkers and doers! Yes, it is a good time to be in CS at U of M!

Sajjan G. Shiva
Professor and Chair

U of M Leading a \$10.8M NIH Big Data Center of Excellence

The Center of Excellence for Mobile Sensor Data-to-Knowledge (MD2K) is one of 11 national Big Data Centers of Excellence awarded by NIH. The MD2K Center, led by U of M Computer Science **Prof. Santosh Kumar**, brings together 22 investigators in Computer Science, Engineering, Health, and Statistics, drawn from 11 universities (Cornell Tech, Georgia Tech, Northwestern, Ohio State, Rice, UCLA, UC San Diego, UC San Francisco, the Universities of Massachusetts, Memphis, and Michigan), and Open mHealth. Former Computer Science faculty **Dr. Timothy Hnat** is now MD2K's Chief Software Architect.



MD2K represents NIH's signature investment in mobile health (mHealth), a rapidly growing industry with tremendous potential to improve health. MD2K will lay a strong scientific foundation for mHealth by producing and making widely available open source, extensible and standards-compliant big data analytics software for extracting information and actionable knowledge from mobile sensor data. The team will test these tools for reducing hospital readmissions in patients with congestive heart failure and for preventing relapse in smokers who are abstinent.

More information about MD2K is available at md2k.org.

Prof. Dasgupta Becomes IEEE Fellow, ACM Distinguished Speaker



Prof. Dipankar Dasgupta has been recognized with two significant professional milestones: elevation to IEEE Fellow and inclusion in the ACM's Distinguished Speakers Program (DSP).

Less than 0.1% of voting IEEE members are selected annually for elevation to IEEE Fellow, the highest grade of IEEE membership. Prof. Dasgupta was chosen for his lifetime of contributions to immunological computation and bio-inspired cyber security. He joins department chair **Prof. Sajjan Shiva** as the second U of M Computer Science faculty member with this honor.

ACM's Distinguished Speakers Program allows schools and organizations to book lectures from leading computing professionals. Through the DSP, Prof. Dasgupta will offer talks on immunological computation, cloud services, privacy in social networks, and puzzle-based learning in cyber security education.

U of M Awarded IA/Cyber Defense Re-Designation

The University of Memphis has been re-designated as a National Center of Academic Excellence in Information Assurance/Cyber Defense Education for academic years 2014-2021 by the National Security Agency. An official certificate was presented at the 18th Colloquium for Information Systems Security Education (CISSE, www.cisse.info/colloquium), held June 16-18 in San Diego.

Named Data Networking Project Advances

The Networking Research Lab was recently awarded a \$350,000 grant from the National Science Foundation to continue their efforts on the Named Data Networking Next Phase Project (NDN-NP). The primary focus of NDN-NP is to develop a new Internet architecture to increase network security, accommodate growing bandwidth requirements, and simplify the creation of increasingly sophisticated applications.



Spearheaded by **Prof. Lan Wang** and a group of undergraduate and graduate students, the U of M is one of eight institutions across the country currently working on the development and deployment of the new Internet architecture. The U of M recently became a founding member of a new NDN consortium for current NDN architecture development, which will allow the Networking Research Lab to play an active role in influencing the direction of NDN research by interacting with other academic and industry members of the consortium.

Among the group's most recent accomplishments is the release of the routing protocol NLSR (Named Link State Routing Protocol). NLSR is a routing protocol in NDN that populates NDN's Routing Information Base. Several academic papers were also published in Fall 2014 by lab members.

Faculty Accolades

Prof. Dipankar Dasgupta received a \$365K grant from the National Science Foundation for "Collaborative Project: Puzzle-Based Cybersecurity Learning to Enhance Defensive Skills of Front-Line Technicians." The three-year award, which became effective on September 1, is a collaboration with Jackson State Community College and will enable investigation of using puzzle-based learning systems in a cyber security setting.

Prof. Dipankar Dasgupta received a 2014 Impact Award from ACM SIGEVO for his paper "Real-Valued Negative Selection Algorithm with Variable-Sized Detectors" published at GECCO 2004. ACM SIGEVO bestows the Impact Award each year to one to three papers from ten years prior that have had the most impact on their field. Prof. Dasgupta's paper was joint work with Dr. Ji Zhou of St. Jude Children's Research Hospital.

Prof. Santosh Kumar received the "Eye of the Tiger" award from the U of M Alumni Association, presented at the home football game on Oct. 11.

Mr. Kriangsiri Malasri received the 2014 Award for Teaching Excellence from the U of M College of Arts and Sciences. He also received the Excellence in Teaching Award from the U of M chapter of the National Society of Leadership and Success.

Prof. Sajjan Shiva delivered an invited keynote address titled "Holistic Game Theory Inspired Defense Architecture" at the IEEE International Conference on Computational Advancement in Communication Circuits and Systems, Kolkata, India, Oct. 30 – Nov. 1.

Fall Conferences

The Department helped host two annual conferences this fall: the 7th **Mid-South Cyber Security Summit** and the 8th **International Research Workshop on Advances and Innovations in Software Testing**.



CYBER SECURITY SUMMIT

The Cyber Security Summit (previously called the Cyber Security Expo) was held on Oct. 17. Attendees were treated to a strong lineup of speakers from the DHS, NSF, FBI, and ORNL, among other organizations. The themes of this year's conference were mobile security, online fraud, and insider threats.



The Software Testing workshop, part of the U of M's Systems Testing Excellence Program (step.memphis.edu), was held on Nov. 3-4 in partnership with the International Test and Evaluation Association (ITEA). Attendees participated in a full program of research paper presentations as well as several tutorials. Computer Science **Prof. Sajjan Shiva** was the workshop's general chair.

WiSe MANet Lab Papers

Three students from **Prof. Santosh Kumar's** Wireless Sensors and Mobile Ad-Hoc Networks Lab presented papers at international conferences:

- **Mahbubur Rahman** at ACM BCB
- **Sudip Vhaduri** at Automotive UI
- **Hilloil Sarker** at ACM UbiComp

Featured Alumnus: Ernest McCracken

Ernest graduated from the Computer Science Department with his B.S. in 2009 and his M.S. in 2012. He recently became an adjunct instructor at the U of M in addition to his full-time job. Here he describes some of the things he's currently doing:



"I am a senior analyst at FedEx Services where I help build tracking and visibility applications. I build front end web applications based on Modern Web standards. Applications I work on include Tracking, Shipping, and FedEx Delivery Manager. We use the latest web frameworks to deliver large scale enterprise applications with a rich user experience.

This semester I also taught COMP 2150 here at the University of Memphis. The class was very enthusiastic and several students have taken part in a video game development group that I run called Memphis Game Developers. We reached almost 80 members this year and became both part of the Memphis Technology Foundation and an official Unity Users Group. The group aims to teach game programming as well as get game developers together to collaborate on different projects. We recently held the Winter LAN Party Supporting Toys for Tots at the Midsouth Makerspace which was a huge success. We've also secured Unreal licenses for interested students. I also became a board member at the Midsouth Makers and assist them in event promotion. I participated in HACKMemphis this year where we built a 3D scanner booth that 3D printed scans of people. Over 75 people attended the event which was held at Cowork Memphis."

U of M Hosts Black Girls Code Robotics Expo

Mr. Kriangsiri Malasri worked with the Memphis chapter of Black Girls Code to host their first Robotics Expo at the U of M on Saturday, Oct. 11.



Attendees got the chance to build and program LEGO WeDo and Mindstorms robotics kits. The event attracted about 50 girls ranging in age from 7 to high school. The younger students focused on simple tasks like getting a motor to respond to sensor input. Older students made their robots do complex activities such as automatically following a path on the ground using only a light sensor.

CS Open House

In celebration of Computer Science Education Week, the Department held its annual Open House for middle- and high-school students on Friday, Dec. 12. About 120 local students and teachers attended the event. Attendees took part in workshops on game programming and LEGO robotics, in addition to several talks by industry volunteers.



Special thanks to volunteers **Karen Farrell** (FedEx Services), **David Hirschfeld** (Bits, Bytes, and Bots), **Meka Egwuekwe** (Lokion), and **Dr. Laney Strange** (U of M Computer Science). **Mr. Kriangsiri Malasri** organized the event with assistance from ACM officers **Kyle Mallard** and **Herve Anigo**.

Undergraduate Students Take Learning Center Positions

The Computer Science Learning Center in Dunn Hall 208 provides a place where undergraduate students can get extra help with their coursework. Historically, the Learning Center has been staffed exclusively by graduate students. Starting in Fall 2014, the Department is transitioning to having advanced undergraduates take these positions, in hopes that they can better connect with and explain material to other undergraduates. Students who are selected for these paid positions get the opportunity to improve their tutoring and teaching skills while helping other students.

Qi Chen, **David Cohen**, **Keenan Diggs**, **Shawn Hickman**, and **Marcus Tipton** are the five undergraduates selected to work in the Learning Center this fall. They will continue their positions in Spring 2015.

Summer/Fall 2014 Graduates

B.S.

Kenneth M. Brown
Ian W. Burns
Wesley S. Carter
Andrew J. DiMotta
Layth A. Fethi
Kyle E. Higginbotham
Kory D. Kozlowski
Vincent S. Lehman
Neal Patel
Shaniqua Rayford
Aaron M. Sams
Jonathan C. Wells

M.S. Applied Computer Science

Qiping Bao
Chuan Huang
Brandie M. White
Man Yang

M.S.

Gaurav S. Kedia
Rameshreddy
Reddibathuni
Sanjib K. Saha
Venkata R. Saladi

Ph.D.

Amin A. Ali
Vivek V. Datla
Ramya Dharam
Ryan J. McCall
Michael C. Nolen
Christopher B. Simmons

Where Are They Going?

Amin Ali has accepted an Assistant Professor position at the University of Dhaka in Bangladesh, one of the top schools in the nation.

Ian Burns is working at local company Mind over Data.

Shaniqua Rayford is in the process of applying to computer science graduate programs.

Brandie White is working for defense contractor Raytheon.

Fall 2014 CS Colloquium

Held most Friday afternoons during the Fall and Spring semesters, the Computer Science Colloquium allows local and guest speakers to share their work. This semester's Colloquium organizers were **Prof. Dipankar Dasgupta** and **Prof. Rick Sheldon**.

- Sept. 19** **Security Failure Impact Analysis**
Rick Sheldon
Visiting Associate Professor, Dept. of Computer Science, University of Memphis
- Sept. 26** **Navigation in Combined Social and Wireless Networks**
Zhuo Lu
Assistant Professor, Dept. of Computer Science, University of Memphis
- Oct. 3** **High Performance Computer Applications in Earthquake Ground Motion Simulation**
Ricardo Taborda
Assistant Professor, Center for Earthquake Research and Information/Dept. of Civil Engineering, University of Memphis
- Oct. 24** **Named Data Networking**
Patrick Crowley
Associate Professor, Dept. of Computer Science and Engineering, Washington University in St. Louis
- Oct. 31** **Software Faults: Definitions and Applications**
Ali Mili
Professor, College of Computing Sciences, New Jersey Institute of Technology
- Nov. 7** **An Occupant-Participatory Approach for Thermal Comfort Enhancement and Energy Conservation in Buildings**
Dan Wang
Associate Professor, Dept. of Computing, The Hong Kong Polytechnic University
- Nov. 21** **Internet Freedom Status**
Richard Brooks
Professor, Dept. of Electrical and Computer Engineering, Clemson University



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