

From the Chairman



Computer science graduates continue to be in high demand. A recent Forbes report indicates that software development has produced the most job growth since 2010, while the U.S. Bureau of Labor Statistics predicts a 30% increase in software developers by 2020. Furthermore, computer science remains one of the

most lucrative fields of study available. According to the National Association of College Employers (NACE), computer science ranks as the third highest-paying degree for entry level jobs.

I am proud to say that our students are taking full advantage of the job market. Several recent graduates have been hired at FedEx, and one Spring 2013 graduate is headed to Wayfair LLC in Boston. In addition, one of our current seniors will be interning this summer with Amazon in Seattle.

Although it may be tough to compete with the job offers our undergraduates are receiving, we are also making efforts to encourage them to continue with graduate studies. An accelerated B.S./M.S. program has received final approval and will be offered starting this fall.

I would like to personally thank Dr. Linda Sherrell, who will be retiring this May after 12 years of service. As the Undergraduate Curriculum Coordinator and a student advisor, she has played a crucial role in shaping our bachelor's program. She will be missed.

Looking forward to another successful year in 2013-2014!

Dr. Sajjan Shiva

Faculty Achievements

Dr. Dipankar Dasgupta is a leader in cyber security research and education. This semester he presented papers at the International Conference on Information Warfare and Security (ICIW) in Denver and the IEEE Symposium Series on Computational Intelligence (SSCI) in Singapore, along with organizing a Symposium on Computational Intelligence in Cyber Security (CICS) at SSCI. In addition, Dr. Dasgupta gave talks on cyber security at Jackson State University and at the CLION Symposium held at the University of Memphis. Under his direction, the U of M's information assurance courses have been re-certified under the Committee on National Security Systems National Standards for Information Systems Security Professionals, Senior Systems Managers, and System Administrators.

Dr. Stan Franklin had a paper on integer sparse distributed memory accepted to the prestigious *Neural Networks* journal. The paper was joint work with **Dr. Javier Snaider**, a former Ph.D. student of Dr. Franklin's who now works with Google.

Dr. Santosh Kumar has been very active in the area of mobile health (mHealth), co-authoring a feature article on the subject in the Jan. 2013 issue of *IEEE Computer* magazine. He was selected in a key group of 22 mHealth leaders from academia, industry, and government who met with the Director of NIH (Dr. Francis Collins) to inform future funding initiatives in the area. He was also invited to deliver a keynote speech at the 2013 Annual Meeting of the International Society for Research on Internet Interventions (ISRII) in Chicago, and he received the University of Memphis Alumni Association Distinguished Research Award in Science, Engineering, and Mathematics.

Department News

ACM Distinguished Speaker Visits Campus

On March 29, **Dr. Laura Dillon** from Michigan State University gave an invited lecture at the University of Memphis as part of the ACM's Distinguished Speakers program. Dr. Dillon presented her work on the Synchronization Units Model (Szumo), which extends an object-oriented language with synchronization contracts to allow the programmer to address concurrency issues without needing to write low-level code.



NetLab News

Dr. Lan Wang's Networking Research Lab (NetLab) welcomed two new members: **Dr. Syed Obaid Amin** (postdoctoral research fellow) and **Vincent Lehman** (undergraduate research assistant). Ph.D. student **Yaoqing Liu** and Dr. Wang's research papers have appeared in IEEE INFOCOM 2013 and ACM SIGCOMM *Computer Communication Review*. A paper co-authored by lab members Dr. Obaid, Ph.D. student **A. K. M. Mahmudul Hoque**, undergraduate student **Adam Alyyan**, and Dr. Wang has been accepted by ACM SIGCOMM ICN Workshop. **Yaoqing Liu** will graduate this summer and join the Department of Computer Science at Clarkston University as an assistant professor. **Adam Alyyan** will be an intern at Amazon for this summer. Prospective NetLab members should contact Dr. Lan Wang at lanwang@memphis.edu

Dr. Linda Sherrell Retires



After 12 years of service, **Dr. Linda Sherrell** will be retiring effective this May. She joined the Department in 2001 as a Visiting Associate Professor and has been instrumental in developing our undergraduate program as well as securing its ABET

accreditation. From 2004-2007, she was the PI on project Tri-P-LETS, a \$1.6M NSF-funded grant that sought to improve the computer science curricula of local high schools by bringing CS graduate students into the classroom. During her career with the Department, Dr. Sherrell taught numerous courses in introductory programming, data structures, discrete mathematics, and software engineering. She has also played a major role in advising both undergraduate and graduate students.

Fifth Annual Computational Thinking Summer Camp for Girls

The Department will hold its fifth annual **Computational Thinking Summer Camp for Girls** from July 15-19. This camp gives female 8th-11th graders from the Memphis area a chance to experience a taste of computer science through hands-on activities and guest lectures. One of the highlights of the camp is getting hands-on experience with AgentSheets, a game authoring and simulation tool that teaches basic concepts of computer programming. For more information, please visit www.cs.memphis.edu/summercamp

2013 Programming Challenge



The Department held its annual Programming Challenge for high-school students on Saturday, Apr. 27. The themes of this year's Challenge were developing Web applications (organized by **Dr. Vinhthuy Phan**) and programming Lego robots with Java (organized by **Mr. Kriangsiri Malasri**).

During the morning, the students attended two workshops covering the basics behind website development and robotics programming. In the afternoon, attendees were challenged to design a new home page for their own schools, and to construct a functional musical instrument out of the Lego robotics kits.

In the Web development category, **Houston High School** took first place, with second going to **Christian Brothers High School** and third to **Marion Jr. High School**. Houston High also won the Lego robotics category with a different team. Second and third place in robotics went to **Evangelical Christian School** and **White Station High School**, respectively.

In all, teams from nine area schools were present: Christian Brothers High School, Evangelical Christian School, Germantown High School, Houston High School, J. A. Fair High School (Little Rock, AR), Marion Junior High School (Marion, AR), Memphis Business Academy, Rosa Fort High School (Tunica, MS), and White Station High School.

Dr. Max Garzon has been invited to join the prestigious editorial board of the *International Journal of Genomic Medicine* of the OMICS Publishing Group. The journal emphasizes the structural and functional analysis of the genome in order to understand the role of genetic factors in health and disease. He was also invited to contribute an article to *Parallel Processing Letters*, special issue on the Theory and Applications of Natural Computing.

Mr. Kriangsiri Malasri received the University of Memphis Alumni Association Distinguished Advising Award. He has served as the Department's undergraduate advising coordinator since Fall 2011.

Dr. Vasile Rus has been recognized as a "PI Millionaire" by the University of Memphis for serving as a PI on more than \$1 million of externally supported research during his tenure at the university.

Dr. Lan Wang received a research grant from Cisco to study mechanisms to scale routing in the Named Data Network architecture for the future Internet. She is serving on the Technical Program Committees of IEEE INFOCOM 2014, IEEE ICNP 2013, and ACM SIGCOMM ICN Workshop 2013.

Student Highlights

2013 CS Research Day



The ninth annual CS Research Day was held on Friday, Mar. 22 at the FedEx Institute of Technology.

In addition to two full presentation sessions, the event featured a set of five-minute "lightning talks" and poster submissions. Cash awards were given to the top two submissions in each category:

Full Presentations:

1. **Nobal Niraula**, Task Learning from the Web for Virtual Assistants (*Advisor: Dr. Vasile Rus*)
2. (Tie) **Harkeerat Bedi**, DDoS Resilient Active Queue Management (*Advisor: Dr. Sajjan Shiva*)
2. (Tie) **Serge Salan**, Cost Prediction of Paths Execution for Articulated Robots (*Advisor: Dr. David Lin*)

Lightning Talks:

1. **Tyler Moore**, Directed Percolation in DNA Self-Assembly by Elementary Cellular Automata (*Advisors: Dr. Max Garzon, CS, and Dr. Russell Deaton, EECE*)
2. **Kazi Zaman**, K-Sense: Recognition and Motivation of Human Activities through Kinematic Modeling and Sensor Feedback (*Advisor: Dr. Timothy Hnat*)

Posters (Graduate):

1. **Abhijit Nag**, Active Authentication of Users through Adaptive Selection of Features using Multilevel Genetic Algorithm (*Advisor: Dr. Dipankar Dasgupta*)
2. **Dongliang Chu**, General Image Composition Method for Sort-last Parallel Rendering (*Advisor: Dr. Qishi Wu*)

Posters (Undergraduate):

1. **Adam Alyyan**, SLAMDroid: Dynamic Indoor Mapping and Localization (*Advisor: Dr. Timothy Hnat*)
2. **Kenneth Armstrong II**, Building Utilization Indoor Tracking with Kinect Sensor (*Advisor: Dr. Timothy Hnat*)

Congratulations to the winners and to all the participants! Special thanks to **Dr. Timothy Hnat** for organizing the event, to **Dr. Kevin Boggs** for allowing us to use the space in FIT, and to our panels of faculty judges: **Dr. Dipankar Dasgupta**, **Dr. Lih-Yuan Deng**, and **Dr. Linda Sherrell** (full presentations); **Dr. Lan Wang** and **Dr. Vasile Rus** (lightning talks); and **Dr. Scott Fleming**, **Dr. David Lin**, and **Mr. Kriangsiri Malasri** (posters)

ACM Student Chapter News

Under the leadership of President **Craig Herndon**, the ACM student chapter was able to invite distinguished speaker **Dr. Laura Dillon** of Michigan State University to deliver a talk on campus. The chapter also hosted a game night and a lecture on cyber security, and they are currently working on building a 3-D printer for use in outreach to local middle and high schools.



ACM chapter elections were held at the end of April. The officers-elect for the 2013-2014 academic year are:

President: **Andrew Hood**
Vice President: **Maria Luong**
Treasurer: **Neal Patel**
Secretary: **Kyle Mallard**
Project Managers: **Jordan Davis**, **Nic Smith**
System Administrator: **Matt Longley**

Student Achievements

Ph.D. candidates **Poonam Dharam** and **Yaoqing Liu** received 1st and 2nd place, respectively, in the Math and Computer Science category at the university's annual Student Research Forum on April 1.

Poonam presented her work with faculty advisor **Dr. Qishi Wu** on bandwidth scheduling in high-performance networks. Yaoqing presented his work with faculty advisor **Dr. Lan Wang** on efficient caching in network routers. Both students continue a long-standing tradition of Computer Science students doing very well in this annual university event.

Spring 2013 Graduates

M.S.

Kanishka Adusumilli
Austin Henley
Danielle Jones
Venkatesh Manam
Aravind Nuthalapati

M.S. Applied Computer Science

Jin Wang

B.S.

Roman Birg
David Drane
Lorrie Hayes
Craig Herndon
R. Doug Rowell
Steve Sosa

Where Are They Going?

Yaoqing Liu (graduating in Summer 2013) has accepted a tenure-track faculty position at Clarkson University in Potsdam, NY.

Lorrie Hayes will be attending the University of Memphis Law School, where she was offered a full tuition scholarship.

Craig Herndon will be working as a software engineer with Wayfair LLC in Boston.

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CS Colloquium

For abstracts and speaker bios, see www.cs.memphis.edu/colloquium

MsDetector: Toward a Standard Computational Tool for DNA Microsatellites Detection
Dr. Hani Girgis, Research Fellow, National Institutes of Health

MMGD: Mining Massive Genomic Data to Understand Microbial Functions
Dr. Erliang Zeng, Research Assistant Professor, Department of Computer Science and Engineering, University of Notre Dame

Comprehensive Analysis of the *cis*-Regulatory Sequences in the Mouse Genome
Dr. Feng Yue, Postdoctoral Fellow, Ludwig Institute for Cancer Research, UCSD School of Medicine

Computational Accelerators: Solving the Eikonal Equation
Dr. Phil Bording, Wave Research

Revolutionizing Healthcare via Democratization of Mobile Health: An Agenda for Computing Research
Dr. Santosh Kumar, Associate Professor, Department of Computer Science, University of Memphis

Recruiting and Retaining Women in Computing
Dr. Sarah Lee, Director of Undergraduate Studies, Department of Computer Science and Engineering, Mississippi State University

Software Innovation in the Real Estate Finance Market
Dan Nemesek, Senior Software Engineer
Brett Estes, Director of IT
Bethany Cooper, Corporate Recruiting and Talent Management Coordinator FNC, Inc.

Taming Networking Challenges with Feedback Control
Dr. Shan Lin, Assistant Professor, Department of Computer and Information Sciences, Temple University

Szumo: A Compositional Contract Model for Safe Multi-threaded Applications
Dr. Laura Dillon, Professor, Department of Computer Science, Michigan State University

Reducing Complexity in an Increasingly Complex World
Dave Loschinsky, Chief Technology Officer, Asentinel LLC

Reading, Writing, Arithmetic, and Programming?
Dr. Caitlin Kelleher, Assistant Professor, Department of Computer Science and Engineering, Washington University in St. Louis

An Intelligent Approach to Intrusion Detection in a Networking Environment
Dr. Ratan K. Guha, Professor, Department of Electrical Engineering and Computer Science, University of Central Florida