

### From the Chairman



Our faculty continue to make a mark in society with their wide range of applied research, covering everything from natural language processing to bioinformatics to Internet protocols to wireless sensor networks. With such a diverse array of computer science applications, it is more important than ever for educators to focus on computational thinking as an integral part of the curriculum, on par with the classic foundations of "reading, writing, and arithmetic." To that end, we have continued our outreach efforts to Memphis-area high schools, including an Open House event as part of CS Education Week last December, the Programming Challenge this spring, and the Computational Thinking Summer Camp for Girls this summer.

I am pleased to report that the Department is growing. We recently welcomed **Dr. Scott Fleming** as a new tenure-track Assistant Professor, with one additional tenure-track position to be filled in the very near future. That we are able to hire new faculty in this less-than-ideal economic climate is a testament to the strength of not only our department, but also computer science as a field.

*Dr. Sajjan Shiva*

### Faculty Achievements

**Dr. Dipankar Dasgupta** gave an invited talk at a cyber security summit at the University of Wales in Cardiff, UK. The two-day summit was organized by the University of Wales and the MIT Geospatial Data Center, on whose advisory board Dr. Dasgupta serves. Participants also included delegates from the United Nations, U.S. Department of Defense, Microsoft, and IBM, as well as faculty from Harvard University, the University of Oxford, Boston University, and the University of Central Florida.

Dr. Dasgupta's Center for Information Assurance hosted an on-campus National Cyber Security Awareness Campaign on March 23, featuring guest speakers from the U.S. Department of Homeland Security and FedEx.

Dr. Dasgupta (pictured below with MIT's Prof. John Williams, a keynote speaker at the event) also organized the IEEE Symposium on Computational Intelligence in Cyber Security (CICS) from April 11-15 in Paris ([www.ieee-ssci.org/2011/cics-2011](http://www.ieee-ssci.org/2011/cics-2011))



**Dr. Sidney D'Mello**, currently a research assistant professor at the U of M's Institute for Intelligent Systems, will join the University of Notre Dame in the Spring of 2012 as an Assistant Professor in the departments of Computer Science and Engineering (CSE) and Psychology. Dr. D'Mello received his Ph.D. in Computer Science from the University of Memphis in 2009 under the mentorship of Stan Franklin (Computer Science) and Art Graesser (Psychology). His primary research interests are in the cognitive and affective sciences.

### Department News

#### U of M Hosts NACLO; Memphis Student Makes National Team



In February the U of M hosted the regional portion of the 2011 North American Computational Linguistics Olympiad (NACLO), coordinated by **Dr. Vasile Rus**. This olympiad is a contest in which high-school students solve linguistic puzzles. In solving the problems, students learn about the diversity and consistency of language, while exercising logic skills. The event allows young people to experience a taste of natural-language processing in the 21st century.



Congratulations to local student **Wesley Jones** of Houston High School (left), who ranked 3rd out of 1,183 participants nationally in the contest's initial round. Wesley then advanced to the second round of the contest, where he placed fourth nationally. This qualified Wesley for the eight-member U.S. Olympic team,

which will represent the country at the International Computational Linguistics Olympiad (ILO 2011). Wesley was the only student in the entire southeast region of the United States to make the national team.

#### New Faculty

**Dr. Scott Fleming** will join the Department in Fall 2011 as a tenure-track Assistant Professor. Dr. Fleming received his Ph.D. in Computer Science from Michigan State University, and was afterward a postdoctoral fellow at Oregon State University. He brings his expertise in software engineering, particularly the design of software engineering tools.



#### U of M Hosts Software Testing Workshop

The Fifth International Research Workshop on Advances and Innovations in Software Testing was held at the FedEx Institute of Technology on May 2-3. This annual workshop focuses on the theoretical and practical aspects of testing including hardware testing, software testing, requirements testing, and the testing of business rules. This year's workshop featured distinguished speakers **Dr. Steven Hutchinson**, test and evaluation executive for the Defense Information Systems Agency, and **Ralph H. Groce III**, chief technology officer of Wells Fargo Retirement. Computer Science faculty **Dr. Sajjan Shiva** (general chair) and **Dr. Linda Sherrell** (registration chair) helped organize the event.

To see the full program, please visit the workshop website at [step.memphis.edu](http://step.memphis.edu)

#### High School Outreach



The Department held its annual **Programming Challenge** on Saturday, April 30. This event invites high-school students from Tennessee, Arkansas, and Mississippi to visit the U of M campus for a day of programming workshops and contests. The theme of this year's event was developing Web apps with Python (organized by **Dr. Vinhthuy Phan**) and programming Lego robots with Java (organized by **Mr. Kriangsiri Malasri**). Teams were present from Bolton High School, Collierville High School, Houston High School, Memphis University School, and Little Rock Central High School in Arkansas. Several faculty members from Rust College in Mississippi also attended the event. For more information and photos, please see the news section of the CS website at [www.cs.memphis.edu](http://www.cs.memphis.edu)

From July 11-15 this summer, the Department will hold its third annual **Computational Thinking Summer Camp for Girls**. 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. For more information and to register, please contact the camp coordinator, **Dr. Linda Sherrell**, at 901.678.3139 or [sherrell@cs.memphis.edu](mailto:sherrell@cs.memphis.edu)

**Dr. Stan Franklin's** AI research was featured in an issue of *New Scientist* magazine. The article focuses on LIDA (Learning Intelligent Distribution Agent), a software agent based on global workspace theory that attempts to simulate the human brain's ability to process its environment and associate the sensed information with long-term memory. The hypothesis is that taken as a whole, these cycles result in what we know as consciousness. The paper on which the *New Scientist* article was based ("The Timing of the Cognitive Cycle") is available online through the Public Library of Science at [www.plosone.org](http://www.plosone.org)

**Dr. Max Garzon** was invited to serve on the TPCs of several premier conferences, including DNA17 (DNA Computing and Molecular Programming) and IJCNN'11 (Conference on Neural Networks).

**Dr. Santosh Kumar** was invited to speak at the NSF Workshop on Pervasive Computing at Scale. Dr. Kumar is also chairing a national meeting on "mHealth Evidence" co-organized by the Robert Wood Johnson Foundation, McKesson Foundation, National Science Foundation, and National Institutes of Health. In addition, Dr. Kumar is co-chairing the TPC of the 1st ACM Workshop on Mobile Systems, Applications, and Services for Healthcare (mHealthSys) hosted at the ACM SenSys 2011 conference. He is also co-chairing the TPC of the NetHealth workshop and is vice-chair of the TPC of the 2011 International Conference on Mobile Ad Hoc and Sensor Networks.

**Dr. Andrew Raij**, a postdoctoral fellow in Dr. Santosh Kumar's Wireless Sensors and Mobile Ad Hoc Networks (WiSe MANet) Lab, has accepted a tenure-track Assistant Professor position at the University of South Florida.

**Dr. Vasile Rus** was selected to serve on the program committees of two prestigious conferences. He is an area chair for the International Conference of the Association for Computational Linguistics and Human Language Technologies (ACL-HLT 2011), which will be held from June 19-24 in Portland, OR. Dr. Rus is also a Program Committee member of the 25th International Conference on Artificial Intelligence (AAAI-11), to be held August 7-11 in San Francisco, CA.



# Student and Alumni Highlights

## CS Research Day 2011



The annual CS Research Day, held on March 25 at the University Center, included seven oral presentations and seven posters covering a wide range of research areas. The top three participants in each category received cash prizes that may be redeemed for research-related expenses.

Thanks go to **Dr. Max Garzon** for organizing this year's event, and to the panel of faculty judges: **Dr. Dipankar Dasgupta**, **Dr. Qishi Wu**, and **Dr. Lan Wang** (presentations); and **Dr. Marc Fisher II**, **Dr. Max Garzon**, and **Dr. Linda Sherrell** (posters). Congratulations to the winners and to all participants!

### Oral Presentations:

**Winner: Archana Bhattarai**, "Concept-Based Information Retrieval from Heterogeneous Evidence" (Advisor: **Dr. Vasile Rus**) Archana also went on to win 1st place at the University Research Forum!

**1st Runner-Up: Harkeerat Bedi**, "Game Theory-Based Defense Mechanisms against DDoS Attacks on TCP/TCP-Friendly Flows" (Advisor: **Dr. Sajjan Shiva**)

**2nd Runner-Up: Jake Qualls**, "CS1 Students' Understanding of Computational Thinking Concepts" (Advisor: **Dr. Linda Sherrell**)

### Posters:

**Winner: Javier Snaider**, "Time Production and Representation in a Conceptual and Computational Cognitive Model" (Advisor: **Dr. Stan Franklin**)

**1st Runner-Up: Kiran Bobba**, "A Metric Model of Gibbs Energies for DNA Self-Assembly and Microarray Design" (Advisor: **Dr. Max Garzon**)

**2nd Runner-Up: Yi Gu and Shwu-Ling Shenq**, "Multi-Objective Genetic Algorithm-Based Solution for Workflow Mapping Work" (Advisor: **Dr. Qishi Wu**)

## ACM Student Chapter Events



On March 2 the ACM student chapter held a workshop on Web technologies given by **Dr. Vinhthuy Phan**. He discussed the Python programming language and the web2py framework for developing Web apps, including demonstrations of

creating a blog, a wiki, and a simple human-versus-computer strategy game. Interested in getting involved with the ACM chapter? Contact President Ernest McCracken ([emccrackn@memphis.edu](mailto:emccrackn@memphis.edu)), Vice President Craig Herndon ([cthrndon@memphis.edu](mailto:cthrndon@memphis.edu)), or faculty advisor Dr. Vinhthuy Phan ([vphan@memphis.edu](mailto:vphan@memphis.edu)).

## NetLab News

**Dr. Lan Wang's** Networking Research Lab welcomed three new members in January: Ph.D. student **A.K.M. Mahmudul Hoque** and undergraduate students **Roman Birg** and **Gus Sanders**. **Ernest A. McCracken** presented our NetViews work at the Workshop on Active Internet Measurements (AIMS) in February. **Yaoqing Liu** and **A.K.M. Mahmudul Hoque** will attend the retreat for our NSF Named Data Networking project from May 23-25 in Palo Alto, CA. We have paid research assistant positions for both undergraduate and Ph.D. students. Interested students can email their resumes to [lanwang@memphis.edu](mailto:lanwang@memphis.edu)

## Applied CS Program Goes Online

The Applied Computer Science graduate program will be fully available online in Fall 2011. For more information about the program contact coordinator **Dr. Max Garzon** ([mgarzon@memphis.edu](mailto:mgarzon@memphis.edu)), or visit [apcs.memphis.edu](http://apcs.memphis.edu)

## Alumni News

**Dr. Andrew Olney** (Ph.D. '06), currently an Assistant Professor in the U of M's Department of Psychology and Associate Director of the Institute for Intelligent Systems, has been selected as a recipient of the Early Career Research Award from the U of M College of Arts and Sciences.



## Game Theory in Cyber Security Lab

Network security is a complex and challenging problem. The area of network defense mechanism design has received immense attention from the research community for more than two decades. However, the network security problem is far from completely solved. The GTCS lab is exploring the applicability of game theoretic approaches to address network security issues. The goal of our research is to design robust solutions for addressing malicious network attacks using game theory. We envision a semi-autonomous defense architecture known as a **Game Inspired Defense Architecture** (GIDA). GIDA is a distributed architecture consisting of three key components: a set of game agents along with

the central game coordinator, an administrative console, and a dynamic honeynet. These three components interact in a semi-autonomous fashion in order to provide means to identify, evaluate, and act upon network flows.

The GTCS lab is under the direction of **Dr. Sajjan Shiva** and includes graduate students **Harkeerat Bedi**, **Ramya Dharam**, **Mustafa Hajeer**, **Danielle Jones**, **Chris Simmons**, and **Vivek Shandilya**. We have recently published papers at the Int'l Conference on Data Engineering and Internet Technology (DEIT) and the IEEE Symposium on Computational Intelligence in Cyber Security (CICS).

## Spring 2011 Graduates

### M.S.

Shweta Addala  
Stephen Michael Ash  
Megan Elizabeth Bailey  
Swathi Bavanaka  
Basanth Koganti  
Praveen Kolla  
Beata Kubiak  
Srinivas Reddy Kukunoor  
Manasa Medikonda  
David L. Mills  
Swetha Mourya Popuri  
Naga Sravana Sunil Saladi  
Vivek Mayura Shandilya  
Shwu-Ling Shenq  
Neva Kay Smith  
Sreedevi Thippareddy  
Sukshith Shankar Veerappajja

### M.S. Applied Computer Science

Jason Knisley  
Silas K. Njoroge

### B.S.

Andrew James Diana, *magna cum laude*  
Eric L. Hicks  
Dylan R. Moore  
Jeremy D. Roberts

## CS Colloquium

This semester's CS Colloquium series included talks from distinguished visiting researchers 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)

**Dr. Yuriy Brun**, Department of Computer Science, University of Washington  
"Software Self-Adaptation: Automating Decision Making"

**Dr. Scott Fleming**, School of Electrical Engineering and Computer Science, Oregon State University  
"Building a Foundation for the Design of Software Engineering Tools"

**Javier Snaider**, Department of Computer Science, University of Memphis  
"A Computational Framework for a Cognitive Architecture"

**Dr. Lih-Yuan Deng**, Department of Computer Science / Department of Mathematical Sciences, University of Memphis  
"Security Enhancement on Linear Random Number Generators via Mutual Shuffling"

**Dr. Cheng-Zhong Xu**, Department of Electrical and Computer Engineering, Wayne State University  
"Autonomic Clouds Management: Challenges and Opportunities"

**Dr. Amanda Stent**, AT&T Research  
"InteractiveX: Generating Multimedia Summaries of Spatio-Temporal Data Sets"

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