

## From the Chairman



In spite of the current economic climate, a report released by Yahoo! earlier this spring lists software engineering as one of the fastest growing fields in the coming years, due to the critical role that software plays in our daily lives. Software engineers also enjoy one of the highest median salaries on the

list, with a reported annual wage of over \$85,000.

Our Department has maintained its tradition of excellence this semester, hosting a major systems testing workshop that aims to improve the quality of software everywhere. Our reputation as a leader in cyber-security education has been cemented with a re-designation from the NSA and DHS as a National Center of Academic Excellence in Information Assurance Education. Meanwhile, our research funding has continued to grow with the NSF, NIH, DHS, and ONR as major sponsors; and our faculty and students have continued to receive accolades for their work.

Looking to the future, we are facilitating further growth by stepping up our outreach activities. These efforts have included events such as the annual Programming Challenge for high-school students and a workshop on CS opportunities for high-school counselors, as well as having two faculty members serve on the Outreach subcommittee of the University Committee to Increase STEM (Science, Technology, Engineering, and Mathematics) Enrollments.

I always welcome input from our alumni and industry/research collaborators. Contact us anytime!

*Dr. Sajjan Shiva*

## Faculty Achievements

**Dr. Dipankar Dasgupta** organized a Symposium on Computational Intelligence in Cyber Security (CICS) at the IEEE Symposium Series on Computational Intelligence (SSCI), held in Nashville, TN, from March 30-April 2. Dr. Dasgupta also gave a tutorial on the topic at that event.

**Dr. Stan Franklin** has joined the editorial board of the *International Journal of Machine Consciousness*. He is also a co-author of two articles therein: "Consciousness is Computational: The LIDA Model of Global Workspace Theory" and "Pressures for Perceptual Stability and Self as Guides to Machine Consciousness." The latter article was co-authored with one of our graduate students, **Sidney D'Mello**.

**Dr. Max H. Garzon** has become computer science editor for Springer's *Encyclopedia of Sciences and Religions*, scheduled to be published towards the end of the year. The work aims to present side-by-side discourse in sciences and religions to foster scholarly comparison and interaction. More details can be found at [refworks.springer.com/mrw/index.php?id=1325](http://refworks.springer.com/mrw/index.php?id=1325)

**Dr. Santosh Kumar** gave an invited talk on his AutoSense project at the National Institute on Alcohol Abuse and Alcoholism (NIAAA) at the National Institutes of Health on January 12. The AutoSense project aims to develop a body area wireless sensor network that enables continuous collection of real-time data on personal exposures to addiction and psychosocial stress.

Three papers from Dr. Kumar's WiSeMANet Lab also appeared in the prestigious IEEE INFOCOM conference, held in Rio de Janeiro, Brazil, from April 20-25.

## Department News

### CfIA Earns Re-Designation

The National Security Agency and Department of Homeland Security have re-designated the Center for Information Assurance (CfIA) as a National Center of Academic Excellence in Information Assurance Education for the next 5 years. Under the direction of **Dr. Dipankar Dasgupta**, the CfIA has become known to 42 states and several universities through the Adaptive Cyber-security Online Training program. For more information about the CfIA and the ACT Online program, see [cfia.memphis.edu](http://cfia.memphis.edu) and [www.act-online.net](http://www.act-online.net)

### Online Elections and Online Courses

The Computer Science Department and the CfIA sponsored two online student elections on behalf of the Student Government Association (SGA) for Basketball Homecoming King/Queen and new student government positions for 2009-2010. These elections were coordinated by **Dr. Max Garzon** and attracted over 500 more voters, a 300% increase over last year's election.

A new pilot program to expand the Department's classrooms online was successfully run in **Dr. Max Garzon's** Human-Computer Interaction graduate class. Four students from the National University of Colombia joined the class of 14 U of M students online, with two of them earning full credit at their institution for their work.

### AutoWitness Featured on U of M Video

**Dr. Santosh Kumar's** AutoWitness system was recently featured on a video produced by the University of Memphis Marketing department. AutoWitness uses wireless sensor technology to automatically alert law enforcement of stolen items. AutoWitness also provides the ability to track these items, making them easier to recover. A YouTube version of the video can be viewed at [www.youtube.com/watch?v=oszSYC9EsVk](http://www.youtube.com/watch?v=oszSYC9EsVk)

**Mr. Kriangsiri Malasri** was awarded a U of M Summer Redesign Fellowship to improve COMP 1900, our introductory computer science course. The proposal was submitted jointly with **Dr. Linda Sherrell**.

In April, **Dr. Vinhthuy Phan** participated in an NSF panel to review proposals in the areas of computational biology, bioinformatics, and bio-computing.

**Dr. Linda Sherrell** was awarded a U of M Summer Redesign Fellowship to improve COMP 2150, the second course in our introductory computer science sequence.

Dr. Sherrell also gave a talk entitled "Experiences with the NSF GK-12 Teaching Fellowship Program" at the STEM Colloquium on March 20. The STEM Colloquium is funded by the NSF grant MemphiSTEP: A STEM Talent Expansion Program. In addition, Dr. Sherrell and **Dr. Santosh Kumar** are members of the University Committee to Increase STEM Enrollments. Both professors serve on the Outreach subcommittee.

**Dr. Sajjan Shiva** received a grant from the Office of Naval Research entitled "Game Theoretic Approaches to Protect Cyberspace." **Dr. Dipankar Dasgupta** and **Dr. Qishi Wu** are co-PIs on the project.

**Dr. Qishi Wu** has been selected as a recipient of the 2009 U of M College of Arts and Sciences Early Career Research Award.

*A full list of recent publications & professional activities can be found at [www.cs.memphis.edu/spring09/](http://www.cs.memphis.edu/spring09/)*

### CS Hosts Software Testing Workshop



The Computer Science Department co-organized the 3rd International Research Workshop on Advances and Innovations in Software Testing, held at the U of M on May 4-5. The other co-organizing departments were Management of Information Systems and Computer Engineering. **Dr. Sajjan Shiva** was the General Chair of the workshop, while **Drs. Linda Sherrell** and **Vasile Rus** served as the Registration Chair and Program Co-Chair, respectively.

This event brought together major researchers and industry representatives for a world-class event aimed at pushing forward the science of software testing. The ultimate goal of the discussions and presentations at the workshop was to increase the quality of software. More information can be found at [step.us.com/conference](http://step.us.com/conference)

### 2009 Programming Challenge

The Computer Science Department hosted the 2009 Programming Challenge on March 28. High-school students from throughout the Mid-South were invited to participate. **Dr. Evan Drumwright** and **Dr. Vinhthuy Phan** organized the event.

The theme of the challenge was to make a "rhythm game," which tests the player's ability to follow a music beat and coordinate with a rhythm. Students were given six weeks to create the game and then met at the FedEx Institute of Technology on the U of M campus to present their projects to judges.

This year's overall winners were the Sharpies from Clarksville Academy, defending their win from last year's Challenge. There were also strong showings from Lausanne School, Central High School (in Little Rock), and Alepena High School (in Alepena, AR).

### Postdocs and Visiting Researchers

The Department is excited for the opportunity to work with postdocs and visiting researchers from around the globe. Some of our current and upcoming collaborators include the following:

**Dr. Fernando Nino** is a visiting researcher working with **Dr. Dipankar Dasgupta** on a NPRST project of developing multiobjective evolutionary solutions to the task-based sailor assignment problem. Dr. Nino is an Associate Professor at the National University of Colombia and recently co-authored a book with Dr. Dasgupta on Immunological Computation.

**Dr. Santosh Kumar's** WiSeMANet Lab welcomed **Dr. Kurt Plarre** in 2008. Dr. Plarre received his Ph.D. from the Univ. of Illinois at Urbana-Champaign, and he is working on detection and inferencing aspects of the AutoSense and AutoWitness systems. A second postdoctoral fellow, **Dr. Andrew Rajj**, will join the group in July 2009. He received his Ph.D. from the Univ. of Florida, Gainesville, and he will work on a new human-computer interface for AutoSense.

**Dr. Kihyeon Kwon**, from Kangwon National University in South Korea, will join **Dr. Qishi Wu's** team this fall. His work will involve optimizing network performance of distributed applications.



# Student Highlights

Graduate student **Archana Bhattarai** (pictured below) received one of the Best Student Paper awards at the IEEE Symposium Series on Computational Intelligence (SSCI) held in Nashville, TN, from March 30-April 2. Archana's research was conducted under **Dr. Vasile Rus** and **Dr. Dipankar Dasgupta**; her paper is entitled "Characterizing Comment Spam in the Blogosphere through Content Analysis."



Graduate student **Pavan Vejandla** presented the paper "Why an AI Research Team Adopted XP Practices" (co-authored with **Dr. Linda Sherrell**) at the the 47th ACM Southeast Conference in Clemson, SC, March 19-21. ACM Southeast is the oldest continually running conference of the ACM.

## Applied CS Student Achievements

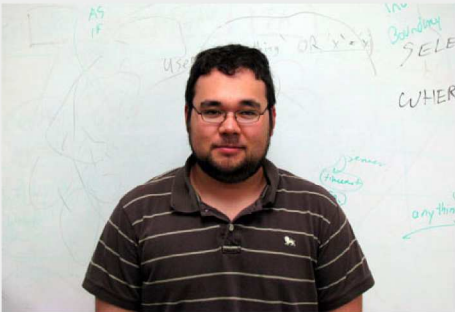
For their capstone projects, Applied CS students **Ning Liu** and **Ranjeet Thakur** developed and put into production systems for a large local company's marketing department and nonprofit organizations. Ranjeet's system will provide social network support in an effort to curb the high incidence of early sexual activity and STDs in Memphis-area middle and high schools. Meanwhile, **Ryan J. McCall**'s capstone deliverable is being submitted for journal publication as "Grounded and Modal Representations for Objects and Spatial Relations in Autonomous Agents."

## NetLab Activities

**Kajal Imon** from the Bangladesh University of Engineering and Technology will join the group in Fall 2009.

**Kriangsiri Malasri** and **Dr. Lan Wang**'s paper "Securing Wireless Implantable Devices for Healthcare: Ideas and Challenges" is scheduled to appear in the *IEEE Communications* magazine later this year.

## Student Spotlight: Ernest McCracken



Undergraduate student **Ernest McCracken**, a research assistant in the Networking Research Lab under **Dr. Lan Wang**, has recently received a number of accolades. He won the first prize in the undergraduate Math/Computer Science category in the 2009 University Research Forum. His topic was "Autonomous Border Patrol using Wireless Sensor Networks." Ernest also won the same prize last year.

Ernest also presented his Internet routing visualization work at NCUR (National Conferences on Undergraduate Research) in April, and his NetViews Internet visualization software (developed under Dr. Wang's guidance) was demonstrated at IEEE INFOCOM 2009 in Brazil. The software has received good feedback. For details about NetViews, visit [netlab.cs.memphis.edu/projects\\_cri.html](http://netlab.cs.memphis.edu/projects_cri.html) and see the YouTube video at [www.youtube.com/watch?v=pU1IDkP5sNE](http://www.youtube.com/watch?v=pU1IDkP5sNE)

Ernest also served as a judge at this year's Programming Challenge. He will be graduating with his B.S. degree this summer and will start his Ph.D. studies at the U of M under Dr. Wang.

## Research Day 2009



The 5th Annual Computer Science Research Day was held on March 20. A total of 12 students gave oral presentations throughout the day.

First place went to **Yi Gu**, for her work under **Dr. Qishi Wu** entitled "Simulation-based Analysis of Performance Dynamics of Distributed Applications in Heterogeneous Network Environments." Second place went to **Archana Bhattarai**, for her work under **Dr. Dipankar Dasgupta** on "Characterizing Comment Spam in the Blogosphere through Content Analysis." Third place went to **Mihai Lintean**, for his work under **Dr. Vasile Rus** entitled "Paraphrase Identification using Weighted Dependencies and Word Semantics."

Special thanks to our panel of faculty judges: **Dr. Max Garzon**, **Dr. Linda Sherrell**, and **Dr. Lan Wang**.

## Alumni Club

Recent and former alumni are invited to join the alumni club at [www.cs.memphis.edu/alumni](http://www.cs.memphis.edu/alumni), if they have not already done so. Join a network of hundreds of other alumni located around the U.S. and many other countries, and share your and their news and opportunities for professional development and employment.

# Spring 2009 Graduates

### Ph.D.

**Derrel R. Blain**  
Dissertation: "QUANTI: a Framework for Simulations"  
Major Advisor: Dr. Max H. Garzon

### M.S.

Daniel George Kay  
Bhagavathy Krishna  
Min Meng  
Ahmed I. Owian  
Mahesh Babu Satharla  
Shekhar Vemuri

### M.S. Applied Computer Science

Ning Liu  
Ryan James McCall (Cognitive Science concentration)  
Ranjeet Thakur

### B.S.

James Brewer Garrett  
Jason Haywood Hills  
Thomas Graves Hilton  
Jonathan Ryan Less  
Andrew R. Vawter

# CS Colloquium

The CS Colloquium this semester included talks from distinguished visiting researchers as well as members of industry and University of Memphis faculty.

**Natasha Jonoska**, University of South Florida  
"Programmable Transducer Implemented by DNA Self-Assembly"

**Alberto Delgado**, National University of Colombia  
"Electronic Genes for Mobile Robotics"

**Jim Davis**, CEO, Verified Person  
"From Grep to Google: Career Advice for the Extrovert Nerd"

**King-Ip Lin**, University of Memphis  
"Applying Data Mining for Approximate Search in High Dimensions"

**Joe Tsien**, Medical College of Georgia  
"Organizing Principles of Real-Time Memory Encoding"

**Fernando Nino**, National University of Colombia  
"Immunologically Inspired Multiagent Systems"

**Xiaohui Cui**, Oak Ridge National Lab  
"Swarm Intelligence and GPU Enhanced High Performance Computing"

**Rick Dale**, University of Memphis  
"Cognitive Dynamics in Action Dynamics"

**Raymond Mooney**, University of Texas, Austin  
"Learning Language from Its Perceptual Context"

**Sidney D'Mello**, University of Memphis  
"Automatic Detection of Complex Mental States by Monitoring Fluctuations in Gross Body Language"

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