From the Chairman

Outsourcing of information technology (IT) related work to foreign countries has become a constant news item in mass media over the last year, although only about 2% of the total IT work is actually outsourced. Meanwhile, the CEO's of IT companies have voiced the shortage of qualified individuals in the USA that they can employ during this intense outsourcing publicity. Nationally, enrollment in CS and IT B.S. degree programs is about half of what it was four years ago. It seems to have stabilized, and there are indications that enrollment is now picking up. It is interesting to note that CS Ph.D. production has grown 26% over the last year, with all of these graduates finding employment. However, master's degree production has dropped 13%, while bachelor's degree production has dropped 15%. Our degree production has followed the national trend, although all our graduates have found jobs. A recent report from the Software and Information Industries Association shows that the rate of growth in S&I industries significantly outpaces that of the overall U.S. economy (10.8% compared to 3.2% GDP growth). The S&I industries employ more than 2.7 million Americans, with 17% employment growth over the last 10 years. The average annual wage of an S&I worker is $75,400, compared to $42,400 for other private-sector workers. It is clear that innovations in the S&I industries play a crucial role in U.S. economic leadership.

Despite the negative publicity, these are indeed exciting times for CS departments in the U.S. and our department in particular. We will continue to conduct world class research contributing to the betterment of mankind. Our curriculum will be continually revised to reflect emerging societal needs and the global, interdisciplinary nature of our changing world. I invite inputs from all our stakeholders (students, alumni, industry, and research collaborators) to keep us on this exciting growth path.

Dr. Sajjan Shiva

Department News

AGI-08 Conference

During March 1-3, Dr. Stan Franklin hosted the First Conference on Artificial General Intelligence (AGI-08). The conference, co-sponsored by the Computer Science Department, attracted some 130 participants from universities all over the country, from industrial giants such as IBM, GE, and Intel, and from several other continents. The conference was a considerable success and may prove to be historic, in that it was concerned with producing machines with human-level intelligence. For details please visit **www.agi-08.org**

Center for Information Assurance Activities

The Center for Information Assurance (CfIA) organized a meeting on "Cyber Security Education and Research" on December 6, 2007. Christine M. Nickell, Chief Program Manager of the National IA Education and Training Program, talked on the importance of information security education and highlighted the DoD Information Assurance Scholarship Program. CfIA also hosted the SANS Security Essentials bootcamp style training workshop from December 10-15, 2007.

In January 2008, the CfIA's ACT Online project held two onsite pilot testing sessions, introducing the first two cyber security courses being developed under a U.S. Department of Homeland Security grant. A second in-house pilot session, releasing two new courses, took place from April 22-23. For details on the ACT Online project, please visit **https://www.act-online.net**

All fifteen of the CS department's IA-related courses were recently recertified (for five years) by the Committee on National Security Systems (CNSS) for meeting standards 4011, 4012, and 4013E. The official certificate, signed by the CNSS Chair, will be presented in an awards ceremony at the 12th Colloquium for Information Systems Security Education on June 4, 2008, in Dallas, TX.

The CS department and CfIA also sponsored the first annual U of M Homecoming (Feb. 27-28) and fourth annual SGA (Apr. 1-3 and 15-17 for a re-run due to procedural errors in the ballot) online elections. The online election system was organized by Dr. Max Garzon and Applied CS student Ning Liu.

CS Research Day

The 4th Annual Computer Science Research Day was held on March 28. This event has traditionally given students the opportunity to present their research and share ideas with fellow students and faculty. This year we invited students from other departments as well. One Ph.D. student from MIS gave an oral presentation, while one student from the School of Audiology and Speech Language Pathology participated and won first place in the poster division.

A total of 23 presentations in two categories (11 oral presentations and 12 poster presentations) were made by the students during the day. In the oral presentation category, **Brad Montgomery** (advisor: Dr. Wu) took 1st place for "Toward 3D Fiducials for Augmented Reality." **Deon Garrett** (advisor: Dr. Dasgupta) was the runner-up, for "Multiobjective Optimization and Landscapes: A.K.A. How to Type My Dissertation." In the poster category, **Anne Warlaumont** won with her project "Analysis of Infant Vocalizations Using a Self-Organizing Map." **Hema Puppala** was the runner-up, for "Identification of Phase Transitions in Simulated EEG Signals."

Programming Challenge

The 2008 University of Memphis Programming Challenge involved ten high-school teams from northwest Arkansas to middle Tennessee. This year's Challenge required the teams to program an adventure game over the course of six weeks, which they then presented at the University of Memphis on April 5.

"The Sharpies" (pictured above), a team of only two students from Clarksville Academy, swept almost all judging categories in the beginner/intermediate class: Best in Show, Best in Class, 1st place Originality, 1st place Oral Presentation, 1st place Documentation, and 1st place User Interface.

Faculty Achievements

Dr. Dipankar Dasgupta and his research team visited the U.S. Navy (NPRST) base in Millington on March 26 to present the GenoSAP-II project. In addition, Dr. Dasgupta is serving as guest editor of a Special Issue on Computational Intelligence on Cyber Security of *IEEE Computational Intelligence Magazine*, May 2008.

Dr. Evan Drumwright has released the first version of his rigid body simulation software, Physsim, to the community. Physsim, which is released under the GNU Public License, enables roboticists to simulate manipulator and humanoid robots with unprecedented speed, stability, and accuracy.

Dr. Drumwright is also organizing a workshop on Advances in Simulation of Robot and Task Dynamics at the Robotics: Science and Systems conference, to be held June 28, 2008 in Zurich, Switzerland. The workshop will focus on improving robotic simulation toward better models for control and testing.

A full list of recent publications & professional activities can be found at **www.cs.memphis.edu/spring08/**

Dr. Max Garzon published Springer's LNCS 4848 *DNA Computing* with a selection of papers from the Proceedings of DNA13, the conference in DNA Computing held last June on the U of M campus. Dr. Garzon also delivered invited talks at Rutgers University and the Computational Neuroscience meeting at the University of Florida in February; organized the

Principles and Theory of Self-Assembly track at the Foundations of Nanotechnology workshop from April 23-25; and has been invited to join the editorial board of Springer's Encyclopedia of Sciences and Religions, as well as that of the new International Journal of Nanotechnology and Molecular Computation (IJNMC).

Dr. Sajjan Shiva delivered a keynote address on "Knowledge Management in Global Software Development Environments" at the International Symposium on Computer and Sensor Networks and Systems, held in Zhengzhou, China, from April 7-10.

Faculty Spotlight

Dr. Lan Wang received her Ph.D. from the University of California, Los Angeles in 2004. She has been a tenure-track Assistant Professor with the Department of Computer Science of the University of Memphis since August 2004. She is affiliated with the university's Center for Information Assurance, the Bioinformatics program, and the Center for Community Health.

Her main research interests are Internet architecture and protocol design, wireless sensor networks, network security and fault-tolerance, and network measurement. Dr. Wang has received two NSF grants. The first aims to develop a new Internet architecture to ensure strong universal network connectivity at the architectural level in order to support future applications. The second grant will enable the RouteViews global routing monitoring system to provide high-quality data and real-time access. Dr. Wang has also received a U of M Faculty Research Grant for using medical sensor networks to monitor patients, and she received a grant from the U of M Systems Testing Excellence Program to investigate new infrastructure testing methods. She is serving as the TPC co-chair of Fourth Workshop on Secure Network Protocols (NPSec 2008), to be held in Orlando, FL, on Oct. 19.

Student Highlights

CS Students Shine at University Student Research Forum

Left to right: Bhagavathy Krishna, Htay Myint Naing, Dr. Santosh Kumar, Santanu Guha, Somnath Mitra

Computer Science students did very well at the University of Memphis Student Research Forum held on April 1. The Wireless Sensors and Mobile Ad Hoc Networks (WiSe MANet) Lab led by Dr. Santosh Kumar won both the first and second prizes in the graduate category.

The first prize went to the team of **Santanu Guha** and **Somnath Mitra**, who challenge the traditional sense and send paradigm of wireless sensor networks and propose a novel approach to event detection and classification where only sensors on the boundary of an event send messages; messages from other nodes are suppressed locally without need for any active communication with neighbors.

The second prize in the graduate category was awarded to the team of **Htay Myint Naing** and **Bhagavathy Krishna**, who are developing an automatic, inexpensive, and efficient tracking system called AutoWitness that can not only detect thefts instantly but also track the position of the stolen items in real time, in case they escape the scene of crime and are taken on the streets.

In the undergraduate category, B.S. student **Ernest McCracken** took first place for his project entitled "Netviews: Real-Time Visualization of Internet Topology Through Peered Vantage Points," a result of work done under Dr. Lan Wang. Netviews is a program used to view historical and real-time Internet topology. In collaboration with Colorado State University's BGP Monitoring System, network operators can use Netviews to quickly identify connectivity issues and suspicious activity, while researchers can use it to identify trends and statistics for data mining.

B.S. student **Brian Kennedy** won second place in the undergraduate category. Brian's project, which is the result of an independent study with Dr. Vinhthuy Phan, aims to build a system that manages online programming contests.

Congratulations to these students for representing Computer Science so well at the university level!

Ph.D. student **Roman Ilin** has received the prestigious Morton Dissertation Award for his dissertation entitled "Learning and Parameterization of Recurrent Neural Network Arrays for Brain Models and Practical Applications," prepared under his advisor Dr. Robert Kozma. The Morton Awards result from the generosity of S. Morgan Morton ('63) and are awarded to two graduating Ph.D. students each year, from a university total of approximately 100. To have his dissertation selected from so many is indeed an honor and a tribute to the dedication and expertise Roman has shown as a researcher.

Ph.D. student **Yi Gu** will present a research poster at the 2008 IEEE International Parallel & Distributed Processing Symposium (IPDPS). Her poster earned her a merit-based travel grant awarded to only the top 10% of submissions.

In addition, Yi got papers accepted at the IPDPS Workshop on Parallel and Distributed Scientific and Engineering Computing, as well as the International Symposium on Advances in Computer and Sensor Networks and Systems. She will receive a travel award from the University of Memphis Graduate Student Government Association to present her IPDPS workshop paper. Yi's advisor is Dr. Qishi Wu.

Ph.D. student **Yunyue Lin** will present a research paper titled "On Design of Scheduling Algorithms for Advance Bandwidth Reservation in Dedicated Networks" at the 2008 INFOCOM High Speed Networks Workshop in Phoenix, AZ. Yunyue's advisor is Dr. Qishi Wu.

Spring 2008 Graduates

Ph.D.

Jamie Deon Garrett
Dissertation: "Multiobjective Optimization and Landscapes"
Major Advisor: Dr. Dipankar Dasgupta

M.S.

Elhadji Abdoulaye Ba
Venu Gopal Reddy Dukka
Joseph R. Vannucci

B.S.

Logan H. Boyd
Ian T. Chipman
Kenneth Gibbs
Tyler W. Roya
Ronald Lavern Shugart
Neva Kay Smith
James B. Wolfe

Upcoming Events

The CS department's **Industrial Advisory Board** meeting will be held Friday, May 2, from 2:30-4:30 pm, in room 205 of the Panhellenic Building on the U of M campus.

Dr. Stan Franklin will host a **Workshop on Consciousness, Brain Rhythms, and the Action-Perception Cycle** from May 3-4 at the University of Memphis. The major sponsor is the Mind Science Foundation. For more information please see **ccrg.cs.memphis.edu/brain-rhythms-workshop.html**

The **Second International Research Workshop on Advances and Innovations in Systems Testing** will be held on the U of M campus from May 4-6, 2008. The workshop is sponsored by the System Testing Excellence Program (STEP). Dr. Shiva is the general chairman, Dr. Rus is the program and workshop co-chair, and Dr. Sherrell is the registration co-chair. For more information please see **STEP.us.com/conference/**

CS Colloquium

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

Dr. Linda Sherrell, University of Memphis,
"Tri-P-LETS: Improving High School Computer Science"

Dr. Violet Syrotiuk, Arizona State University,
"Network FRESCO: A Framework for Experimental Screening, Control, and Optimization"

Dr. Yixin Chen, University of Mississippi,
"Depth, Outlier Detection and Ranking"

Mr. Kevin Horne, FedEx,
"An African-American Experience in IT"

Dr. Samir R. Das, Stony Brook University,
"MobiSteer: Using Steerable Beam Directional Antenna for Vehicular Network Access"

Dr. Dan Pei, AT&T Research,
"Scalable VPN Routing via Relaying"

Dr. Donald Wunsch, Missouri University of Science and Technology,
"Clustering: A Survey and New Advances"

Dr. Prasant Mohapatra, University of California, Davis,
"QuRiNet Testbed and Related Research on Resource Management in Wireless Mesh Networks"

Dr. German Hernandez, National University of Colombia,
"Matching Problems Old and New: From the Marriage Problem to Sailor Assignment and Google Adwords Problems"