pointers

DEPARTMENT OF COMPUTER SCIENCE
GEORGIA STATE UNIVERSITY

MESSAGE FROM THE CHAIR

Dr. Yi Pan

I am pleased to announce in this issue that the Department of Computer Science has awarded its 50th Ph.D. degree. This is a significant milestone for our department as it progresses toward its goal of becoming one of the country's leading research departments. It is particularly impressive when taking into account that the first Ph.D.'s were awarded less than six years ago.

Another milestone will be reached next year, when we expect to hire a new faculty member to fill a full professor/eminent scholar position in bioinformatics. We are now accepting applications. For details, please visit *www.cs.gsu.edu/?q=faculty_positions*.

One of our long-time faculty members, Dr. K. N. King, retired in June. Dr. King has helped the department in many ways during his 23 years at GSU. I am pleased to report that he is continuing to work for the department on a part-time basis.

Finally, let me invite you to visit our department's new web site at *www.cs.gsu.edu*. You will find longer versions of the articles in this newsletter as well as more recent news.

WE NEED YOUR HELP

These are exciting times in the Department of Computer Science. Our program is rapidly expanding. We are hiring nationally-recognized scholars who conduct state-of-the-art research, and we are attracting the best students from around the world. Your generous donation will help us continue to improve in the years ahead. For information about giving to the department, please visit *www.cs.gsu.edu/?q=alumni*. Your gifts are tax-deductible to the fullest extent allowed by law. To ensure that your donation reaches us, please designate that it go to "Computer Science."

50TH PH.D. DEGREE AWARDED

On May 15, the Department of Computer Science awarded its 49th and 50th Ph.D. degrees to Nael Abu-Halaweh and Lanier Watkins.

Dr. Abu-Halaweh's dissertation was titled "Integrating Information Theory Measures and a Novel Rule-Set-Reduction Technique to Improve Fuzzy Decision Tree Induction Algorithms." His dissertation advisor was Dr. Robert Harrison. Dr. Watkins' dissertation was titled "Using Network Traffic to Infer CPU and Memory Utilization for Cluster Grid Computing Applications," and his advisor was Dr. Raheem Beyah.

The Ph.D. program was created just ten years ago. The first degrees were awarded in December 2004 to Bryson Payne and Ajay Katangur. Dr. Payne is now the chief information officer for North Georgia College & State University. Dr. Katangur is currently an assistant professor at Texas A&M University-Corpus Christi.

Some Ph.D. recipients have chosen an academic career, including Akshaye Dhawan (Ursinus College), Hui Liu (Missouri State University), Praveen Madiraju (Marquette University), Jon Preston (Southern Polytechnic State University), and Wei Zhong (University of South Carolina Upstate). Others hold jobs in industry, including Dimitru Brinza and Kelly Westbrooks (both at Life Technologies), and Stefan Gremalschi and Navin Viswanath (both at LogicBlox).
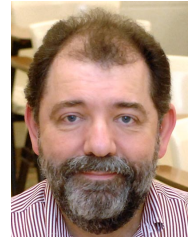
DEPARTMENT LAUNCHES NEW WEBSITE

On May 5, the Department of Computer Science launched its new Drupal-based website. Using Drupal, a popular open-source content management system, will make the site easier to update. Drupal also adds some significant new functionality, including an integrated calendar of events, a list of the most popular links, and a site-wide search feature. During the transition to Drupal, the site's content was thoroughly updated and a number of photos were added. The old site can be accessed for a limited time at *www2.cs.gsu.edu*.

KING RETIRES AFTER 23 YEARS

Dr. K. N. King, an associate professor of computer science, retired in June after 23 years at Georgia State University.

Dr. King is a native of Columbus, Ohio. In high school, he excelled in mathematics and science, particularly chemistry.

Dr. K. N. King

As a freshman at Case Western Reserve University, he planned to major in chemistry but ended up in computer engineering instead. After receiving the B.S. degree in 1975, he went on to earn an M.S. from Yale in 1976 and a Ph.D. from Berkeley in 1980, both in computer science.

He worked at Georgia Tech from 1980 to 1987, first as an assistant professor and later as a research scientist in the Software Engineering Research Center. He came to Georgia

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KING RETIRES AFTER 23 YEARS

State in 1987, joining the Department of Mathematics and Computer Science as an associate professor. When the Department of Computer Science was created in 1999, he was one of only eight full-time faculty members.

Dr. King's specialties include theoretical computer science, software testing, programming languages, and computer science education. At Georgia Tech, he was a member of the team that built Mothra, a pioneering software testing system built around the idea of program mutation. He is the author of numerous journal articles, conference papers, and magazine articles. In the late 1980's, he was a columnist for the *Journal of Pascal, Ada, and Modula-2*. His publications have been cited nearly 300 times in journals, conferences, and books.

Dr. King is internationally known for his textbooks: *Modula-2: A Complete Guide* (1988), *C Programming: A Modern Approach* (1996, with a second edition in 2008), and *Java Programming: From the Beginning* (2000). *C Programming: A Modern Approach* is one of the best-selling C books of the last 15 years, with the first edition going through 17 printings. It has been translated into Chinese and Italian.

After writing an influential paper in 1997 advocating the use of Java for teaching programming to beginners, Dr. King became the first person at GSU to teach Java and spearheaded the adoption of Java as GSU's introductory language. In 2008, he obtained funding from the Institute for Personal Robots in Education to introduce personal robots into CSc 2010 (Introduction to Computer Science), a project that is now well underway.

Over the years, Dr. King has served the Department of Computer Science in a variety of ways. Most notably, he has been an advisor to GSU's student ACM chapter since 1988. He has also been the department webmaster since 1999 and editor of the department newsletter for the past five years.

Since 1989, Dr. King has served as a volunteer for the Georgia Radio Reading Service, a service for the blind and print-handicapped. He took acting classes several years ago and has appeared in several major motion pictures shot in Atlanta as well as in numerous student and independent films.

On July 1, Dr. King was awarded the title of Associate Professor Emeritus. In retirement, he plans to travel more and to continue working part-time for the Department of Computer Science. This fall, he will be teaching CSc 4330/6330 (Programming Language Concepts).

PRASAD WINS NSF GRANTS

Dr. Sushil Prasad has been awarded two grants by the National Science Foundation. The first grant is for a project titled "EAGER: Exploratory Frameworks for Distributed Algorithms for Optimization Problems on Networks of Heterogeneous Sensors." This grant is valued at $112,000 and runs for two years.

Dr. Prasad has developed an algorithmic framework for attacking the sensor target coverage problem. His framework uses a distributed algorithm to combine local sub-solutions to yield a feasible global solution. Under the new grant, he will investigate whether this framework can be effective for related problems, such as channel assignment in cellular networks, vertex cover, and triangle packing. He also plans to explore whether the same approach can be applied to such problems as target tracking, data aggregation, and channelization of ad-hoc mobile networks for real-time traffic.

The second grant, valued at $50,000, was used to provide travel grants to student authors of papers in the IPDPS 2010 conference, workshops, and Ph.D. forum. IPDPS (International Parallel and Distributed Processing Symposium) is the flagship conference of the IEEE Computer Society Technical Committee on Parallel Processing (TCPP), which administered the travel grants. Dr. Prasad is the chair of TCPP.

NEURONBANK FORMALLY ANNOUNCED

NeuronBank, a web-based neuroscience tool developed by computer science faculty, was formally announced in April in a paper published in *Frontiers in Systems Neuroscience*. The NeuronBank system allows researchers to catalog, search, and analyze neuronal circuitry within and across species. It was developed over the past four years by Dr. Sushil Prasad, Dr. Raj Sunderraman, Dr. Ying Zhu, and Dr. Paul Katz with support from the National Institutes of Health. Dr. Katz is a core faculty member in Georgia State's Neuroscience Institute.

BEST BUY DONATES HARDWARE TO NETWORKING LAB

Best Buy has donated $800 worth of computer hardware to the department's networking laboratory, including four Netgear wireless-G routers, three Netgear wireless-G PCI cards, five Dynex 10/100 PCI network cards, two Linksys wireless-G PCI cards, and two Logitech webcams.

The donation was arranged by computer science undergraduate major Dirk Carey, who works as a Geek Squad Agent at Best Buy's Perimeter store. The department thanks him and his general manager, Dan Sheehan, who approved the donation.

BEYAH NAMED TO DARPA STUDY GROUP

Dr. Raheem Beyah is one of 12 junior faculty members in the U.S. to be named to a highly selective research study group sponsored by the Defense Advanced Research Projects Agency (DARPA).

The Computer Science Study Group (CSSG) is a program that supports university research in computer science and related fields while allowing younger researchers to become more knowledgeable about Department of Defense (DoD) information technology needs. CSSG members meet approximately 20 days per year for briefings. In addition, they participate in tours of military and industrial installations during two week-long trips in the summer.

As a member of CSSG, Dr. Beyah will be eligible for up to three years of funding to develop ways to integrate innovative computer science and technology advances with DoD projects. During his first year with the group, Dr. Beyah will receive a $100K DARPA research grant. In the second phase, he will become eligible for significant DARPA funding (up to $1 million) to conduct additional research. Participants are expected to obtain matched funding to continue their research project in the third phase. Successful projects will be selected for substantial DoD support to continue development beyond the CSSG period.

HU WINS NSF GRANT

Dr. Xiaolin Hu has received a $73,695 grant from the National Science Foundation for a two-year project titled "Collaborative Research: Portable, Modular, Modern Technology Infused Courseware for Broader Embedded System Education." Dr. Hu's award is part of a $170,000 Collaborative Research grant funded by the NSF's Course, Curriculum, and Laboratory Improvement program. The remaining money goes to Southern Polytechnic State University, where Dr. Kai Qian is the principal investigator as well as the lead PI for this collaborative project.

Work to be done under the grant will build on Dr. Qian's efforts to develop a new model of embedded systems education. Course labs use a popular microcomputer development kit that is expandable and affordable, making the labs portable as well as avoiding the barrier of setting up high-cost embedded systems labs. The courseware and projects being developed are modular and have multiple learning levels. This modular design gives instructors the flexibility to adopt the full course or use selected modules based on their needs. Dr. Hu will integrate selected courseware modules into CSc 4350/6350 (Software Engineering), which he teaches on a regular basis.

DEPARTMENT RECEIVES SECOND CENTURY INITIATIVE FUNDING

The Department of Computer Science will receive funding from Georgia State's Second Century Initiative (2CI) to hire a new faculty member in 2011. The goal of 2CI, which was announced by President Mark Becker last November, is to strengthen collaborative research by hiring 100 faculty members over the next five years.

During the first year of this initiative, departments were invited to submit proposals for hiring either a cluster of faculty in a related area or a single "high-impact" faculty member. Fifty-six proposals were submitted, but only eight were funded, including our department's proposal to hire an eminent scholar in the area of bioinformatics. The proposal was prepared jointly with the Departments of Biology, Chemistry, and Mathematics and Statistics.

ISBRA 2010 HELD IN CONNECTICUT

In May, the Department of Computer Science helped organize the 6th International Symposium on Bioinformatics Research and Applications (ISBRA 2010), which drew 100 researchers, developers, and practitioners working on all aspects of bioinformatics and computational biology and their applications. Georgia State hosted ISBRA in 2007 and 2008; this year, it was held at the University of Connecticut in Storrs, Connecticut.

The symposium featured 20 papers (selected by the program committee from 57 submissions), 17 short abstracts, and 29 posters. Six distinguished scientists gave keynote talks: Dr. Catalin Barbacioru (Life Technologies), Dr. Piotr Berman (Pennsylvania State University), Dr. Mark Gerstein (Yale University), Dr. Ivan Ovcharenko (National Center for Biotechnology Information), Dr. Laxmi Parida (IBM T. J. Watson Research Center), and Dr. Mona Singh (Princeton University).

Three best poster awards were presented at the conference. The winners were:

- Promita Bose and Robert Harrison (Georgia State), "Delaunay Tessellated Matrices for Discriminating Protein 3D Models"
- Asav Dharia, Matthew Gajdosik, Jin Jun, and Craig Nelson (UConn), "Introducing a New Model for the Retention of Gene Duplicates: DPI, Duplication, Purification, and Inactivation"
- Kejie Li and Michael Gribskov (Purdue University), "RNA Structural-BLAST: A New RNA Structure Database Searching Service Using RNA Fingerprint"

In addition, Bo Liu and Mihai Pop (Universi-ty of Maryland) won the award for best oral presentation for their paper "Comparative Analysis of Metabolic Pathways in Metagenomics."

The steering chairs of ISBRA 2010 were Dr. Dan Gusfield (University of California, Davis), Dr. Yi Pan (Georgia State), and Dr. Marie-France Sagot (INRIA). The general chairs were Dr. Ion Mandoiu (UConn) and Dr. Alex Zelikovsky (Georgia State). The program chairs were Dr. Mark Borodovsky (Georgia Tech), Dr. J. Peter Gogarten (UConn), Dr. Teresa Przytycka (NIH), and Dr. Sanguthevar Rajasekaran (UConn), with Dr. Yufeng Wu (UConn) and Dr. Craig Nelson (UConn) serving as poster chairs. The publicity chair was Dr. Dumitru Brinza (Life Technologies). Dr. Anu Bourgeois (Georgia State) and Dr. Raj Sunderraman (Georgia State) were the finance chairs.

Financial support for ISBRA 2010 was provided by the UConn School of Engineering, the Booth Engineering Center for Advanced Technology, the UConn Center for Applied Genetics and Technology, and Life Technologies. Next year's ISBRA will be held in Changsha, China.

DEPARTMENT HOLDS FIRST POSTER DAY

On Saturday, February 27, the Department of Computer Science held its first Research Poster Day. Graduate students presented posters describing their research, with the best posters winning cash prizes. Seventeen posters were displayed at the event. The first-place winner was Chunyu Ai, who won $100; second place was shared by Fan Bai and Yang Wang, who each won $25.

Poster Day was organized by Dr. Anu Bourgeois, Dr. Yingshu Li, Dr. Michael Weeks, and Dr. Alex Zelikovsky.

PH.D. STUDENT WINS BEST POSTER AWARD AT MBD RESEARCH DAY

Ph.D. student Ken Nguyen won a best poster award at the Sixth Annual Molecular Basis of Disease Research Day, which was held on May 21 in the Student Center Ballroom. Judges selected his poster, "KB-MSA: Knowledge-Based Multiple Sequence Alignment," as the best of the 12 posters presented by students from the Departments of Computer Science, Mathematics and Statistics, and Physics and Astronomy. Dr. Yi Pan is Ken's Ph.D. advisor.

MBD Research Day featured a keynote address by Dr. Ralph Tripp, a Georgia Research Alliance Eminent Scholar at the University of Georgia, along with presentations by MBD Fellows. Nael Abu-Halaweh, who received his Ph.D. in May, gave a talk on "Classification of Real and Pseudo Micro-RNA Sequences."

FACULTY NEWS

Dr. Raheem Beyah was named a Minority in Research Science Trailblazer. The award, which is given to "men and women who are demonstrating outstanding performance that will shape the future course of science and technology," was presented on February 18 at the 24th Black Engineer of the Year Awards STEM Global Competitiveness Conference in Baltimore.

Dr. Xiaolin Hu received a seed grant from the Centers for Disease Control and Prevention for a project titled "Advancing Child Maltreatment Prevention Using Complex Systems Science Modeling and Simulation." The work is to be done in collaboration with Dr. Richard Puddy of CDC. Each researcher will receive $15,000 per year for two years from the CDC/Georgia State Seed Award Program for Social and Behavioral Science Research.

On June 22, research being done by **Dr. Xiaolin Hu** was featured in a video on Science360, a daily news service sponsored by the National Science Foundation. The video, which is titled "The ARRA Report 3," highlights several research projects that receive funding from the American Recovery and Reinvestment Act of 2009.

Dr. G. Scott Owen was elected to the ACM Council for a two-year term as a SIG Governing Board Council Representative. The ACM Council is the governing body of the Association for Computing Machinery, the world's first and largest computing society.

On June 29, **Dr. Yi Pan** delivered a keynote talk to several hundred attendees at the 10th IEEE International Conference on Computer and Information Technology (CIT 2010). The title of his talk was "Protein Structure Prediction and Its Understanding Based on Machine Learning Methods." The conference was held on June 29–July 1 in Bradford, United Kingdom.

Dr. Sushil Prasad served as one of two technical program co-chairs for the Fourth International Conference on Information Systems, Technology and Management (ICISTM 2010). The conference was held in Bangkok, Thailand, on March 11–13.

Dr. Raj Sunderraman was appointed Associate Chair of the Department of Computer Science.

The second edition of *Digital Signal Processing Using MATLAB & Wavelets,* a book by **Dr. Michael Weeks,** was published in March by Jones and Bartlett. The second edition is 40 pages longer and includes a new chapter on the continuous wavelet transform.

ACM CHAPTER WINS OUTSTANDING RECRUITMENT AWARD

The Georgia State University student chapter of the Association for Computing Machinery (ACM) has won the 2009–2010 Student Chapter Excellence Award for Outstanding Recruitment Program. Out of hundreds of student ACM chapters (there are 14 in Georgia alone), only five were given a Student Chapter Excellence Award. The award comes with a cash prize of $500 and the right to display a special "best of" icon on the chapter website. Winning chapters will also be featured on the ACM website and in ACM MemberNet.

During the 2009–2010 academic year, GSU's ACM chapter recruited more than 50 new members. To help publicize meetings and attract members, the chapter used the university's radio and TV stations, Facebook, Orkut, and podcasts. Other recruiting tools included an outstanding lineup of speakers (featuring wearable computing pioneer Thad Starner and Macintosh programming guru Aaron Hillegass of Big Nerd Ranch), a new chapter website, and a field trip to Oak Ridge National Laboratory. Congratulations to chair Saurav Karmakar and the other chapter officers!

PH.D. STUDENTS WIN TRAVEL GRANTS

The following Ph.D. students recently received travel grants:

- **Ming Fang.** *Conference:* ICDIM 2010. *Amount:* $175. *Advisor:* Dr. Raj Sunderraman.
- **Fasheng Qiu.** *Conference:* IPDPS 2010. *Amount:* $250. *Advisor:* Dr. Xiaolin Hu.
- **Marco Valero.** *Conference:* ICC 2010. *Amount:* $1,000. *Advisor:* Dr. Raheem Beyah.
- **Yang Wang.** *Conference:* IPDPS 2010. *Amount:* $250. *Advisor:* Dr. Xiaojun Cao.

AI RECEIVES DISSERTATION GRANT

Ph.D. student Chunyu Ai has won a Georgia State University Dissertation Grant valued at $1,000. She was also one of only five students to be considered for the William M. Suttles Graduate Fellowship, which is given to the most outstanding student who applies for a Dissertation Grant. Dr. Yingshu Li is Ms. Ai's Ph.D. advisor.

COMPUTER SCIENCE STUDENTS RECEIVE AWARDS

The Department of Computer Science recently gave awards to five outstanding undergraduate and graduate students:

Outstanding Senior Award: Shawn Kumar
Outstanding Graduate Student Award: Chunyu Ai
Graduate Teaching Award: Saurav Karmakar
Graduate Research Award: Yang Wang
Special Recognition Award for Innovative Teaching by a Graduate Student: Stefanie Markham

Shawn Kumar and Chunyu Ai received their awards at the annual Arts and Sciences Honors Night ceremony, which was held on April 20 in the Student Center Ballroom. The event included a screening of a new video highlighting student research. Ph.D. student Stephen Pellicer was featured in the video, which can be viewed at *www.youtube.com/watch?v=-vCWDN4eDw0.*

Have something to say?

Mail suggestions and alumni news to *webmaster@cs.gsu.edu.*