Song Joins Department

Dr. WenZhan Song joined the Department of Computer Science in August as an associate professor and director of the Sensorweb Research Laboratory. Dr. Song was previously an assistant professor in the School of Engineering and Computer Science at Washington State University Vancouver. He earned B.S. and M.S. degrees in computer science from Nanjing University of Science and Technology in 1997 and 1999, respectively. In 2005, he received his Ph.D. degree in computer science from the Illinois Institute of Technology.

Dr. Song’s research interests include computer networks and distributed computing. In recent years, his research has focused on Sensor Web systems, which are used for environment monitoring, smart environments, and smart grid applications.

Dr. Song has received more than $2.5 million in research funding from NSF, NASA, USGS, and Boeing, including an award from NSF’s Faculty Early Career Development (CAREER) Program. During 2007–2009, Dr. Song led a multidisciplinary team that developed an air-dropped wireless sensor network for volcano monitoring, a project that was mentioned in such publications as MIT’s Technology Review, Network World, Scientific American, New Scientist, and National Geographic.

In his NSF CAREER project, Dr. Song is studying collaborative communication and storage mechanisms for sensor networks in challenging environments, such as volcanos. In his NSF smart environment project (with Dr. Diane Cook), the goal is to imbue wireless sensor networks with cognitive capabilities and context awareness, in order to make them act in a more intelligent manner and prolong their lifetime.

With Dr. Song’s arrival, the department has an unprecedented five active CAREER awards. (The other CAREER award winners are Dr. Raheem Beyah, Dr. Xiaojun Cao, Dr. Xiaolin Hu, and Dr. Yingshu Li.) The CAREER award, which emphasizes high-quality research and novel education initiatives, is the most competitive and prestigious award from NSF to young faculty members in science and engineering fields.

Ph.D. Program Achieves High NRC Ranking

Georgia State University’s computer science Ph.D. program is nationally competitive and ranks among the best in the Southeast, according to a report released by the National Research Council in September. The report contains assessments of more than 5,000 doctoral programs in 62 fields at 212 U.S. universities.

The NRC report provides two sets of overall rankings: survey-based and regression-based. Both rankings are based on a weighting of 20 factors, such as number of faculty publications, student GRE scores, and average time to complete a degree. However, the weighting of these factors is different for survey-based ranks (S-ranks) than for regression-based ranks (R-ranks). The weighting for S-ranks was determined by a survey of faculty evaluators; the weighting for R-ranks was based on which factors best correlated with high faculty rankings of departments.

The R-rank and S-rank for each program was reported as a range, reflecting the imprecision of such measurements.

(continued on page 3)
Chair’s Message
Welcome to the newly redesigned Pointers, the newsletter of the Department of Computer Science at Georgia State University. With this issue, Pointers expands from four to eight pages, giving us more space to cover the exciting changes that are taking place in our department. The increased length will also give us more room for photos, which were often lacking in past issues.

The fall of 2010 was a significant time for us, with two major developments. First, Dr. Wen-Zhan Song joined our department. Dr. Song is an internationally recognized expert in wireless sensor networks. He joins our networking group, which was already very strong. Among other accomplishments, Dr. Song is the winner of an NSF CAREER award. Our department now has five active CAREER awards, which places our department among the elite in the field.

The second major development of last fall was the release of the National Research Council rankings of Ph.D. programs. The rankings show that our program is not only competitive with others around the country but also among the best in the Southeast. We were quite pleased that our young department achieved such a high rank.

Our faculty continue to be successful in attracting NSF grants. Dr. Sushil Prasad was awarded two grants worth a total of $260,000. In addition, Dr. Raheem Beyah and Dr. Yingshu Li received an $84,000 grant.

On a personal note, I was gratified to be selected by the Department of Computer Science and Technology at Tsinghua University as an outstanding alumnus. Of the 4,000 graduates of the department, only 14 were chosen. I was also honored to be the first Georgia State faculty member to win an IBM Faculty Award.

Finally, I invite you to join me at the 7th International Symposium on Bioinformatics Research and Applications (ISBRA 2011). The conference will be held in Changsha, China, on May 27–29. See page 5 for more information about this important event.

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.”
The R-rank for our department’s Ph.D. program ranged from 43 to 78, with a rank of 1 representing the top department in the country. Our S-rank ranged from 18 to 57. These ranks place our Ph.D. program among the best in the Southeast.

In addition to R-ranks and S-ranks, the NRC report includes rankings of programs by specific aspects of faculty, students, and program traits. Our department fared particularly well in several of these rankings:

- **Overall support and outcomes.** Ranked 1–14 based on supporting a high fraction of students, having students graduate quickly and get jobs, and tracking student placements.

- **Graduating within 6 years.** Ranked 9–17 based on the percentage of students receiving a doctorate within 6 years.

- **Time to degree.** Ranked 2–26 based on a shorter time required to earn a doctorate.

- **Academic jobs.** Ranked 1–3 based on the percentage of doctorate recipients who have a position at an educational institution.

- **Diversity.** Ranked 3–12 based on the diversity of the program’s faculty and students.

The previous NRC ranking of doctoral programs (released in 1995) did not include our department, which was created in 1999 and began admitting Ph.D. students in 2001. Data was collected for the new NRC study during 2005–2006. Our Ph.D. program would likely have a higher ranking if the NRC data were more recent. Since August 2006, the department has produced an additional 44 Ph.D. graduates. Moreover, the faculty has improved since 2006. At the time of the study, only one faculty member (Dr. Yingshu Li) held a National Science Foundation CAREER award. Since then, two more faculty members (Dr. Raheem Beyah and Dr. Xiaolin Hu) have won CAREER awards, and two new CAREER-award-winning faculty (Dr. Xiaojun Cao and Dr. WenZhan Song) have joined GSU, giving the department five active CAREER awards. The CAREER award, which emphasizes high-quality research and novel education initiatives, is the most competitive and prestigious award from NSF to young faculty members in science and engineering fields.
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 “GIS Vector Data Overlay Processing on Azure Platform.” The award, which is valued at $200,000 and runs for two years, is a Collaborative Research grant funded by NSF’s Computing in the Cloud program. Another $50,000 was awarded to Dr. Xuan Shi of Georgia Tech’s Center for Geographic Information Systems. Both grants were funded through NSF’s Early-Concept Grants for Exploratory Research mechanism, which supports early-stage research that has a potentially high payoff.

The motivation for the project comes from the enormous vector-based data files produced by a geographic information system (GIS). Vector-based spatial data overlays are more complicated to process than raster-based data because of the huge number of vertices required to represent irregular geometric shapes. Dr. Prasad and his collaborator will tackle this problem using a cloud-computing approach, which offers high speed, large storage capacity, and on-demand accessibility. The researchers will attempt to develop distributed algorithms and test them on the Windows Azure platform, the first cloud computing product from Microsoft.

The second grant, valued at $60,000, is for a project titled “A Curriculum Initiative on Parallel and Distributed Computing – Toward Core Topics for Undergraduates.” The goal of this project is to propose a set of core topics in parallel and distributed computing for undergraduate computer science and computer engineering students. To achieve this goal, Dr. Prasad will release a preliminary curriculum, collect feedback, and recruit colleagues to try out portions of the proposed curriculum during the 2010–2011 academic year.

Beyah Chosen for Leadership Georgia

Dr. Raheem Beyah has been selected to participate in Leadership Georgia’s class of 2011. Established in 1971, Leadership Georgia is one of the nation’s oldest and most successful leadership-training programs for young business, civic, and community leaders, typically between 25 and 45 years old.

Each year, a class of approximately 60 people is chosen from a pool of several hundred applicants. Members attend five two-day meetings, held in different locations across Georgia, in an effort to learn more about important issues affecting the state. Past participants have included many influential state and national leaders; U.S. Senator Sam Nunn was a member of the first Leadership Georgia class.

Pan Honored by Tsinghua University

Dr. Yi Pan has been selected by the Department of Computer Science and Technology at Tsinghua University as an outstanding alumnus. Of the 4,000 graduates of the department, only 14 received this honor. Dr. Pan received B.Eng. and M.Eng. degrees from Tsinghua in 1982 and 1984, respectively.

Other honorees include the CEO of China Investment Corporation, senior vice presidents at Lenovo and Sohu.com, the director of HP Labs China, a military general, professors from Imperial College London and the University of Toronto, and high-ranking executives from other well-known Chinese companies.

Tsinghua University, often called “the MIT of China,” is widely considered to be the best engineering school in China. In recent years, the Department of Computer Science and Technology has consistently been ranked as the top CS department in the country by China’s Ministry of Education.

Recent Ph.D. Graduates


Beyah and Li Receive NSF Grant

Dr. Raheem Beyah and Dr. Yingshu Li have received a grant for $83,884 from the National Science Foundation for a project titled “EAGER: Evaluating the Feasibility of Self-Protecting Heterogeneous Wireless Sensor Networks.” The grant will run for one year. Dr. Beyah will be the principal investigator; Dr. Li is the co-principal investigator. NSF’s EAGER (EArly-concept Grants for Exploratory Research) funding supports “high-risk, exploratory, and potentially transformative research.”

Pan Wins IBM Faculty Award

Dr. Yi Pan has won a 2010 IBM Faculty Award valued at $24,000. The IBM Faculty Awards program is an international competition designed to encourage collaboration between IBM researchers and faculty members at leading universities. The program also promotes courseware development and curriculum innovation in areas of interest to IBM. To be eligible for an award, a senior faculty member must “have an outstanding reputation for contributions in their field,” according to program rules.

Only 95 faculty members worldwide won an IBM Faculty Award in 2010, and only two of those awards went to faculty members in Georgia universities. Dr. Pan is the first GSU faculty member to receive an IBM Faculty Award. The IBM Faculty Awards program is part of the IBM University Awards program, which includes IBM Ph.D. Fellowship Awards, IBM Innovation Awards, and IBM Shared University Research Awards.

ISBRA 2011 to Be Held in China

On May 27–29, Central South University will host the 7th International Symposium on Bioinformatics Research and Applications (ISBRA 2011). The conference location is Changsha, China, making this the first time the conference has been held in Asia. Faculty members from Georgia State’s Department of Computer Science have helped organize ISBRA since it began in 2005 as the International Workshop on Bioinformatics Research and Applications. The conference was held on the Georgia State campus in 2007 and 2008.

Authors are invited to submit papers that demonstrate original research in all areas of bioinformatics and computational biology, including the development of experimental or commercial systems. The deadline for submitting extended abstracts (12 pages) is February 11. Authors of accepted abstracts will be notified by March 11, with final versions due on March 18. The deadline for submitting short abstracts (4 pages) is April 8. Notification will occur by April 22, with final versions due on April 29.

Accepted extended abstracts will be published prior to the symposium in the Springer Verlag Lecture Notes in Bioinformatics series. Accepted short abstracts will be published online and on CD-ROM. The authors of selected extended abstracts will be invited to submit full versions to a special issue of IEEE/ACM Transactions on Computational Biology and Bioinformatics. All other authors will be invited to submit full versions to a peer-reviewed volume to be published later in BMC Bioinformatics.

ISBRA 2011 will feature keynote addresses by several distinguished speakers, including Dr. Bernard Moret (EPFL), Dr. David Sankoff (University of Ottawa), Dr. Russell Schwartz (Carnegie Mellon), Dr. Liping Wei (Peking University), and Dr. Eric Xing (Carnegie Mellon).

The steering chairs of ISBRA 2011 are Dr. Dan Gusfield (University of California, Davis), Dr. Yi Pan (Georgia State), and Dr. Marie-France Sagot (INRIA). The general chairs are Dr. Mona Singh (Princeton), Dr. Lijian Tao (Central South University), and Dr. Albert Y. Zomaya (University of Sydney). The program chairs are Dr. Jianer Chen (Texas A&M), Dr. Jianxin Wang (Central South University), and Dr. Alex Zelikovsky (Georgia State). The publicity chairs are Dr. Ion Mandoiu (University of Connecticut) and Dr. Yanqing Zhang (Georgia State), Dr. Raj Sunderraman (Georgia State) is the publication chair.

ISBRA 2011 is sponsored by the National Natural Science Foundation of China (NSFC), Central South University, and Georgia State University.
King Wins Tech Fee Award

Associate Professor Emeritus K. N. King has won a Student Technology Fee award valued at $15,406. The money is being used to buy robots for use in CSc 2010 (Introduction to Computer Science).

In the fall of 2008, Dr. King taught one section of CSc 2010 using robots. Each student in the class was loaned a small robot for the semester. Students learned how to control the robots by writing programs in the Python language. In every semester since then, the Department of Computer Science has offered one robot-based section of CSc 2010.

Students enrolled in these sections use the Parallax Scribbler, an off-the-shelf robot equipped with three wheels, two motors, a variety of sensors, and a speaker. Funding from the Tech Fee award will allow the department to replace the original Scribbler robots with the Scribbler 2, an improved model. The number of available robots will also double, allowing two robot-based sections of CSc 2010 to be taught in fall and spring semesters. The switch from the original Scribbler to the Scribbler 2 is expected to take place this summer.

In collaboration with Ph.D. student Stefanie Markham, Dr. King is conducting research into the use of personal robots for teaching introductory computer science, with a focus on whether using robots helps attract and retain more computer science majors. A preliminary report on their work was presented at the ITiCSE 2010 conference last June and referenced in an ACM news item published online in July.

Money from GSU’s Tech Fee is used to equip student laboratories and to purchase technology that will help students meet the educational objectives of their academic programs. Georgia State funded 68 Tech Fee awards for fiscal year 2011.

Department Welcomes Visitors

The Department of Computer Science is hosting six visiting scholars and post-doctoral fellows during the 2010–2011 academic year.

- **Aibin Chen.** Dr. Chen is a professor and vice-president in the School of Computer Science and Information Engineering at Central South University of Forestry and Technology in China. His research areas include image processing and pattern recognition. During his visit, which will last from September 2010 to September 2011, he is collaborating with Dr. Saeid Belkasim. Dr. Chen is supported by the China Scholarship Council.

- **Shi-Jinn Horng.** Dr. Horng is a professor in the Department of Computer Science and Information Engineering at National Taiwan University of Science and Technology. His research areas include parallel processing, information security, and image processing. During his visit, which lasted from July 2010 to October 2010, he collaborated with Dr. Yi Pan on research in parallel processing and information security. Dr. Horng was supported by Taiwan’s National Science Council.

- **Sooman Hwang.** Dr. Hwang is a professor in the Information Technology and Shipbuilding program at Koje College in South Korea. His research areas include computer graphics and visualization. During his visit, which will last from August 2010 to August 2011, he is collaborating with Dr. Ying Zhu on research in computer graphics. Dr. Hwang is supported by Koje College.

- **Min Li.** Dr. Li is an associate professor in the School of Information Science and Engineering at Central South University in China. During her visit, which will last from December 2010 to December 2011, she is collaborating with Dr. Yi Pan on bioinformatics research, with an emphasis on the analysis of protein interaction networks. Dr. Li is supported by the China Scholarship Council and the National Science Foundation.

- **Neal Xiong.** Dr. Xiong is a post-doctoral fellow with a Ph.D. from the Japan Advanced Institute of Science and Technology. His research area is networking and cloud computing. He arrived at GSU in 2008, originally working with Dr. Yingshu Li. Since 2009, he has collaborated with Dr. Yi Pan. Their current research deals with fault detection in wireless networks and cloud computing. Dr. Xiong’s visit is scheduled to end in March 2011. He is supported by the National Science Foundation and by Dr. Pan’s IBM Faculty Award.

- **Ming Zhang.** Dr. Zhang is a post-doctoral fellow with a Ph.D. from the University of Arizona. His research areas include modeling and simulation, distributed systems, and DEVs. During his visit, which will last from October 2010 to March 2012, he is collaborating with Dr. Xiaolin Hu on research in large-scale data assimilation technology for predicting forest fire spreading. Dr. Zhang is supported by the National Science Foundation.

Faculty News

**Dr. Xiaojun Cao** was promoted to the rank of Associate Professor with tenure, effective Fall 2010.

**Dr. Xiaolin Hu** was promoted to the rank of Associate Professor with tenure, effective Fall 2010.

**Dr. Yi Pan** delivered a keynote talk at the 2010 International Colloquium on Computing, Communication, Control, and Management (CCCM 2010). The title of his talk was “From Supercomputing to Grid Computing to Cloud Computing.” The conference was organized by Yangzhou University and held in Yangzhou, China, on August 20–22.

Student ACM Chapter Elects New Officers

The Georgia State University student chapter of the ACM recently elected officers for the 2010–2011 academic year. The new officers are:

- **Chair:** Saurav Karmakar
- **Vice Chair:** Marco Valero
- **Secretary:** Piyaphol Phoungphol
- **Treasurer:** Emmanuel Thomas
Graduate Fellowship Winners Announced

The winners of Molecular Basis of Disease (MBD) and Brains & Behavior (B&B) fellowships were recently announced. New MBD fellowships were awarded to the following computer science graduate students (the name of each student’s advisor is in parentheses):

- Promita Bose (Harrison)
- John Daigle (Prasad)
- Ming Fang (Sunderraman)
- Hailong Hou (Zhang)
- Bismita Srichandan (Sunderraman)

The following students hold MBD fellowships that were awarded in prior years:

- Irina Astrovskaia (Zelikovsky)
- Zejin Ding (Zhang)
- Wooyoung Kim (Pan)
- Serghei Mangul (Zelikovsky)
- Ken Nguyen (Pan)
- Anjum Reyaz-Ahmed (Zhang)
- Amit Sabnis (Harrison)

New B&B fellowships were awarded to the following students:

- Xiao Chen (Zhu)
- Saurav Karmakar (Zhu)

The following students hold B&B fellowships from prior years:

- Rasanjalee Dissanayake (Prasad)
- Chad Frederick (Prasad)
- Weiling Li (Sunderraman)
- Stefanie Markham (Belkasim)

Fellowships last for one year but can be renewed for up to three years.

Molecular Basis of Disease is a program in computational biomedicine that includes faculty in six departments engaged in interdisciplinary research: Biology, Chemistry, Computer Science, Physics and Astronomy, Mathematics and Statistics, and Computer Information Systems. The program provides both graduate and undergraduate fellowships as well as support for state-of-the-art facilities in these departments.

Brains & Behavior is a Georgia State initiative that unites a wide variety of researchers who bring unique perspectives about how nervous systems produce behavior. B&B research groups foster collaboration among faculty from Biology, Chemistry, Computer Information Systems, Computer Science, Mathematics and Statistics, Philosophy, Physics and Astronomy, and Psychology. The B&B program is administered by GSU’s Neuroscience Institute.

Ph.D. Students Win Travel Grants

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

- **Zejin Ding** was one of ten student authors to win a travel grant to attend the first ACM International Conference on Bioinformatics and Computational Biology (ACM-BCB). The grant paid for his flight and a three-night stay at the conference hotel. At the conference, Mr. Ding presented the paper “An Effective Filtering Gene Selection Method for Microarray Data via Shuffling and Statistical Analysis,” which was co-authored by his Ph.D. advisor, Dr. Yan-Qing Zhang. The conference was held in Niagara Falls, New York, on August 2–4. Dr. Yi Pan was a member of the conference steering committee.

- **Qian Hu** won a travel grant worth $1000 to attend the 4th IEEE Workshop on Enabling the Future Service-Oriented Internet (EFSOI 2010). The workshop was held in Miami on December 6 in conjunction with IEEE GLOBECOM 2010. Dr. Xiaojun Cao is Ms. Hu’s Ph.D. advisor.

- **Marco Valero** won a travel grant worth $850 to attend last year’s Military Communications Conference (MILCOM 2010), where he presented the paper “DSF – A Distributed Security Framework for Heterogeneous Wireless Sensor Networks,” co-authored by Himali Saxena, Dr. Chunyu Ai, Dr. Yingshu Li, and Dr. Raheem Beyah (his Ph.D. advisor). The conference was held in San Jose, California, on October 31–November 3.

- **Mingsen Xu** and **Debraj De** were each awarded a $1250 travel grant to attend the 8th ACM Conference on Embedded Networked Sensor Systems (SenSys 2010). Both students work for the Sensorweb Research Laboratory, which is directed by Dr. Wenzhan Song. The conference was held in Zurich on November 3–5.

Alumni News

**Dr. Bryson Payne** (Ph.D. 2004), chief information officer and associate professor of computer science at North Georgia College & State University in Dahlonega, was a finalist in the Atlanta Telecom Professional of the Year awards. Dr. Payne was peer-nominated for his efforts in modernizing the IT infrastructure at NGCSU and for his role as a collaborator and co-writer in the $43 million North Georgia Network fiber-optic broadband grant project. He was selected as one of twelve Enterprise finalists and recognized at the ATPY awards gala event in Atlanta on November 9, with over 600 IT and telecommunications professionals in attendance. Dr. Payne is also currently serving as the chair of the University System of Georgia’s CIO Advisory Council, the professional organization of CIOs and IT leaders in all 35 USG universities and colleges. He recently completed the Chancellor’s Executive Leadership Institute executive training program.
Computing Trivia Challenge

Try your hand at the following trivia questions, which come from the GSU ACM chapter’s annual trivia contest. (Answers appear at the end.)

1. Which tech entrepreneur is the central character in the Oscar-nominated movie, The Social Network?
   (a) Jack Dorsey
   (b) Reid Hoffman
   (c) David Karp
   (d) Mark Zuckerberg

2. In what year was the first Intel Pentium CPU released?
   (a) 1988
   (b) 1993
   (c) 1998
   (d) 2003

3. What was the first computer that operated in real time and used video displays for output?
   (a) ENIAC
   (b) Mark-1
   (c) UNIVAC
   (d) Whirlwind

4. According to the TIOBE Programming Community Index, which of the following is not one of the five most popular programming languages?
   (a) C
   (b) C++
   (c) C#
   (d) Objective-C

5. Who did Bill Gates team up with for a series of Microsoft ads in 2008?
   (a) Louis C.K.
   (b) Larry David
   (c) Steve Martin
   (d) Jerry Seinfeld

6. Google recently announced that CEO Eric Schmidt will be replaced in April. Who will be the new CEO?
   (a) Nikesh Arora
   (b) Sergey Brin
   (c) David Drummond
   (d) Larry Page

7. The latest volume of Donald Knuth’s The Art of Computer Programming was published in January. What is the number of this volume?
   (a) 2A
   (b) 3A
   (c) 4A
   (d) 5A

8. 32-bit versions of the Unix operating system have a “Y2K”-like date problem. When will the problem occur?
   (a) 2012
   (b) 2025
   (c) 2038
   (d) 2099

9. How many cores does Intel’s experimental Single-Chip Cloud Computer have?
   (a) 8
   (b) 16
   (c) 48
   (d) 96

10. Approximately how many servers does Google operate?
    (a) 1,000
    (b) 10,000
    (c) 100,000
    (d) 1,000,000

Answers:

(a) 2-d, 2-b, 3-d, 4-d, 5-d, 6-d, 7-c, 8-c, 9-c, 10-d