

pointers

DEPARTMENT OF COMPUTER SCIENCE
GEORGIA STATE UNIVERSITY

FALL 2007

MESSAGE FROM THE CHAIR



Dr. Yi Pan

The Department of Computer Science congratulates Dr. Sushil Prasad, who was recently elected chair of the IEEE Computer Society Technical Committee on Parallel Processing, and Dr. Alexander Zelikovsky, who won a prestigious SIAM Outstanding Paper Prize. These accomplishments are a sign of the high quality of our faculty. We are also very proud to welcome Dr. Xiaojun Cao to our department. With the hiring of Dr. Cao, our department has the rare honor of having two NSF CAREER awardees on the faculty. (Dr. Yingshu Li also won a CAREER award in 2006.)

2007 was a banner year for our department in terms of Ph.D. production. Sixteen students received the Ph.D. in calendar year 2007, including seven in August, the largest number to graduate at one time in the history of the department.

PRASAD ELECTED CHAIR OF TECHNICAL COMMITTEE ON PARALLEL PROCESSING



Dr. Sushil Prasad

Dr. Sushil Prasad has been elected chair of the IEEE Computer Society Technical Committee on Parallel Processing. His term of office began in July and ends in June 2009. With nearly 100,000 members, the IEEE Computer Society is the world's leading organization of computer professionals. Founded in 1946, it is the largest of the 39 societies of the IEEE. The Computer Society sponsors over three dozen Technical Committees, which serve as the focal point for the society's activities within a technical discipline and directly influence standards development, conferences, publications, and educational activities.

The Technical Committee on Parallel Processing (TCPP) acts as an international forum to promote parallel processing research and education, and participates in setting up technical standards in this area.

Among other activities, TCPP sponsors professional conferences and workshops. The flagship conference is the International Parallel and Distributed Processing Symposium (IPDPS), which is held annually in the spring. TCPP also sponsors the International Conference on High Performance Computing (HiPC).

CAO JOINS DEPARTMENT



Dr. Xiaojun Cao

Dr. Xiaojun (Matt) Cao joined the Department of Computer Science in August as an assistant professor. Dr. Cao was formerly an assistant professor in the Department of Networking, Security, and Systems Administration at the Rochester Institute of Technology. He received a B.S. degree in engineering physics from Tsinghua University in 1996 and an M.S. in electronic engineering from the Chinese Academy of Sciences in 1999. In 2004, he received his Ph.D. degree in computer science and engineering from the University at Buffalo. His research focuses on network modeling, analysis, and protocol/algorithm design.

Dr. Cao is the recipient of a prestigious award from the National Science Foundation's Faculty Early Career Development (CAREER) Program. The grant provides Dr. Cao with \$400,000 in support over a five-year period for his research on developing a multi-granular switching framework to reduce the complexity, cost, and size of both electronic and optical switches. 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.

ZELIKOVSKY WINS SIAM OUTSTANDING PAPER PRIZE



Dr. Alexander Zelikovsky

Dr. Alexander Zelikovsky has won a SIAM Outstanding Paper Prize for the paper "Tighter Bounds for Graph Steiner Tree Approximation." The paper, which was coauthored with Dr. Gabriel Robins of the University of Virginia, appeared in the *SIAM Journal on Discrete Mathematics* in 2005. Prizes are given for outstanding papers published in SIAM journals during the three years prior to the year of the award. Only three awards are given each year. The award carries a stipend of \$500 for each author.

The membership of SIAM (Society for Industrial and Applied Mathematics) includes engineers, scientists, industrial mathematicians, academic mathematicians, and computer scientists. SIAM publishes fourteen peer-reviewed research journals.

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BIOINFORMATICS CONFERENCE RETURNS TO GEORGIA STATE IN 2008

In May, Georgia State will host the 4th International Symposium on Bioinformatics Research and Applications (ISBRA 2008). ISBRA 2008 will provide a forum for the exchange of ideas and results among researchers, developers, and practitioners working on all aspects of bioinformatics and computational biology and their applications.

The proceedings of ISBRA 2008 will be published in the Springer Verlag Lecture Notes in Bioinformatics series. As in previous years, it is anticipated that a special issue of a major bioinformatics journal will be devoted to extended versions of the best symposium papers.

ISBRA 2008 is the latest in a series of conferences that includes last year's ISBRA 2007 (also held at Georgia State) and the earlier International Workshop on Bioinformat-

ics Research and Applications (IWBRA), held in 2005 and 2006.

The general chairs of ISBRA 2008 are Dr. Yi Pan and Dr. Dan Gusfield (University of California, Davis). The program chairs are Dr. Raj Sunderraman, Dr. Alex Zelikovsky, and Dr. Ion Mandoiu (University of California, San Diego). Dr. Robert Harrison and Dr. Yan-Qing Zhang are the organizing chairs, and Dr. Anu Bourgeois is the finance chair. Dr. Yingshu Li and Dr. Dumitru Brinza (University of California, San Diego) are the publicity chairs. Ph.D. students Gulsah Altun and Stefan Gremalschi are the poster chairs.

Symposium attendees will stay at the Atlanta Marriott Downtown. Sessions will be held at the Aderhold Learning Center.

ISBRA 2008 is sponsored by the Department of Computer Science, the Biomedical Computational Center, the Molecular Basis of Disease Program, and the GSU Student Chapter of the ACM.

HU RECEIVES NSF GRANT

Dr. Xiaolin Hu received a \$120,000 grant from the National Science Foundation for a project titled "System Integration of Dynamical Data-Driven Wildfire Spread and Firefighting Modeling, Simulation, and Optimization." Dr. James Nutaro from Oak Ridge National Laboratory is co-principal investigator of the grant, which runs from August 1, 2007 to July 31, 2009.

Research to be performed under the grant involves developing an integrated data-acquisition, modeling, simulation, and optimization software environment for effective wildfire management. This environment integrates real-time acquisition of weather and fire-front position data, fast simulation of fire spread to predict fire behavior, just-in-time optimization to compute firefighting resource deployment, and modeling and simulation of firefighting to assess strategies of fire suppression. Integrating these components that are usually treated in isolation enables a novel comprehensive software system to effectively support real-time optimal decision-making for fire management and minimize firefighting risk and cost. The software environment will also serve as a valuable training and planning tool for fire management, and will provide a multidisciplinary educational tool for students and researchers in general.

DEPARTMENT HOSTS VISITING FACULTY

The department was honored to host three visiting faculty members during the fall semester.

- Dr. Shi-Jinn Horng, who visited from July 1 to September 30, is dean of the College of Electrical Engineering and Computer Science at the National United University of Taiwan. During his stay at Georgia State, he collaborated with Dr. Yi Pan on research into information security and networks. Dr. Horng was supported by Taiwan's National Science Council.
- Dr. Yeon-kwon Jeong is a member of the Mobile Multimedia Laboratory research staff at the Information and Communications University of Korea. Dr. Jeong is collaborating with Dr. Yingshu Li on a project titled "WLAN MAC Improvement Methodologies for Seamless Vertical Handover in Next-Generation Mobile Communications." Dr. Jeong's visit will last from March 2007 to February 2009.
- Dr. Xiaoming Wang is associate dean of the College of Computer Science at Shaanxi Normal University in China. During his year-long visit, Dr. Wang will collaborate with Dr. Li on research in wireless sensor networks. Dr. Wang is supported by the China Scholarship Council.

RECENT PH.D. GRADUATES

Dumitru Brinza. *Dissertation:* Discrete Algorithms for Analysis of Genotype Data. *Advisor:* Dr. Alex Zelikovsky. *Current position:* Staff research associate II, Department of Computer Science and Engineering, University of California, San Diego. (August 2007)

Jeff Chastine. *Dissertation:* On Inter-referential Awareness in Collaborative Augmented Reality. *Advisor:* Dr. Ying Zhu. *Current position:* Associate professor, Department of Information Technology, Clayton State University. (August 2007)

Hai Deng. *Dissertation:* Identifying Calcium Binding Sites and Predicting Disulfide Connectivity. *Advisor:* Dr. Guantao Chen. (August 2007)

Xuezheng Fu. *Dissertation:* Structure Pattern Analysis Using Term Rewriting and Clustering Algorithm. *Advisor:* Dr. Robert Harrison. (August 2007)

Haejin Hu. *Dissertation:* Design of Comprehensible Learning Machine Systems for Protein Structure Prediction. *Advisor:* Dr. Yi Pan. *Current position:* Post-doctoral scholar, National Cancer Center, Korea. (August 2007)

Jon Preston. *Dissertation:* Rethinking Consistency Management in Real-Time Collaborative Editing Systems. *Advisor:* Dr. Sushil Prasad. *Current position:* Associate professor, Department of Information Technology, Clayton State University. (August 2007)

Yanchao Wang. *Dissertation:* Protein Structure Data Management System. *Advisor:* Dr. Raj Sunderraman. *Current position:* Post-doctoral fellow, Interdisciplinary Research in the Mathematical and Computational Sciences (IRMACS), Simon Fraser University, Canada. (August 2007)

Xiujuan Chen. *Dissertation:* Computational Intelligence-Based Classifier Fusion Models for Biomedical Classification Applications. *Co-advisors:* Dr. Robert Harrison and Dr. Yan-Qing Zhang. *Current position:* Software engineer, CollegeNET. (December 2007)

Liang Cheng. *Dissertation:* IEEE 802.15.4 MAC Protocol Study and Improvement. *Advisor:* Dr. Anu Bourgeois. *Current position:* Software engineer, NVIDIA Corporation. (December 2007)

Aiguo Du. *Dissertation:* Prediction of Oxidation States of Cysteines and Disulfide Connectivity. *Advisor:* Dr. Yi Pan. *Current position:* Senior analyst, The Dow Chemical Company. *Previous position:* Senior bioinformatician, Baylor College of Medicine. (December 2007)

Yong Li. *Dissertation:* Contour-Based 3D Biological Image Reconstruction and Partial Retrieval. *Advisor:* Dr. Saeid Belkasim. (December 2007)

Feng Tan. *Dissertation:* Improving Feature Selection Techniques for Machine Learning. *Advisor:* Dr. Anu Bourgeois. (December 2007)

PAN, ZHANG, DING RECEIVE AWARDS AT BIBE

Dr. Yi Pan received the outstanding achievement award at the 7th IEEE International Conference on BioInformatics and BioEngineering (IEEE BIBE 2007), where he was a keynote speaker. Dr. Yan-Qing Zhang, who was program co-chair and chair of the bioinformatics track, received the outstanding academic service award. Ph.D. student Zejin (Jason) Ding, the web co-chair, received the excellent professional service award. The conference was held at the Harvard Medical School Conference Center in Boston on October 14–17.



Dr. Yi Pan

DESRIST 2008 COMING TO ATLANTA

The Third International Conference on Design Science Research in Information Systems and Technology (DESRIST 2008) will be held in Atlanta. Several Georgia State faculty members and staff are among the conference organizers, including Dr. Vijay Vaishnavi (program chair) and Dr. Richard Baskerville (program co-chair) of the Department of Computer Information Systems and Art Vandenberg (local arrangements chair) of Information Systems & Technology. Dr. Ying Zhu of the Department of Computer Science is serving as doctoral consortium co-chair. DESRIST 2008 will be held on May 7–9 at the Westin Buckhead Atlanta.

FACULTY NEWS

Dr. Raheem Beyah has been named an associate editor of *Security and Communication Networks*, an international journal published by Wiley. *Security and Communication Networks* publishes original research and review papers on security and cryptographic mecha-

nisms applied to all types of information and communication networks, including wired, wireless, and optical-transmission platforms.

Dr. Raheem Beyah was chosen as one of 2007's Outstanding Atlanta honorees. Being selected by Outstanding Atlanta is the city's premier honor for community involvement by young Atlantans ages 21 to 36. Founded in 1968, the organization chooses ten young leaders annually based on their roles in business, civic, and cultural fields.

In its October 26 issue, the *Atlanta Business Chronicle* named **Dr. Raheem Beyah** one of the paper's Up & Comers 40 Under 40, a list of the 40 "most successful and powerful leaders in the community" under the age of 40. The editors of *Atlanta Business Chronicle* reviewed over 270 nominations before making their selections. Dr. Beyah was selected because of his community involvement as well as his academic achievements.

Dr. Raheem Beyah has joined the Board of Directors at KIPP WAYS Academy, a free college-preparatory charter school serving students in West Atlanta. KIPP West Atlanta Young Scholars (WAYS) Academy is one of over fifty KIPP (Knowledge Is Power Program) schools operating in low-income urban and rural communities throughout the country. KIPP WAYS Academy opened in 2003; it has approximately 300 students in grades five through eight.

A team that includes **Dr. Xiaojun (Matt) Cao** has received a Cisco Research Grant. The grant was awarded to the Rochester Institute of Technology, where Dr. Cao worked before coming to Georgia State. The project involves using 10 GigE network devices to create an advanced network infrastructure for computing and collaboration, with an emphasis on uncompressed HD over IP, high-throughput data transfers, and low-latency backplane/interconnects for HPC clusters. The grant includes \$78,000 in cash and as much as \$386,000 in equipment.

The department is pleased to announce that **Dr. Mark Keil** of the Department of Computer Information Systems has been granted a joint appointment. He joins four other faculty members who hold joint appointments in the Department of Computer Science: Dr. Veda

Storey and Dr. Vijay Vaishnavi (both of Computer Information Systems), Dr. Guantao Chen (Mathematics and Statistics), and Dr. Xiaochun He (Physics and Astronomy).

During the the fall semester, the Department of Computer Science offered a new course on the history of computing. CSC 3010, which was taught by **Dr. K. N. King**, is one of the few courses on the history of computing being offered in the United States.

Dr. Yingshu Li won the best paper award at the International Conference on Wireless Algorithms, Systems, and Applications (WASA 2007). The award was for the paper "Constructing Connected Dominating Sets with Bounded Diameters in Wireless Networks," coauthored with Donghyun Kim, Feng Zou, and Ding-Zhu Du of the University of Texas at Dallas. Thirty-six papers were presented at the conference, which was held on August 1–3 in Chicago.

Dr. Yingshu Li received a \$30,000 grant from South Korea's Electronics and Telecommunications Research Institute. Dr. Li is the principal investigator for the grant; the co-principal investigator is Dr. Yeon-kwon Jeong, a visiting professor. The grant is for a project that involves investigating how to support seamless vertical handover effectively in the IEEE 802.11 WLAN environment and other wireless access networks.

Dr. Sushil Prasad is serving as tutorials chair for the 22nd IEEE International Parallel and Distributed Processing Symposium (IPDPS 2008). IPDPS is a forum for engineers and scientists from around the world to present their latest research findings in the fields of parallel processing and distributed computing. IPDPS 2008 will be held on April 14–18 at the Hyatt Regency Resort in Miami.

Dr. Yan-Qing Zhang received a \$5,000 grant from the National Science Foundation for a project titled "Student Fellowships for Participating in IEEE 7th International Symposium on BioInformatics and BioEngineering." Dr. Youping Deng of the University of Southern Mississippi and Dr. Jack Yang of Harvard University are co-principal investigators. The grant was used to provide financial support for students to attend BIBE 2007, which was held in Boston on October 14–17.

DEPARTMENT FEATURED IN GEORGIA STATE MAGAZINE

An article in the Summer 2007 issue of *Georgia State Magazine* features research being done in the Department of Computer Science. The article, titled "Introducing Bioinformatics," discusses the department's key role in the emerging field of bioinformatics. The article quotes the department chair, Dr. Yi Pan, extensively. It also mentions Dr. Robert Harrison, the first bioinformatics faculty member to be hired by the department, and NeuronBank, a joint project with the Department of Biology. *Georgia State Magazine* is a quarterly publication distributed to more than 120,000 alumni, donors, and other friends of the university.

GRADUATE FELLOWSHIP WINNERS ANNOUNCED

The winners of Molecular Basis of Disease (MBD) and Brains & Behavior (B&B) fellowships were announced prior to the beginning of fall semester. New MBD fellowships were awarded to the following computer science graduate students:

- Irina Astrovskaya
- Xiong Cheng
- Zejin Ding
- Stefan Gremalschi
- Anjum Reyaz-Ahmed
- Kelly Westbrook

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

- Gulsah Altun
- Bernard Chen
- Xiujuan Chen
- Eunjung Cho
- Stephen Pellicer

A new B&B fellowship was awarded to the following student:

- Rizzi Aznita

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

- Akshaye Dhawan
- Yong Li

- James Reid
- Xiaoyuan Suo
- Hong Yang

Each fellowship provides a stipend of \$22,000 per year. Fellowships last for one year but can be renewed for up to three years. MBD is a program in computational biomedicine that includes faculty from six Georgia State departments. B&B is a Georgia State initiative that unites researchers who study how nervous systems produce behavior.

PH.D. STUDENTS WIN TRAVEL GRANTS

Ph.D. student Bernard Chen received an NSF student travel fellowship award to attend the 7th IEEE International Conference on BioInformatics and BioEngineering (IEEE BIBE 2007). He was also the first runner-up for the Best Student Research Paper award. His paper, "Super Granular SVM Feature Elimination (Super GSVM-FE) Model for Protein Sequence Motif Information Extraction," was coauthored with Ph.D. student Stephen Pellicer, Dr. Phang C. Tai, Dr. Robert Harrison, and Dr. Yi Pan. The conference was held in October at the Harvard Medical School Conference Center in Boston.

Ph.D. student Yiwei Wu was awarded a travel grant to attend the 2007 Military Com-

munications Conference (MILCOM 2007). He presented a paper titled "Constructing k -Connected m -Dominating Sets in Wireless Sensor Networks," coauthored with Dr. Ying-shu Li (his Ph.D. advisor), Dr. Feng Wang of the University of Minnesota, and Dr. My Thai of the University of Florida. MILCOM 2007 was held in October at the Gaylord Palms Resort and Convention Center near Orlando.

STUDENTS FOR OPEN SOURCE HOLDS FIRST MEETING

Students for Open Source (SOS), a new student organization, held its first meeting in September. SOS is dedicated to the promotion of free and open source software. It provides an opportunity for like-minded students to meet, thus fostering a stronger sense of community among Linux and open source users throughout the Georgia State community. The organization plans to hold meetings once or twice per month during the academic year. Anyone is invited to attend; there are no dues or fees. The 2007–2008 officers of SOS are:

President: David Tomaschik
Vice-President: Charles Keller
Treasurer: Mark Sahara
Secretary: Kyle Proctor

Dr. Michael Weeks is the group's faculty advisor.

pointers

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**P.O. BOX 3994
ATLANTA, GA 30302-3994**

Have something to say?

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