

pointers

DEPARTMENT OF COMPUTER SCIENCE
GEORGIA STATE UNIVERSITY

SPRING 2007

MESSAGE FROM THE CHAIR



Dr. Yi Pan

For the second year in a row, the Department of Computer Science has played host to an international conference. Last year, it was the IEEE International Conference on Granular Computing. This year, we organized and hosted the first International Symposium on Bioinformatics Research and Applications. Hosting an international event of this magnitude was a great honor for our department and for Georgia State University. The conference is an important step in our department receiving national and international recognition for its research in bioinformatics. The conference was such a success that we are planning to host it again next year. Information about next year's conference will be posted at www.cs.gsu.edu/ISBRA/. We hope to see you at ISBRA 2008!

DEPARTMENT HOSTS INTERNATIONAL BIOINFORMATICS SYMPOSIUM

In May, the Department of Computer Science hosted the first International Symposium on Bioinformatics Research and Applications (ISBRA 2007), drawing a crowd of 200 researchers, developers, and practitioners working on all aspects of bioinformatics and computational biology and their applications. Attendees came from 14 countries and 20 U.S. states.

The symposium featured 55 papers, 23 posters, and two tutorials, as well as keynote addresses by three distinguished scientists: Dr. Ming Li (University of Waterloo), Dr. Laura L. Elnitski (National Human Genome Research Institute), and Dr. Mark Borodovsky (Georgia Tech).

The proceedings of ISBRA 2007 were published as volume 4463 of the Springer Verlag Lecture Notes in Bioinformatics series. A special issue of *IEEE/ACM Transactions on Computational Biology and Bio-*

informatics, the leading bioinformatics journal, will be devoted to expanded versions of the best symposium papers.

The following awards were given at the conference banquet:

- *Best Paper*: Srinath Sridhar, Fumei Lam, Guy Blelloch, R. Ravi, and Russell Schwartz (Carnegie Mellon University), "Efficiently Finding the Most Parsimonious Phylogenetic Tree via Linear Programming"
- *Best Poster*: Gregory M. Reck and Iosif I. Vaisman (George Mason University), "Evaluation of Stability Changes in Single Point Protein Mutants Using a Four-body Statistical Potential"
- *Outstanding Research Achievement*: Mark Borodovsky (Georgia Tech), Laura L. Elnitski (National Human Genome Research Institute), Ming Li (University of Waterloo)
- *Educational Service*: Jack Y. Yang (Harvard University), Mary Qu Yang (National Human Genome Research Institute)

The general chairs of ISBRA 2007 were Dr. Yi Pan and Dr. Dan Gusfield (University of California, Davis). The program chairs



Some of the participants at ISBRA 2007, which was held in the Aderhold Learning Center on campus



Dr. Yi Pan presents an Outstanding Research Achievement award to Dr. Laura Elnitski during ISBRA 2007

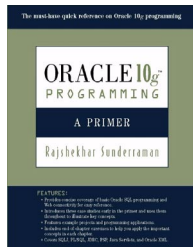
were Dr. Alex Zelikovsky and Dr. Ion Mandoiu (University of Connecticut). Dr. Robert Harrison and Dr. Yan-Qing Zhang were the organizing chairs, Dr. Raj Sunderraman was the publication chair, Dr. Anu Bourgeois was the finance chair, and Dr. K. N. King and Dr. Yingshu Li were publicity chairs. Ph.D. students Gulsah Altun and Dumitru Brinza served as poster chairs.

ISBRA 2007 was sponsored by the Department of Computer Science, the Biomedical Computational Center, and the Molecular Basis of Disease Program.

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SUNDERRAMAN UPDATES ORACLE PRIMER



Dr. Raj Sunderraman's latest book, *Oracle 10g Programming: A Primer*, was published in May. This book is the most recent edition of *Oracle Programming: A Primer*, which first appeared in 1998. The first edition discussed Oracle 7.0; later editions covered versions 8.0 and 9i.

Dr. Sunderraman's book is a concise, streamlined guide to Oracle programming that introduces the Oracle technology students need to know for a first database course. It is designed to accompany a popular database textbook, *Fundamentals of Database Systems*, Fifth Edition, by Ramez Elmasri and Shamkant B. Navathe.

The first part of *Oracle 10g Programming: A Primer* offers a basic review of the relational model and an introduction to Oracle SQL and PL/SQL. The second part introduces related technologies that facilitate Oracle Web functionality, including chapters on SQLJ, Oracle Web programming with Java servlets, and Oracle XML. The final chapter contains a number of sample projects and programming applications.

Published by Addison-Wesley, *Oracle 10g Programming: A Primer* (ISBN 0-321-46304-8) is a paperback book with 544 pages. It is available at Amazon.com for \$39.60.

GEORGIA STATE STUDENTS COMPETE IN IMAGINE CUP

Five Georgia State students competed in the Imagine Cup, an international computing contest sponsored by Microsoft Corporation. The Imagine Cup consisted of nine competitions organized into three categories. Georgia State students competed in Embedded Development and Software Design, which were two of the competitions in the Technology Solutions category. The other categories were Skills Challenges and Digital Arts.

A team of four students (David Tomaschik, Michael Igbini, Kyle Proctor, and Fred Hudson) participated in the Embedded Development competition. Kyle Proctor is majoring in Computer Information Systems; the other team members are computer science majors. Dr. Michael Weeks was the team's advisor.

Each team in the Embedded Development competition was required to build a working prototype of an embedded device that would have an impact on solving some of the world's toughest problems. Teams were required to use Windows Embedded CE 6.0 as their operating system and target their project to the eBox-2300 system.

The Georgia State team's project, which was titled "The Oui Language Learning Lab," involved creating a prototype system for an interactive environment that helps the user rapidly learn new words in a foreign language. The system permits users to interact with their environment and receive real-time feedback in a foreign language to help them build language skills. It uses an embedded computer system that allows users to hear the words for everyday objects in the foreign language of their choice. Users press a button located on or next to the object to trigger the response. The system also supports a quiz mode that allows users to evaluate their progress, and a game-show mode that provides a more entertaining environment for younger users. The system requires little or no computer background to use. The embedded nature of the system allows it to be used in remote parts of developing countries, helping bring foreign language education to the less fortunate.

During the first round, which ended in February, teams submitted an interim report describing their project. Over 400 teams participated in the competition; Georgia State's team was one of 192 to advance to the second round. Only seven U.S. teams advanced to this round, which ended in May. In the second round, teams were provided with an eBox-2300 computer as well as a set of software

tools to use in developing their prototype system. Based on reports submitted at the end of the second round, 15 teams were chosen to advance to the worldwide finals in South Korea.

Another Georgia State computer science major, Minh Nguyen, competed in the Software Design competition, which had three stages. The first stage was an online competition consisting of twelve programming and testing challenges. In the second stage, the top 500 students were invited to attend one of four regional semi-finals. Semi-finalists competed over the course of one day on a challenge of particular complexity and difficulty. The top 24 students were invited to the third stage: the North American Final in Redmond, Washington. Mr. Nguyen qualified for the regional semi-finals with a score of 145 out of 330. His faculty advisor was Dr. Xiaolin Hu.

The Imagine Cup began four years ago. In 2004, the first year of competition, a team of four Georgia State students was awarded second place in the Southern Regional Imagine Cup competition.

INTERNAL GRANTS AWARDED TO COMPUTER SCIENCE FACULTY

Five Computer Science faculty members were among 61 Georgia State professors who recently won internal grants from the university. The awards were competitive, with applications reviewed by an Internal Grant Peer Review Committee consisting of 24 senior faculty members. Two CS faculty members received Research Initiation Grants, which promote the scholarly and artistic activity of the faculty and foster academic excellence within the university:

- Dr. Anu Bourgeois, "Energy Efficient Schemes for IEEE 802.15.4 MAC Protocol"
- Dr. Alex Zelikovsky, "Computational Methods for Genetic Association Search and Susceptibility Prediction for Common Diseases"

Another three faculty members were co-recipients of Research Program Enhancement Awards, which are available only to currently funded research groups:

- Dr. Irene Weber (Biology), Dr. Guantao Chen (Mathematics and Statistics), Dr. Robert Harrison, and Dr. Yi Pan, "Bioinformatics" (3-year renewal)
- Dr. David Washburn (Psychology), Dr. Marise Parent (Psychology), Dr. Scott Decker (Counseling and Psychological Services), and Dr. Yan-Qing Zhang, "A Multidisciplinary Approach to Learning" (renewal)

RECENT PH.D. GRADUATES

Bo Jin. *Dissertation:* Evolutionary Granular Kernel Machines. *Advisor:* Dr. Yan-Qing Zhang. *Current position:* Post-doctoral scholar, Department of Biostatistics, Bioinformatics, and Epidemiology, Medical University of South Carolina. (May 2007)

Jason Pamplin. *Dissertation:* Formal Object Interaction Language: Modeling and Verification of Sequential and Concurrent Object-Oriented Software. *Advisor:* Dr. Ying Zhu. *Current position:* Independent consultant. (May 2007)

Hao Tian. *Dissertation:* A Methodology For Domain-Specific Conceptual Data Modeling and Querying. *Advisor:* Dr. Raj Sunderraman. *Current position:* Data manager, Centers for Disease Control and Prevention. (May 2007)

Hao Wang. *Dissertation:* Design of a Structural Search Engine for Chemical Compound Database. *Advisor:* Dr. Robert Harrison. (May 2007)

OWEN VISITS ASIA TO PLAN NEW SIGGRAPH CONFERENCE

Dr. Scott Owen, the president of ACM SIGGRAPH, did a three-week tour of Asia late last year, where he visited Singapore, Kuala Lumpur, and Tokyo. The purpose of the trip was to investigate sites for a possible new conference in Asia. Interest and activity in Asia in computer science, especially computer graphics and digital media, has increased dramatically. As a result, Dr. Owen last fall formed a steering committee to investigate the possibility of starting a new annual SIGGRAPH Conference in Asia (SiA). The steering committee consists of Dr. Owen, ACM SIGGRAPH vice president Alyn Rockwood, and eleven members from six Asian countries.

In Singapore, Dr. Owen was a guest of the Singapore Tourism Board and met with representatives of several academic and government institutions. There was a meeting of the entire steering committee in Kuala Lumpur to plan the new conference. Dr. Owen also discussed SiA with government and academic representatives in Kuala Lumpur and Tokyo and had a very favorable reaction.

The existing SIGGRAPH conference, held annually during the summer, is the largest ACM conference, with between 20,000 and 30,000 attendees. SiA will likely be held in December, starting in 2008 or 2009, and is expected to attract a similar number of people.

Dr. Owen's SiA proposal was covered in Asian news media as well as in *Variety*.

FACULTY NEWS

Dr. Raheem Beyah has been named Demo Co-Chair for the 3rd International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom 2007). TridentCom was held in Orlando on May 21–23. The conference was co-sponsored by the IEEE Communications Society and CREATE-NET.

Dr. Xiaolin Hu served as a program co-chair for MSV'07, the 2007 International Conference on Modeling, Simulation, and Visualization Methods. MSV'07 was part of WORLDCOMP'07 (2007 World Congress in Computer Science, Computer Engineering, and Applied Computing), the largest annual gathering of researchers in computer science, computer engineering, and applied computing. WORLDCOMP'07 was held on June 25–28 at the Monte Carlo Resort in Las Vegas.

On May 24, **Dr. Scott Owen** presented the opening keynote address, titled "The Future of the Digital Age," at ASIAGRAPH in Shanghai, China. On May 26, Dr. Owen gave

an invited talk on "ACM SIGGRAPH and Plans for an Asian SIGGRAPH Conference" at the 11th Seoul International Cartoon & Animation Festival in Seoul, South Korea.

Dr. Yi Pan received a \$30,000 grant from the National Science Foundation for a project titled "Transmembrane Protein Segment Prediction and Understanding Based on Machine Learning Methods." Dr. Robert Harrison of Computer Science and Dr. P. C. Tai of Biology are co-principal investigators on the grant, which runs from September 1, 2006 to August 31, 2007. The research to be performed under the grant involves an innovative approach to rule generation for understanding prediction of transmembrane segments by integrating rough set theory, support vector machines, and association rule-based classifiers.

Dr. Yi Pan has been appointed by John Wiley & Sons to serve as co-editor for the new Wiley book series on Wireless Communication and Mobile Computing along with Dr. Xuemin (Sherman) Shen of the University of Waterloo in Canada. The objective of the series is to provide timely treatments of both the theoretical and practical aspects of wireless communication and network systems.

Dr. Yi Pan delivered one of three keynote addresses at the IEEE 21st International Conference on Advanced Information Networking and Applications (AINA 2007), which was held in Niagara Falls, Canada, on May 21–23. The title of his talk was "Public Computing – Challenges and Solutions." The conference was devoted to the theory, design, and application of computer networks and distributed computing systems. It was organized by the

EHPCLab at St. Francis Xavier University and sponsored by Nokia and the IEEE Technical Committee on Distributed Processing.

Several members of the Department of Computer Science are helping to organize the upcoming 7th IEEE International Symposium on BioInformatics and BioEngineering (BIBE 2007), which will be held in Cambridge, Massachusetts, on October 15–17. **Dr. Yi Pan** and **Dr. Yan-Qing Zhang** are members of the BIBE steering committee. Dr. Zhang is a program co-chair for BIBE 2007 in addition to serving as chair of the bioinformatics track. **Dr. Yingshu Li** is a publicity co-chair, and **Dr. Alex Zelikovskiy** is a publication co-chair. Ph.D. student Zejin Ding is the web chair for the conference. Dr. Pan will also be one of five invited keynote speakers.

Dr. Sushil Prasad served as program co-chair for the first IEEE International Workshop on Service Oriented Technologies for Biological Databases and Tools (SOBDAT 2007). The SOBDAT workshop provided a forum for researchers and practitioners working to solve problems related to the integration of the diverse databases and tools used in the analysis of biological data. SOBDAT was held on July 13 in Salt Lake City in conjunction with the 2007 IEEE International Conference on Web Services (ICWS) and the 2007 IEEE International Conference on Services Computing (SCC). A recent Georgia State Ph.D. recipient, Dr. Janaka Balasooriya, now at the University of Missouri-Rolla, served as a local arrangements co-chair for SOBDAT.

RECENT DEPARTMENTAL COLLOQUIA

February 1. "Algorithms for Estimating and Reconstructing the History of Meiotic Recombination in Populations," *Dr. Daniel M. Gusfield*, University of California, Davis (Molecular Basis of Disease Distinguished Lecture Series)

February 9. "Hierarchical Classification of Genes and Prediction of Functional Modules for Bacterial Genomes," *Dr. Hongwei Wu*, University of Georgia

February 13. "Ant Colony Optimization for Bioinformatics Problems," *Dr. Ling Chen*, Yangzhou University

February 15. "Protein Interaction Module Detection Using Graph Algorithms," *Dr. Chris Ding*, Lawrence Berkeley National Laboratory

February 19. "Multi-granular Waveband Switching in Optical Networks," *Dr. Xiaojun Cao*, Rochester Institute of Technology

March 14. "Membrane Systems: An Unconventional Model for Computation (and Simulation)," *Dr. Andrei Paun*, Louisiana Tech University

March 23. "Revealing Divergent Evolution, Identifying Circular Permutations, and Detecting Active-Sites by Protein Structure Comparison," *Dr. Luonan Chen*, Osaka Sangyo University, The University of Tokyo, and Shanghai University

May 2. "Multiobjective Control of Time-Discrete Systems and Dynamic Games on Networks," *Dr. Dmitrii Lozovanu*, Moldova State University

May 18. "Reliability in Grid Computing," *Dr. Yuanshun Dai*, University of Tennessee

ACM STUDENT CHAPTER ELECTS NEW OFFICERS

The Georgia State University student chapter of the ACM recently elected officers for the 2007–2008 academic year. The new officers are:

Chair: Akshaye Dhawan

Vice Chair: Sandeep Kondubhatla

Secretary: Chetan Galgali

Treasurer: Philip Rogers

Program Co-Chairs: Naveen Hiremath
and Zejin Ding

Publicity Chair: Chirayu Poundarik

Membership Chair: Rizwan Babwani

Webmaster: Chad Frederick

STUDENTS PARTICIPATE IN UNDERGRADUATE RESEARCH CONFERENCE

A team of undergraduate computer science majors participated in Georgia State's first Undergraduate Research Conference, which was held on April 11 in the Student Center. The team members were David Tomaschik, Michael Igbini, Kyle Proctor (a Computer Information Systems major), and Fred Hudson. Their presentation, titled "The Oui System—An Embedded Systems Language Learning Lab," was related to their Imagine

Cup project (see page 2). The team's faculty sponsor was Dr. Michael Weeks.

The Undergraduate Research Conference was designed to showcase research, art, and music produced by Georgia State undergraduates. It also served as a recruiting tool: high-school seniors who were already accepted by Georgia State were invited to attend the conference to see the high-quality work being done by undergraduates. The conference was the first ever held at Georgia State, but the university plans for it to be an annual event.



Michael Igbini, Dr. Michael Weeks, Kyle Proctor, David Tomaschik, and Fred Hudson

STUDENTS RECEIVE AWARDS AT HONORS DAY

The following computer science students were presented with departmental awards at the annual Arts and Sciences Honors Day ceremony:

Outstanding Senior Award

Ricky Johnson

Outstanding Undergraduate Research Award

David Tomaschik

Outstanding Graduate Research Award

Jon Preston

Chinh Vu

Outstanding Teaching by a Graduate Student Award

James Reid

Ashish Singh

The ceremony was held on April 4 at Georgia State's Rialto Center for the Arts.

pointers

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New Phone Numbers for Department

As of July 1, all telephone numbers used by the Department of Computer Science have changed. The main department phone number is now (404) 413-5700. Please visit the department web site at www.cs.gsu.edu/people/ for new faculty and staff numbers.

Have something to say?

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