

# pointers

DEPARTMENT OF COMPUTER SCIENCE  
GEORGIA STATE UNIVERSITY

FALL 2006

## MESSAGE FROM THE CHAIR



Dr. Yi Pan

The fall semester was a good one for the Department of Computer Science. Assistant Professor Raheem Beyah was named one of the *Georgia Trend* 40 Under 40, a rare accomplishment. Associate Professor Michael Weeks reached an important milestone with the publication of his first book.

But perhaps the biggest accomplishment during the fall was the graduation in December of five Ph.D. students—the largest number to graduate at one time in the history of the department. Altogether, the department produced a bumper crop of ten Ph.D. graduates in calendar year 2006. We hope to continue Ph.D. production at this level in 2007.

## BEYAH FEATURED IN GEORGIA TREND MAGAZINE

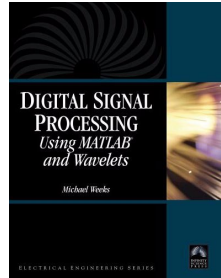


Dr. Raheem Beyah

Dr. Raheem Beyah was featured in *Georgia Trend* magazine's October cover story, "40 Under 40: The Best and Brightest." The article listed Dr. Beyah as one of the *Georgia Trend* 40 Under 40, a group of people under 40 years of age "who will lead our state's commercial, cultural, academic and governmental institutions into the future." The staff of *Georgia Trend* reviewed 200 candidates nominated by the magazine's readers before choosing 40.

At age 29, Dr. Beyah was one of the youngest leaders selected by the magazine's editors. He was honored as a result of his professional accomplishments, industry relationships, and community involvement. *Georgia Trend* noted that Dr. Beyah "has made it his mission to bridge the digital divide, the gap between the community technology haves and have-nots."

## WEEKS PUBLISHES FIRST BOOK



Dr. Michael Weeks has published his first book, *Digital Signal Processing Using MATLAB and Wavelets*. The book was motivated by growing interest in digital signal processing in the computer science community. DSP applications in the consumer market, such as the MP3 audio format and MPEG-based cable/satellite television, have fueled a desire to understand this technology outside of hardware circles.

Designed for upper-division engineering and computer science students as well as practicing engineers, *Digital Signal Processing Using MATLAB and Wavelets* emphasizes the practical applications of signal processing. Over 100 MATLAB projects and wavelet techniques provide the latest applications of DSP, including image processing, games, filters, transforms, networking, parallel processing, and sound.

The book includes coverage of the mathematical processes and techniques needed to understand DSP theory. Designed to be incremental in difficulty, it will benefit readers who are unfamiliar with complex mathematical topics or those limited in programming experience. Beginning with an introduction to MATLAB programming, the book moves through filters, sinusoids, sampling, the Fourier transform, the z-transform, and other key topics. An entire chapter is dedicated to a discussion of wavelets and their applications. The book is accompanied by a CD-ROM that contains the programs used throughout the book, along with example projects. Instructors may obtain a CD-ROM with over 350 slides in both OpenOffice and PowerPoint formats.

Published by Infinity Science Press, *Digital Signal Processing Using MATLAB and Wavelets* (ISBN 0-9778582-0-0) is a hard-

cover book with 452 pages. It has a list price of \$69.95 but is available for less from Internet bookstores, including Amazon.com, which sells it for \$44.07.

## BOURGEOIS NAMED DIRECTOR OF UNDERGRADUATE STUDIES



Dr. Anu Bourgeois

Dr. Anu Bourgeois was appointed Director of Undergraduate Studies, effective September 26, replacing Jaman Bhola. Mr. Bhola had held this position since January 2000. Department chair Dr. Yi Pan thanked Mr. Bhola for his long service to the department. Dr. Bourgeois has been in charge of learning outcomes for the last two years. Dr. Pan noted that she had done an "excellent job" in that position and expressed confidence that she will excel in her new post.

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## GEORGIA STATE TO HOST INTERNATIONAL BIOINFORMATICS SYMPOSIUM

In May, Georgia State will host the first International Symposium on Bioinformatics Research and Applications (ISBRA 2007). ISBRA 2007 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 2007 will be published in the Springer Verlag Lecture Notes in Bioinformatics series, and it is anticipated that a special issue of a major bioinformatics journal will be devoted to expanded versions of the best symposium papers.

ISBRA 2007 is the successor to the successful International Workshop on Bioinformatics Research and Applications, held on May 22–25, 2005 at Emory University and on May 28–31, 2006 at the University of Reading (U.K.) in conjunction with the International Conference on Computational Science.

The general chairs of ISBRA 2007 are Dr. Yi Pan and Dr. Dan Gusfield (University of California, Davis). The program chairs are Dr. Alex Zelikovsky and Dr. Ion Mandoiu (University of Connecticut). Dr. Robert Harrison and Dr. Yan-Qing Zhang will be the organizing chairs, Dr. Raj Sunderraman will be the publication chair, Dr. Anu Bourgeois will be the finance chair, and Dr. K. N. King and Dr. Yingshu Li will be publicity chairs.

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

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

## WEEKS LAUNCHES NEW MATLAB COURSE

During the fall semester, Dr. Michael Weeks taught a new course entitled “Introduction to MATLAB Programming.” The three-hour course, which is dual-listed as CSC 3610 and

CSC 7610, is designed to give science majors experience with the MATLAB programming language. MATLAB is used for scientific applications involving images, sound, and other signals. The course requires no previous programming experience.

Although the course is aimed at science majors—including students majoring in biology, chemistry, physics, and mathematics—75% of the students enrolled in the fall were computer science majors. Dr. Weeks hopes that the course will draw more students from outside the department when it is next taught. He currently plans to offer the course again in the fall of 2007.

## DEPARTMENT HOSTS SUMMER INSTITUTE FOR AP COMPUTER SCIENCE TEACHERS

The Department of Computer Science hosted the Summer Institute for AP Computer Science Teachers on June 19–30. The purpose of the institute was to prepare high school teachers to teach AP Computer Science, which has used the Java programming language for the last three years. The institute offered two courses (Learning Java for AP Computer Science A and Learning Java for AP Computer Science AB) as well as a workshop (Teaching AP Computer Science A & AB). Summer Institute programs were taught by Dr. Anu Bourgeois, Dr. K. N. King, and Dr. Raj Sunderraman, who was also the director of the institute. A total of 14 teachers participated in the Summer Institute, which was sponsored by the University System of Georgia’s Double the Double Initiative.

## RECENT PH.D. GRADUATES

**Somashekar Akkaladevi.** *Dissertation:* Decision Fusion for Protein Secondary Structure Prediction. *Advisor:* Dr. Saeid Belkasim. *Co-advisor:* Dr. Yi Pan. *Current position:* Assistant professor, Department of Computer Information Systems, Virginia State University. (August 2006)

**Fuhua Jiang.** *Dissertation:* SVM-Based Negative Data Mining to Binary Classification. *Advisor:* Dr. A. P. Preethy. *Current position:* Software engineer in embedded systems, Delhi Technical Center, Brighton, Michigan. (August 2006)

**Weidong Mao.** *Dissertation:* Prediction of Genetic Susceptibility to Complex Diseases. *Advisor:* Dr. Alex Zelikovsky. *Current position:* Assistant professor, Department of Computer Science, Shippensburg University. (August 2006)

**Wei Zhong.** *Dissertation:* Clustering System and Clustering Support Vector Machine for Local Protein Structure Prediction. *Advisor:* Dr. Yi Pan. *Current position:* Assistant professor of computer science, Division of Mathematics & Computer Science, University of South Carolina Upstate. (August 2006)

**Anthony Aquilio.** *Dissertation:* A Framework for Dynamic Terrain with Application in Off-road Ground Vehicle Simulations. *Advisor:* Dr. Ying Zhu. *Co-advisor:* Dr. Scott Owen. *Current position:* Software developer for GameTap, a video game service operated by Turner Broadcasting System. (December 2006)

**Janaka Balasooriya.** *Dissertation:* Distributed Web Service Coordination for Collaborative Applications and Biological Workflows. *Advisor:* Dr. Sushil Prasad. *Current position:* Postdoctoral fellow, Department of Computer Science, University of Missouri-Rolla. (December 2006)

**Jingwu He.** *Dissertation:* Algorithms for Computational Genetics Epidemiology. *Advisor:* Dr. Alex Zelikovsky. *Current position:* Research scientist, Operations Research, Norfolk Southern Corporation. (December 2006)

**Yuan Chen He.** *Dissertation:* Fuzzy-Granular Based Data Mining for Effective Decision Support in Biomedical Applications. *Advisor:* Dr. Raj Sunderraman. *Co-advisor:* Dr. Yan-Qing Zhang. (December 2006)

**Nisar Hundewale.** *Dissertation:* CAD Tools for DNA Micro-Array Design, Manufacture and Application. *Advisor:* Dr. Alex Zelikovsky. *Current position:* Instructor, Department of Computer Science, Georgia State University. In the fall, will be an assistant professor, Graduate School of Public Health, University of Pittsburgh. (December 2006)



Dr. Raj Sunderraman (third from left) and Summer Institute participants

The Department of Computer Science is accepting applications for an anticipated tenure-track position for an assistant/associate professor beginning in Fall semester, 2007. The announcement can be found at [www.cs.gsu.edu/employment/faculty.html](http://www.cs.gsu.edu/employment/faculty.html).

## DEPARTMENT HONORS MASSEY

On December 8, a ceremony was held in the department conference room to honor Dr. Fred Massey for his role in the creation of the Department of Computer Science. Dr. Massey was chair of the Department of Mathematics in 1984, when it became the Department of Mathematics and Computer Science, and remained chair of the joint department until his retirement in 1998. During this period, he played a key role in recruiting outstanding computer science faculty, fostering the growth of the computer science program, and paving the way for a separate computer science department.



Dr. Yi Pan and Dr. Fred Massey

## GEORGIA STATE CHAPTER OF THE NATIONAL SOCIETY OF BLACK ENGINEERS FOUNDED

Senior computer science major Brooks Lee, along with charter faculty advisor Dr. Raheem Beyah, have founded the Georgia State chapter of the National Society of Black Engineers (NSBE). The organization welcomes members from all areas of science, including computer science, computer information systems, biology, physics and astronomy, chemistry, mathematics, statistics, and geosciences. The primary goal of the Georgia State chapter is to help young scientists become better professionals and leaders in their fields by providing career advancement, networking, interview preparation, and empowering minorities and females through education in their communities.

The officers of the new chapter are:

*President:* Brooks Lee  
(Senior, Computer Science)

*Vice President:* Dedrick Gilchrist  
(Junior, Computer Information Systems)

*Treasurer:* Oluwatoyin Salami  
(Sophomore, Exercise Science)

*Secretary:* Fougere Jacquelin  
(Senior, Respiratory Therapy)

*Membership Chair:* Chad Hampton  
(Junior, Computer Science)

*Programs Chair:* Jeffery Walker III  
(Senior, Computer Science)

*Academic Excellence Chair:* Joel Myers, Jr.  
(Junior, Computer Science)

## ZHU NAMED DIRECTOR OF HYPERMEDIA AND VISUALIZATION LABORATORY

Dr. Ying Zhu was recently named director of the Hypermedia and Visualization Laboratory (HVL), replacing Dr. Scott Owen, who resigned from the position.

The HVL was originally established in the Department of Mathematics and Computer Science in 1992 with Dr. Owen as the director. Although the core faculty of the HVL has always been small, its projects have involved most of the faculty in the Department of Computer Science. The HVL has had over \$1.5 million in funding from the federal government (NSF and NIH), local government, and private industry, and has produced almost fifty publications. In the past two years, HVL faculty have graduated three Ph.D. students and are currently supervising several more.

Dr. Owen plans to continue playing an active role in the research activities of the HVL. He is currently serving a three-year term as president of ACM SIGGRAPH, the world's leading organization for researchers, artists, developers, filmmakers, scientists, and other professionals who share an interest in computer graphics and interactive techniques.

## FACULTY NEWS

**Dr. Raheem Beyah** was awarded a grant through a subcontract with the Georgia Institute of Technology. Funding for the grant comes from Scientific Atlanta, Inc. (S-A) with matching funds from the Georgia Research Alliance. The grant will support the development of a network-monitoring tool that allows S-A to monitor links between their distributed nodes. As a result of this work, S-A will ultimately be able to provide better service to rural areas.

**Dr. Ross Gagliano**, who retired from the Department of Computer Science in 1999, has been named an associate editor of *Ubiquity*, a



Dr. Ying Zhu

web-based publication of the Association for Computing Machinery. *Ubiquity* combines the features of a well-edited magazine of opinion and a town hall forum, offering essays by IT leaders and interactive feedback from site visitors. It is dedicated to fostering critical analysis and in-depth commentary on issues relating to the nature, constitution, structure, science, engineering, cognition, technology, practices, and paradigms of the IT profession. Book reviews by Dr. Gagliano and others appear at *Ubiquity's* Book Review page ([www.acm.org/ubiquity/bk\\_rev.html](http://www.acm.org/ubiquity/bk_rev.html)).

**Dr. Scott Owen** was elected to the Executive Committee of the ACM Special Interest Groups Governing Board. The SIG Governing Board (SGB), which is comprised of the chairs or presidents of the ACM SIGs, establishes financial and other policies that relate to all SIGs. In addition to his general duties of helping with SGB issues, Dr. Owen is the Large SIG Advisor. In this capacity, he is responsible for providing assistance to large SIGs (defined as those with a budget over \$1,000,000). ACM currently has 34 Special Interest Groups, each covering a separate computing discipline.

The National Science Foundation approved an additional \$33,000 in funding for a grant held by **Dr. Alex Zelikovsky**. The grant, which started in August 2004, will be extended until July 31, 2007. The title of the project is "New Directions for Advanced VLSI Manufacturability"; it deals with issues that affect the layout and manufacturing of VLSI chips, including automatic layout flows for phase-shifting masks, area fill synthesis for yield improvement, gate-length biasing for leakage variability control, and principled methodologies for exploring restricted design rules.

An article co-written by **Dr. Yan-Qing Zhang** was ranked among the TOP25 Hottest Articles published in the journal *Artificial Intelligence in Medicine*. The rankings were determined by ScienceDirect based on the number of downloads by online users during July, August, and September, 2005. The article, titled "Granular support vector machines with association rules mining for protein homology prediction," was co-authored by recent Ph.D. recipient Dr. Yuchun Tang and current Ph.D. candidate Bo Jin. It was originally published in the September 2005 issue of the journal.

## FACULTY PROMOTIONS

Congratulations to the following computer science faculty members, who received promotions in 2006:

**Dr. Robert Harrison** was promoted to Professor.

**Dr. Raj Sunderraman** was promoted to Professor.

**Dr. Anu Bourgeois** was promoted to Associate Professor with tenure.

## PH.D. STUDENT WINS TRAVEL AWARDS

Dumitru Brinza, a Ph.D. candidate advised by Dr. Alex Zelikovsky, recently won significant travel awards from two conferences. He received a registration scholarship of \$585 and a travel stipend of \$1000, which allowed him to attend the 9th Annual Conference on Computational Genomics in Baltimore on October 28–31. Of the 120 students who applied for travel funding, only six were given awards. He also received a scholarship in the amount of \$1100 to attend the Genetic Analysis Workshop 15 in St. Pete's Beach, Florida, on November 11–15. Funding for the scholarship was provided by Illumina, Inc. Although 600 people attended the workshop, only one Illumina scholarship was awarded.

## PH.D. STUDENT RANKS 9TH IN UCSD DATA MINING CONTEST

Bo Jin, a Ph.D. candidate advised by Dr. Yan-Qing Zhang, participated in the 2006 UCSD Student Data Mining Contest. The competition, which was open to undergraduate students, graduate students, and post-doc researchers, drew 58 teams from 22 U.S. universities.

The contest was designed to give participants a chance to test their data mining skills on a real-world data set. Teams competed to build a system that correctly predicts useful information from a corpus of text documents. There were two tasks: Document Classification (predicting the topic of a document) and Word Prediction (given some words in a document, predicting what other words would be found in the document). Mr. Jin finished in

9th place on the Document Classification task with a score of 83.7 (the winning team's score was 87.6). His score placed him ahead of teams from the University of Central Florida, UCLA, UC San Diego, the University of Michigan, and the University of Texas at Austin.

The contest, which ran from May 15 to July 15, was organized by UC San Diego and sponsored by Fair Isaac.

## RECENT DEPARTMENTAL COLLOQUIA

**October 13.** "Design of Multiple-Fault Tolerant RAIDs: A Graph-Theoretic Algorithm for Data and Parity Placement," *Dr. Narsingh Deo*, University of Central Florida

**October 17.** "Microsoft Academic Relations Programs," *Dr. Juan E. Vargas*, Microsoft Corporation

**November 3.** "Rule-Based Social Networking for Expert Finding," *Dr. Harold Boley*, University of New Brunswick and Institute for Information Technology – e-Business, National Research Council of Canada

**November 8.** "Adaptive Programming with Hierarchical Multiprocessor Tasks," *Professor Thomas Rauber*, University Bayreuth, Germany, and *Professor Gudula Rünger*, Martin-Luther-University in Halle/Wittenberg, Germany

**December 7.** "Runtime User Monitoring for Software Evolution," *Dr. William N. Robinson*, Department of Computer Information Systems, Georgia State University

**December 8.** "On the Way to Intellectual Brain-Computer Interface (IBCI)," *Dr. Alexander Kaplan*, Moscow State University

## pointers

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### Have something to say?

Mail suggestions and alumni news to  
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