Remembering Justin Bellmor

Fall semester 2009 began on a somber note for the College of Computing. Senior Justin Bellmor (third from left, above) passed away on Aug. 26 due to a brain aneurysm suffered in July. More than 200 family members, friends, classmates, professors and others gathered in the Klaus Atrium on Saturday, Aug. 29, to pay their respects in a memorial service. Pictured above with Justin (left to right) are mother Ann, brother Morgan and father Russell Bellmor.

Research News

YTD New Awards

Proposed Contracts for July 2009

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Value</th>
<th>PI</th>
<th>Co-PIs</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dartmouth College</td>
<td>$150,000</td>
<td>Mustaque Ahamad</td>
<td>None</td>
<td>13P Postdoctoral Research Fellowship Program Support</td>
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<tr>
<td>HP Labs</td>
<td>$35,000</td>
<td>Hongyuan Zha</td>
<td>None</td>
<td>Robust Knowledge Acquisition from Social Media</td>
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### Grants/Gifts Received for July 2009

<table>
<thead>
<tr>
<th>Donor</th>
<th>Amount</th>
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<th>Co-PIs</th>
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<tbody>
<tr>
<td>Qualcomm</td>
<td>$75,000</td>
<td>Blair MacIntyre</td>
<td>None</td>
<td>A Study of Mobile AR and Social Networking</td>
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<tr>
<td>NSF</td>
<td>$989,240</td>
<td>Nancy Nersessian</td>
<td>None</td>
<td>Becoming a 21st Century Scientist: Cognitive Practices, Identity Formation, and...</td>
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<td>NSF</td>
<td>$445,249</td>
<td>Alessandro Orso</td>
<td>None</td>
<td>Automated Debugging Techniques for Modern Software Systems</td>
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<tr>
<td>Navy / Office of Naval Research</td>
<td>$574,726</td>
<td>Wenke Lee</td>
<td>Jonath Giffin and Nick Feamster</td>
<td>Botnet Attribution and Removal: From Axioms to Theories to Practice</td>
</tr>
<tr>
<td>IES (via Rutgers University)</td>
<td>$216,488</td>
<td>Ashok Goel</td>
<td>Spencer Rugaber</td>
<td>Systems and Cycles: Using Structure-Behavior-Function Thinking as a Conce...</td>
</tr>
<tr>
<td>NSF</td>
<td>$500,000</td>
<td>Vijay Vazirani</td>
<td>None</td>
<td>Algorithmic and Game-Theoretic Issues in Bargaining and Market...</td>
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<td>NSF</td>
<td>$218,691</td>
<td>John Stasko</td>
<td>None</td>
<td>Supporting Investigative Analysts and Researchers in Sense-Making...</td>
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<td>NSF</td>
<td>$136,620</td>
<td>Aaron Bobick</td>
<td>Rehg</td>
<td>Category-Driven Affordance Prediction for Autonomous Robots</td>
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<td>Kitware Inc.</td>
<td>$30,000</td>
<td>Irfan Essa</td>
<td>None</td>
<td>Vision with a Purpose: Inferring the Function of Objects in Video</td>
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<td>NSF</td>
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<td>Keith Edwards</td>
<td>None</td>
<td>Technology at the Margins: The Urban Homeless as a Lens...</td>
</tr>
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<td>NSF</td>
<td>$590,000</td>
<td>Alexander Gray</td>
<td>None</td>
<td>CAREER: Scalable Machine Learning for Astrostatistics</td>
</tr>
</tbody>
</table>

### People@CoC

**Nersessian Named Fellow of Cognitive Science Society**

**Nancy Nersessian**, Regents’ Professor of Cognitive Science (IC), was elected as a fellow of the Cognitive Science Society, the field’s top professional organization, at CogSci 2009, held July 29 to Aug. 1 in Amsterdam. The Cognitive Science Society is an international scientific organization that promotes interdisciplinary interchange among researchers in disciplines comprising the field of cognitive science, including artificial intelligence, linguistics, anthropology, psychology, neuroscience, philosophy and education. Nersessian, both a past governing board member (2001-06) and past president (2003-04) of the organization, also was invited to be co-chair of EuroCogSci 2011. She currently is an associate editor of the...
Vuduc Work On Autotuning Draws Notice in Journal, U.S. DOE Workshop
Assistant Professor Rich Vuduc (CSE) co-organized a U.S. Dept.of Energy-sponsored workshop this summer on “Libraries and Autotuning for Petascale Applications.” “Autotuning” refers to automated processes by which existing software can be reconfigured automatically to run on parallel and other high-performance systems. The workshop featured lectures and discussions among researchers and practitioners from top universities, national laboratories and industry. Vuduc's recent article on autotuning sparse matrix computations, “Optimization of Sparse Matrix-Vector Multiplication on Emerging Multicore Platforms,” recently was the “hottest” (meaning, most downloaded) article in the Journal of Parallel Computing.

GVU Researchers at the UW/ Microsoft Research Summer Institute
The GVU Center was well represented at the University of Washington/Microsoft Research Summer Institute in July at Semiahmoo Resort in Washington. This event, attended by leading computer science researchers, focused on tackling the issue of complexity in digital homes. Professor Keith Edwards (IC) presented the keynote, “Interaction and Infrastructure: Bridging the Gap Between Human-Computer Interaction and Networking.” Associate Professor Beki Grinter (CS) presented a talk on “Domestic Networking as a Starting Point for Investigations About Human-Network Interaction.” Ph.D. student Erika Poole (IC) presented a talk on “Unraveling the Technological Knot: It’s Not Just About Usability or Technological Innovation.” And Ph.D. student Mario Romero (IC) presented a talk on “Supporting Architectural Design for Technological Homes Through Activity Visualization.” Edwards also was an invited participant at the Computer Science and Telecommunications Board workshop on Usable Security and Privacy, at the National Academy of Science in Washington, D.C.

MacIntyre Named nVidia ‘Professor-Partner’
Associate Professor Blair MacIntyre (IC) has been awarded a “Professor-Partnership” by nVidia and will be a featured speaker at the company’s Research Summit this fall in San Jose, Calif. MacIntyre will speak during a session on “Visual Computing Trends” and will discuss mobile augmented reality. The professor-partnership, which carries with it an unrestricted award of $30,000, is the second such honor received by a College of Computing professor. Professor David Bader (CSE) received the award in 2008. The Research Summit is one part of nVidia’s GPU Technology Conference, to be held Sept. 30 to Oct. 2 in San Jose. In addition to his talk, MacIntyre will participate in panel discussions for the conference.

Georgia Tech Takes the Spotlight at IPDPS in Rome
Georgia Tech was a major presence at the 23rd IEEE International Parallel and Distributed Processing Symposium (IPDPS), held May 25-29 in Rome, Italy. The event attracted more than 600 of the field’s top scientific researchers for a week packed with technical talks and demonstrations. The conference accepts less than a quarter of all papers submitted for presentation; five from the College of Computing were presented as regular papers:
- “Understanding the Design Trade-offs among Current Multicore Systems for Numerical Computations,” by Seunghwa Kang (ECE), David Bader (CSE) and Rich Vuduc (CSE)
- “Adaptable, Metadata Rich IO Methods for Portable High Performance IO,” by Scott Klasky (CSE), Fang Zheng (CS), Scott Klasky (Oak Ridge National Laboratory, or ORNL) and Karsten Schwan (CS)
- “Compact Graph Representations and Parallel Connectivity Algorithms for Massive Dynamic Network Analysis,” by Kamesh Madduri (Lawrence Berkeley National Laboratory) and David Bader (CSE)
- “Coupled Placement in Modern Data Centers,” by Madhukar Korupolu (IBM Almaden), Aameek Singh (IBM Almaden) and Bhuvan Bamba (CS)
- “Design, Implementation and Evaluation of Transparent pNFS on Lustre,” by Weikuan Yu (ORNL), Oleg Drokin (Sun Microsystems) and Jeffrey Vetter (CSE and ORNL)

An additional paper from Georgia Tech appeared at the co-located 3rd Workshop on Multithreaded Architectures and Applications (MTAAP): “A Faster Parallel Algorithm and Efficient Multithreaded Implementations for Evaluating Betweenness Centrality on Massive Datasets,” by Kamesh Madduri (Lawrence Berkeley National Laboratory), David Ediger (ECE), Karl Jiang (CSE), David Bader (CSE), Karl Jiang (CSE), and Daniel Chavarria-Miranda (Pacific Northwest National Laboratory).

Ph.D. students Seunghwa Kang and Manisha Gajbe (CS) were selected among the top 24 international student applicants to present their research at a Ph.D. forum sponsored by the IEEE Computer Society’s Technical Committee in Parallel Processing (TCPP).
Additionally, David Bader (CSE) served as general vice chair of the symposium, co-chair of the co-located 8th IEEE High Performance Computational Biology (HICOMB) workshop and
program chair of the co-located 18th IEEE Heterogeneity in Computing Workshop (HCW). Milos Prvulovic and Karsten Schwan serve on the IPDPS 2009 Program Committee. Vetter and Bader serve as program committee members of the 3rd Workshop on Multithreaded Architectures and Applications (MTAAP). Bader also will serve as general chair of next year’s symposium, to be held April 19-23, 2010, in Atlanta.

Software Engineering Group Represents at ICSE 2009 in Vancouver
School of Computer Science faculty and students made their presence known at ICSE (International Conference on Software Engineering) 2009, the flagship conference in software engineering, held May 16-24 in Vancouver, Canada. Highlights included:

• Ph.D. student Chris Parnin (CS), who published a paper, “How We Refactor, and How We Know It,” co-authored with Emerson Murphy-Hill and Andrew P. Black. The paper received an ACM SIGSOFT Distinguished Paper Award.
• Orso, who gave a keynote on "Securing Software Systems through Static and Dynamic Program Analysis" at SESS (Software Engineering for Secure Systems). Orso also co-organized and co-chaired an ICSE track on “New Ideas and Emerging Results,” which received more than 130 submissions and accepted 38.
• Ph.D. student Hina Shah (CS), who presented a poster, co-authored with Mary Jean Harrold, at CHASE (Cooperative and Human Aspects of Software Engineering).

Harrold Paper Featured in IEEE Journal
Mary Jean Harrold (CS) had her paper, “Recomputing Coverage Information to Assist Regression Testing,” featured in the July/August issue of IEEE Transactions on Software Engineering, one of the top two journals in software engineering. Coauthored with Pavan Chittimalli, the article is featured on the journal’s website.

Orso, Doctoral Students Win Distinguished Paper Award at ISSTA 2009
Ph.D. students William Halfond and Saswat Anand, along with Associate Professor Alex Orso (all CS), received an ACM distinguished paper award at the ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2009), the flagship conference in software testing and analysis. The paper, “Precise Interface Identification to Improve Testing and Analysis of Web Applications,” describes a new technique for identifying the interfaces of a web application. Results show that the use of this technique leads to improvements in a range of quality assurance techniques for web applications, including testing, verification and finding security vulnerabilities.

Biros, Vuduc Paper Nominated for Best Paper at SC09
A Georgia Tech team’s paper is one of three finalists for the Best Paper Award at Supercomputing 2009, the premier conference in the high performance computing field. Titled “A Massively Parallel Adaptive Fast-Multipole Method on Heterogeneous Architectures,” the paper was coauthored by a College of Computing team that included postdoctoral researcher Ilya Lashuk, research scientist Harper Langston, Ph.D. students Rahul Sampath and Aparna Chandramowlishwaran, M.S. student Aashay Shringarpure (CS), and professors George Biros and Rich Vuduc (all CSE unless noted). The paper describes a novel and highly scalable implementation of an algorithm, known as the kernel-independent fast multipole method (FMM), and includes first-of-its-kind runs on problems with hundreds of millions to tens of billions of particles on large-scale, parallel systems with more than 64,000 processing cores and up to 256 GPUs.

M.S. Student Takes 2nd in UC-San Diego Data-Mining Contest
Ph.D. student Mark Nelson (IC) placed second in the “hard” category of the 2009 University of California-San Diego data-mining competition, which finished on July 15. This year’s event focused on predicting fraudulent e-commerce transactions. Entrants were given several thousand transactions labeled “fraudulent / not-fraudulent” and had to mine enough information from those to rank the unlabeled ones in order of the likelihood that they were also fraudulent. Thanks to Nelson’s second-place finish, Georgia Tech was the only North American university to have a team place in any category. Associate Professor Charles Isbell (IC) was the faculty advisor.

http://www.cc.gatech.edu/compiler/
Four Students Awarded ARC Fellowships for 2009-10
The Algorithms & Randomness Center (ARC) and ThinkTank recently announced the winners of its fellowships for the 2009-10 year. The recipients and their proposed projects include:

• Amanda Pascoe (Math), “Cluster Algorithms for Discrete Models of Colloids” (adviser: Dana Randall of CS)


• Luyi Gui (ISyE), “Collaboration Mechanism Design Under Data Uncertainty in Multicommodity Flow Networks” (adviser: Ozlem Ergun, ISyE)

• Daniel Dadush (ISyE), “Towards the KLS Conjecture for Convex Bodies” (adviser: Santosh Vempala of CS)

The winners were selected by an ARC faculty committee composed of Prasad Tetali (chair, joint with CS and Mathematics), Bill Cook, Ton Dieker, Vladimir Koltchinskii, Milena Mihail (CS) and Eric Vigoda (CS).

PhD Student Takes Paper Award at IEEE Security Symposium
Ph.D. student Monirul Sharif (CS), along with visiting student Andrea Lanzi and CS faculty members Jon Giffin and Wenke Lee, received the Best Student Paper award at the 30th IEEE Symposium on Security and Privacy, held May 17 in Oakland, Calif. The paper was titled “Automatic Reverse Engineering of Malware Emulators.”

Goel Appointed As Associate Editor of IEEE Journal
Ashok Goel (IC) has been appointed associate editor of IEEE Intelligent Systems. Goel already is associate editor of ASME Journal of Computing and Information Science in Engineering and on the editorial boards for the Journal of Experimental and Theoretical AI; AI for Engineering Design, Analysis and Manufacturing; and Advanced Engineering Informatics. He also has been selected as co-chair of Diagrams 2010, to be held in conjunction with CogSci 2010 next August in Portland, Oregon.

Ram, Thomaz Make Entries in IJACI 2009
Associate Professor Ashwin Ram and Assistant Professor Andrea Thomaz represented the School of Interactive Computing at the International Joint Conference on Artificial Intelligence (IJCAI) 2009 conference, held July 11-17 in Pasadena, Calif. The event is the top international AI conference in the world. Ram presented three papers:

• “Goal-Driven Learning in the GILA Integrated Intelligence Architecture,” J. Radhakrishnan, S. Ontañón, Ashwin Ram (IJCAI 09)


Thomaz and two of her graduate students, Maya Cakmak and Crystal Chao, held a research demo titled “Interactive Social Exploration for Robot Learning.”

Ram Gives Talk at Disney Imagineering on AI for Interactive Gaming
Associate Professor Ashwin Ram (IC) spoke on artificial intelligence (AI) and its growing prevalence as a selling point for commercial games at a July 13 tech talk at Disney Imagineering in Glendale, Calif. “Game AI” refers to taking computer games beyond scripted interactions, however complex, into the arena of truly interactive systems that are responsive, adaptive and intelligent. Such systems learn about the player during game play, adapt their own behaviors beyond the pre-programmed set provided by the game author, and interactively develop and provide a richer experience to the player. Ram discussed different programming strategies for Game AI, such as at the character or game levels.

Lebanon Presents Paper on Word Acquisition at EMNLP Conference
Assistant Professor Guy Lebanon (CSE) presented a paper, “Statistical Estimation of Word Acquisition With Application to Readability Prediction,” at the Conference on Empirical Methods in Natural Language Processing (EMNLP) 2009, held Aug. 6-7 in Singapore. Lebanon’s project goal is to develop an Internet search engine feature that can return results based on users’ reading comprehension levels, and the first step has been to develop a reliable method to determine age-related readability by the ages at which certain words are required. Aside from its potential educational benefits for children, the filter also could be beneficial for adults with remedial education needs or those learning English.
Earwood Named Regional Budget Director for National Advising Group

Kathy Earwood, head advisor in the Office of Student Services, was appointed regional budget director for the National Academic Advising Association's Region IV, which encompasses Georgia, Alabama, Mississippi and Florida. Earwood, who served from 2006 to 2008 as the state of Georgia representative to Region IV, also will chair NACADA's Region IV conference to be held in Atlanta from March 21-23, 2010. For the past six years, she has served on NACADA's national awards committee.

Welcome to New Faculty

The College of Computing welcomes the following faculty appointments new for the 2009-10 year:

- Doru-Cristian Balcan, Postdoctoral Researcher (IC)
- Nina Balcan, Assistant Professor (CS)
- Elijah Cameron, Director of Assessment and Evaluation (OEC)
- Stephanie Chaillat, Research Scientist I (CSE)
- Alex Hill, Postdoctoral Researcher (IC)
- Ashwin Lall, Postdoctoral Researcher (CS)
- Harper Langston, Research Scientist I (CSE)
- Ilya Lashuk, Postdoctoral Researcher (CSE)
- Daniel Luo, Postdoctoral Researcher (CS)
- Ian McClendon, Research Scientist I (IC)
- Chris Peikert, Assistant Professor (CS)
- Roberto Perdisci, Postdoctoral Researcher (CS)
- Derek Reilly, Temporary Research Scientist I (IC)
- Jason Riedy, Research Scientist II (CSE)

Personnel Announcements

Logan Moon has joined CoC as a Research Technologist I in TSO/CSE effective 7/1/09. His email address is lmoon3@gatech, phone number is 5-1513. Welcome Logan!

Ashwin Lall has joined CoC as a Post-Doc in CS effective 7/20/09. His email address is alall@cc and is located in KACB 3337. Welcome Ashwin!

Roberto Perdisci has joined CoC as a Post-Doc in CS effective 8/3/09. His email address is perdisci@gtisc. Welcome Roberto!

Russell Poole's last day at CoC was 8/7/09. Best wishes Russ!

Doug Conley's last day at CoC was 8/21/09. Best wishes Doug!

Sharon Crouch's last day at CoC was 8/31/09. Best wishes Sharon!

General News

GVU Center Calls for Potential Foley Scholars to Apply

Applications for the second annual Foley Scholarships are due Friday, Sept. 4. Named in honor of Jim Foley, School of Interactive Computing professor, founder of the GVU Center and interim dean of the College, these unrestricted $5,000 scholarships support students who demonstrate brilliance and show potential to have a big impact on the field. Applicants must be current master's or Ph.D. students in good standing and actively doing research with the GVU Center. Two students will be selected in early October by a committee of GVU alumni, industrial partners and faculty. Awardees will be honored at the Foley Scholars dinner on Oct. 14. For more information, contact Renata Le Dantec (renata@cc) or visit the application website.

Four CoC Faculty Named to Georgia Tech Strategic Planning Committee

Four College faculty members were appointed to the committee charged by President Bud Peterson with shepherding the Institute's just-launched strategic planning process. Aaron Bobick (IC), Nick Feamster (CS), Charles Isbell (IC) and Beth Mynatt (IC) will represent the College. Over the next year to 18 months, the committee will gather and weigh input from Georgia Tech stakeholders both on-campus and off to help design a plan that will guide the Institute in the immediate, mid- and long terms. Bobick and Isbell also are co-chairs of two subcommittees for the group: "Ensure Georgia Tech's Research Preeminence" and "Innovate in How we Teach and Learn," respectively.

GVU Ice Cream Social Kicks Off Brown Bags Lecture Series

The GVU Center hosted its traditional Ice Cream Social on Thursday, Aug. 20, in TSRB courtyard to kick off the GVU Brown Bag series.