

**ANNUAL REPORT OF INSTITUTIONAL PROGRESS 2006-2007**  
**MAJOR UNIT ACCOMPLISHMENTS – THE COLLEGE OF COMPUTING**

**IMPROVING APPLICATIONS AND ENROLLMENT**

- Total undergraduate applications grew 9% (From 648 in 06 to 709 in 07)
- Total undergraduate enrollment grew 35% (From 188 in 06 to 253 in 07)
- Total enrollment for BS Computational Media grew 97% (From 34 in 06 to 67 in 07)
- Total applications for master's programs grew 81% (From 407 in 06 to 737 in 07)
- Total applications for doctoral programs grew 22% (From 462 in 06 to 565 in 07)
- Total enrollment for master's programs grew 53% (From 284 in 06 to 435 in 07)
- Total enrollment for MS Computer Science grew 145% (From 94 in 06 to 230 in 07)
- Total enrollment for MS Human-Computer Interaction grew 41% (From 17 in 06 to 24 in 07)
- Total enrollment for MS Information Security grew 230% (From 10 in 06 to 33 in 07)

**IMPROVING APPLICATION AND ENROLLMENT IN WOMEN AND MINORITY STUDENTS**

- BS Computer Science and BS Computational Media total female enrollment grew 7% (From 26 in 2006 to 33 in 2007)
- BS Computer Science and BS Computational Media total minority enrollment grew 140% (From 15 in 2006 to 36 in 2007)

**IMPROVING STUDENT RETENTION AND GRADUATION**

The College of Computing Office of Diversity & Community develops and facilitates the overall enrichment activities that enhance the “soft skills” needed to be successful in college and beyond. The goal of the office is to create an environment that creates a sense of community and creates leaders motivated to make an impact in their chosen field of computing. Some of the imminent programs used to attain such means are as follows:

- INTEL Opportunity Scholars, SAIC Scholars and Undergraduate Research Opportunities in Computing: Each of these programs is designed to attract students as early as their freshmen year to engage in the undergraduate research experiences. Students have the opportunity to partner with graduate student mentors and faculty for a more in-depth view of how computing works.
- Cisco Internet Generation Scholarship, a scholarship that financially supports students as well as enhances student experiential learning opportunities.
- The Lockheed Martin STARS Institute offers a one day training session on developing interpersonal skills, time management, working in teams and public speaking.
- The Computing Professional Development Workshop Series, four professional workshops are held each semester covering topics such as resume writing tips, how to conduct an internship, co-op or job search, diversity in the workplace, and graduate school opportunities among others.
- BOOT UP!, a comprehensive freshmen orientation for all incoming students. This event is geared towards building a sense of community among the new students. The event is led by current computing upperclassmen.

- Student Leadership Organizations, the College of Computing oversees the activities of the following student organizations; the Women@CC, Minorities@CC, CC Ambassadors, UCouncil, Student Activities Board@CC, GT – ACM, and UPE Honor Society
- Peer 2 Peer (P2P) is a peer mentoring program designed to enhance the freshmen transition into college while building a collaborative community among student peer groups. The purpose of P2P is to provide a communication link for the College of Computing and Georgia Tech community in order to connect students to opportunities in areas relating to designated Community Interest Groups (CIGs): Academic, Professional Development, Research, and Student Life and Leadership.

## **RECRUITMENT AND PIPELINE INITIATIVES**

The CoC Office of Diversity & Community promotes the College's commitment to improving diversity while increasing the pipeline of talented students considering a computing major. One of the critical missions of the Office of Diversity & Community is to set the standard for establishing strategic recruitment programs to enhance the college's undergraduate enrollment trends. The following are recruitment activities sponsored through the Office of Diversity & Community:

- The Computing Expo & Cool Computing event which attracts over 300 accepted and prospective students to the college to "preview" the college's academic, enrichment and industry opportunities.
- Women@CC – 24 Hours at Tech!, an overnight program for women granted admission to the College of Computing.
- Family Affair & Welcome Weekend – 24 Hours at Tech, in collaboration with the Office of Admission, these two events are designed to attract underrepresented talent to the college.
- Computing Information Session, hosted weekly and open to general public.
- Computing - High School Group Tours, the college hosts over 20 high schools each semester to visit the facilities and meet with current computer science and computational media students.
- College of Computing - High School Advisory Board, attracts high school college counselors and teachers from across the country to spend 24 hours at Georgia Tech.
- WISDOM through Computing – “Women Innovating Society & Designing Opportunities with Meaning,” The WISDOM event is geared to inform and attract 1st & 2nd year Georgia Tech women that are classified with an “undecided” major to consider the possibilities in computing.

## **NEW FACULTY**

- Richard Vuduc is an assistant professor in the Computational Science and Engineering Division of the College of Computing at Georgia Tech, working in the area of high-performance computing.
- Nathan Clark is an assistant professor in the School of Computer Science. His research interests broadly lie in compilation and computer architecture; more specifically investigating customizing computer architectures for particular application domains, and the compilation/virtualization challenges that arise from such customization.
- Hyesoon Kim is an assistant professor in the School of Computer Science. Her research interests include high-performance energy-efficient computer architectures, programmer-compiler-architecture interaction, low-power high-performance embedded processors, and compiler and hardware support for dynamic optimizations, virtual machines, and binary instrumentation.

- Adam Tauman Kalai is an assistant professor in the School of Computer Science. His research interests include machine learning theory, randomized algorithms, and game theory.
- Yael Kalai is an assistant professor in the School of Computer Science. She received her Ph.D. in cryptography at MIT under the supervision of Shafi Goldwasser. She received her M.S. degree from the Weizmann Institute, and her B.S. degree from the Hebrew University of Jerusalem.
- Karen Liu is an assistant professor in the School of Interactive Computing. Her research interests are in computer graphics and animation, including physics-based animation, character animation, numerical methods, robotics and computational biomechanics.
- Andrea Thomaz is an assistant professor in the School of Interactive Computing. Her research topics include artificial intelligence, robotics, human-computer interaction and machine learning.

## COLLEGE INITIATIVES AND EVENTS

- Symantec Sponsors Tiger Teams Student Competition for Usable Security (September 1, 2006)  
Symantec Corporation sponsored the competition designed to foster research in creating secure systems that are both usable and useful to everyday computer users.
- Institute for Personal Robotics in Education (IPRE) (September 15, 2006)  
The Institute for Personal Robotics in Education (IPRE), a joint effort of the College of Computing, Microsoft Research, and Bryn Mawr College, was created to make education more fun and effective through the use of personal robots.
- **College of Computing Debuts Threads (September 26, 2006)**  
**Incoming freshmen were the first to experience Threads™, a transformational approach to undergraduate computer science education developed by college faculty. With the goal of producing graduates whose skill sets will be difficult to outsource in a globally-competitive marketplace, Threads™ is the basis for a flexible, exciting and innovative computer science curriculum that enables students to pursue lifelong learning and drive real, sustainable value throughout their careers.**
- College of Computing Dedicates Klaus Advanced Computing Building (October 26, 2006)  
The Christopher W. Klaus Advanced Computing Building was dedicated on October 26. Klaus contributed \$15 million to build the facility that houses some of the most advanced computing labs and innovative educational technology in the world.
- College of Computing Designated First STI Center of Competence Focused on Cell Processor (November 15, 2006)  
IBM® Corp., Sony Corporation and Toshiba Corporation selected to partner with the College of Computing at Georgia Tech to build a community of programmers and broaden industry support for the Cell BE processor.
- Computing Awarded NSF Grant to Broaden CS Pipeline (January 23, 2007)  
The College of Computing was awarded a \$2 million grant from the National Science Foundation's (NSF) Broadening Participation in Computing Initiative to expand the pipeline of quality students and faculty at all educational levels and increase the participation of historically under-represented groups such as women and minorities in undergraduate and graduate computer science programs.
- College of Computing Announces Creation of Two Schools (February 16, 2007)  
The College of Computing formed the School of Computer Science and the School of Interactive Computing under the College of Computing umbrella. This move marked the first time a college-level computing program has delineated the field into separate but related bodies of study.

- College of Computing Hosts New Face of Computing Symposium (March 2, 2007)  
More than 200 corporate executives, industry leaders and technologists from across the country attended the New Face of Computing Symposium. Richard A. DeMillo, John P. Imlay Jr. Dean of the College of Computing at Georgia Tech joined featured speaker, Craig Mundie, Chief Research and Strategy Officer at Microsoft Corporation, for an onstage discussion focused on computing's impact across industries, societies and cultures.

## NOTEWORTHY RANKINGS

- Computing Ranked 7th in the World by the Academic Rankings of World Universities (February 14, 2007)  
Georgia Tech was ranked seventh in the world for Computing and Engineering, according to a 2007 academic ranking of world universities by broad subject field published this month by the Institute of Higher Education at the Shanghai Jiao Tong University. The 2007 ranking was the first of its kind for ARWU.
- Computational Media Academic Advising Ranked Best on Campus (May 16, 2007)  
In its April 2007 Report, the Georgia Tech Office of Assessment reported the Computational Media (CM) Interdisciplinary Degree at the College of Computing and the School of Literature, Communication and Culture ranked highest on campus among students for academic advising. 69 CM students surveyed ranked the program's advising with an average score of 3.86 out of 4.
- Computing Grad Programs Ranked 4th in Nation; Professor Ranked 1st in World (May 31, 2007)  
The College of Computing at Georgia Tech was ranked 4th in the Nation for graduate programs in an article published in the June 2007 issue of Communications of the ACM. The article by Jie Ren and Richard N. Taylo also ranks Georgia Tech 3rd in the nation for software engineering and lists Mary Jean Harrold as the number one software engineering scholar in the world.

## RESEARCH CENTER ACCOMPLISHMENTS

- GTISC, BellSouth and ISS Initiate VoIP Security Research Partnership (September 27, 2006)  
The Georgia Tech Information Security Center (GTISC) created a partnership with BellSouth (NYSE:BLS) and Internet Security Systems (NASDAQ: ISSX) to explore security surrounding the emerging Voice over Internet Protocol (VoIP) technology.
- **ARC ThinkTank Created to Solve Challenging Problems from Campus Researchers (November 11, 2006)**  
**Under the leadership of Santosh Vempala, the College of Computing's Algorithms and Randomness Center and ThinkTank was created to focus on a growing field of research: bringing an algorithmic perspective to questions such as how proteins fold, how the brain learns, or how to predict the spread of a virus.**

## FACULTY ACCOMPLISHMENTS

- Kalai and Feamster Win Prestigious Thesis Award (August 8, 2006)  
College of Computing Assistant Professors Yael Kalai and Nick Feamster won the George M. Sprowls Award for the best doctoral theses in computer science
- **Vigoda Wins Fulkerson Prize (August 16, 2006)**  
**College of Computing Associate Professor Eric Vigoda won the 2006 Delbert Ray Fulkerson Prize for his**

**paper titled "A polynomial-time approximation algorithm for the permanent of a matrix with nonnegative entries," co-authored with Mark Jerrum at the University of Edinburgh and Alistair Sinclair at UC Berkeley.**

- **Xu Receives 2006 IBM Faculty Award (August 20, 2006)**  
Associate Professor Jun (Jim) Xu was selected to receive a 2006 IBM Faculty Award for making fundamental contributions to performance evaluation methodologies. Valued at \$30,000, the award is offered in recognition of the quality of faculty programs and their importance to industry.
- **Goel and Rugaber Win NSF Science Of Design Award (August 23, 2006)**  
College of Computing Associate Professor Ashok Goel (PI) and Senior Research Scientist Spencer Rugaber (Co-PI) won a grant from the National Science Foundation (NSF) Science of Design Program. Their proposal titled "Teleological Reasoning in Adaptive Software Design" was awarded \$640,000 over four years, and will enable fundamental contributions toward the design of intelligent software agents.
- **Goodman Appointed Chairperson of National Research Council Committee (August 29, 2006)**  
Computing Science and Systems (CSS) division Professor Sy Goodman was appointed chairperson of the National Research Council Committee on Improving Cyber Security Research in the United States. The committee was charged with developing a coherent strategy for cyber security research for the 21st Century.
- **Bader Receives 2006 IBM Faculty Award (September 7, 2006)**  
Associate Professor David Bader received a 2006 IBM Faculty Award in recognition of his outstanding achievement and importance to industry. The \$40,000 award was given to Bader for making fundamental contributions to the design and optimization of parallel scientific libraries for multicore processors, such as the IBM Cell.
- **Goel Leads NSF Award-Winning Team (September 15, 2006)**  
College of Computing Associate Professor Ashok Goel, along with his research team from Georgia Tech and Rutgers University, won a grant from the National Science Foundation (NSF) Advanced Learning Technology Program. The team will receive approximately \$640,000 over the next three years for the proposal, titled "Learning About Complex Systems by Constructing Structure-Behavior-Function Models."
- **Bader Gives Keynote On Petascale Computing (September 16, 2006)**  
College of Computing Associate Professor David Bader gave an invited keynote on "Petascale Computing for Large-Scale Graph Problems" at the second international conference on High Performance Computing and Communications (HPCC '06) in Munich, Germany.
- **Isbell Selected for Computer Science Study Group Program (September 19, 2006)**  
Assistant Professor Charles Isbell was among 12 junior faculty from across the nation selected for the Computer Science Study Group Program, which qualified him for a \$500,000 government research grant in order to pursue basic computer science research as it relates to the Department of Defense's technology challenges
- **Manolios & Harrold Help Boeing With 787 Dreamliner (September 28, 2006)**  
College of Computing Assistant Professor Pete Manolios and Professor Mary Jean Harrold were awarded over \$250,000 to help Boeing with the development of their new airplane, the 787 Dreamliner. Specifically, Manolios is working on the hosted function allocation problem and Harrold is working on the fault propagation problem.
- **Bader Wins Microsoft Research Award (November 20, 2006)**  
College of Computing Associate Professor David Bader received a \$75,000 award from Microsoft Research to investigate the design and optimization of algorithms that fully exploit multi-core processors.

- Ericson and Guzdial Win NSF Support (November 25, 2006)  
Barbara Ericson, director of computer science outreach and Professor Mark Guzdial, director of undergraduate programs at the College of Computing were awarded funding for yet another National Science Foundation Course, Curriculum, and Laboratory Improvement (NSF CCLI) grant.
- **Nersessian Awarded Distinction of AAAS Fellow (November 28, 2007)**  
**College of Computing Professor of Cognitive Science Nancy Nersessian was one of four Georgia Tech faculty elected by their peers as Fellows of the American Association for the Advancement of Science.**
- **Foley Receives Lifetime Achievement Award from SIGCHI (March 28, 2007)**  
**The Computer Human Interaction Special Interest Group (SIGCHI) within the Association for Computing Machinery (ACM) awarded School of Interactive Computing Professor James D. Foley their Lifetime Achievement Award. The Lifetime Achievement Award is awarded to those who have made the greatest contributions to the study of human-computer interaction (HCI) and who have led the shaping of the field.**
- Abowd Receives Social Impact Award from SIGCHI (March 28, 2007)  
The Computer Human Interaction Special Interest Group (SIGCHI) within the Association for Computing Machinery (ACM) awarded School of Interactive Computing Professor Gregory Abowd their Social Impact Award. The Social Impact Award is given to individuals who promote the application of human-computer interaction research to pressing social needs.
- **Fujimoto and Nersessian Named Regents' Professors for 2007 (April 20, 2007)**  
**College of Computing faculty members Richard Fujimoto and Nancy Nersessian received the only two available Regents' promotions from the Institute for 2007.**
- Bader Joins IBM Technical Leadership Forum (May 4, 2007)  
College of Computing Associate Professor David A. Bader was selected as the first academic member of the IBM Technical Leadership Forum.
- Bader Joins Nation's Brightest Engineers to Tackle Green Issues (June 25, 2007)  
College of Computing Associate Professor David A. Bader was one of eighty-three of the nation's brightest young engineers selected to take part in the National Academy of Engineering's (NAE) 13th annual U.S. Frontiers of Engineering symposium.
- Bader Elected to Serve on Advisory Board for Internet2 (July 27, 2007)  
College of Computing Associate Professor and Executive Director of High-Performance Computing David A. Bader was been elected to the 2007 Internet2 Advisory Council.

### **NSF CAREER Award Winners**

Gabriel Loh, Charles Isbell, Nick Feamster, and Subhash Khot