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Dear Colleagues,

This last year has been once again marked by significant visibility and leadership of the School of Electrical and Computer Engineering at Georgia Tech. Whether in education, research, or service, ECE has been a key player in the Institute’s success and in the growing reputations of Atlanta and the state of Georgia in research, education, and high-tech business.

ECE research awards for fiscal year 2008 reached almost $62.7 million, funding such diverse programs as high-speed electronics for use in work or home entertainment products, assistive devices for the disabled, and robotic and sensing technologies for environmental research, homeland security, or disease detection. We continue to be a dominant player in Georgia Tech commercialization activities, with Suniva and Innovolt, two ECE-based companies in the Advanced Technology Development Center, making headlines. Suniva announced plans to build the first solar cell manufacturing plant in Georgia, and Innovolt launched the most advanced surge protection device developed in the last 20 years.

We granted 698 degrees in the last year, and our enrollments remain the largest among ECE programs in the U.S. Over 2,300 students were enrolled at our Atlanta campus; the Georgia Tech Savannah campus in southeastern Georgia; the Georgia Tech Lorraine campus in Metz, France; and the Georgia Tech Shanghai Initiative in China. Two new graduate degree programs were approved in this last year—a dual M.S. degree program between ECE and Politecnico di Torino in Italy and an interdisciplinary Ph.D. degree program in robotics.

Our faculty members received many well-deserved awards in 2007-08 and moved into leadership positions that are key to Georgia Tech’s future success. Mark Allen and Steve McLaughlin were appointed to top leadership roles in the Georgia Tech Provost’s Office, where they are defining the Institute’s agendas in research and innovation, as well as international initiatives. Bonnie Heck Ferri received the 2007 Hewlett-Packard/Harriet B. Rigas Award from the IEEE Education Society for her outstanding contributions and leadership in ECE education. Elliot Moore became the fifth ECE faculty member to receive a Presidential Early Career Award for Scientists and Engineers, while six faculty members attained Fellow status from several professional societies in the last year.

Our most important products are our students, and they continue to make us proud. For the third year in a row, our chapter of Eta Kappa Nu received an Outstanding Chapter Award for academic excellence and service to ECE students and the community as a whole. Reeve Ingle was named 2007 Student of the Year by the Cooperative Education Division of the American Society of Engineering Education for his outstanding work at NASA Johnson Space Center in Houston. Many more students won scholarships and fellowships and supported K-12 and general community outreach efforts.

It is a great honor and challenge to lead ECE, where we are dedicated to helping make Georgia Tech the best technological university in the world. We are grateful for the support of our corporate and government partners, alumni, and friends who join with us in these endeavors. I invite you to learn more about our accomplishments and to help us make the next year even better.

Gary S. May
Steve W. Chaddick School Chair
School of Electrical and Computer Engineering
Georgia Institute of Technology
The School of Electrical and Computer Engineering at the Georgia Institute of Technology is located in the heart of Atlanta, one of the fastest growing and most diverse markets for high-tech development in the United States. As the largest individual school at Georgia Tech, ECE is a leader in many different areas of research and education and in the Institute’s commercialization activities.

The following statistics detail the size and scope of the School’s operations and represent the Atlanta campus, Georgia Tech Savannah, Georgia Tech Lorraine, and the Georgia Tech Shanghai Initiative.

### STUDENTS

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<td>M.S.</td>
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*Total also includes faculty at GT Savannah and GT Lorraine.

### ECE STATE BUDGET & EXPENDITURES

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<th>STATE BUDGET (Initial FY 08 allocation - $18,110,500)</th>
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<td>Microelectronics Research Center</td>
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<tr>
<td>Total</td>
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</table>

**TOTAL ECE EXPENDITURES** $82,931,379.70

* Includes Georgia Tech Foundation and Agency Funds

### 4 new ECE academic programs/courses

**Dual Master’s Degree Program** Georgia Tech is partnering with two leading Italian universities, the Politecnico di Torino and the University of Trento, to offer dual master’s degrees in ECE and computer science. The new graduate programs, which begin in fall 2008, represent the first in these disciplines between American and Italian universities.  
www.ms-atlantis.gatech.edu

**Interdisciplinary Robotics Doctorate** Georgia Tech’s Colleges of Computing and Engineering will offer the nation’s first interdisciplinary doctoral degree in robotics, starting in fall 2008. The degree program was developed through Tech’s Center for Robotics and Intelligent Machines (RIM@Georgia Tech), a collaborative research center involving both colleges and GTRI.  
www.rim.gatech.edu

**Video Game Programming and Architecture** ECE introduced a new video game programming class to students in fall 2007: Multicore and GPU Programming for Video Games. The course focuses on the architecture and programming of multicore processors and graphical processing units. http://faculty.ece.gatech.edu/aaron.lanterman

**NSF Grant Makes Lab Experience Flexible** A team of ECE faculty received a $500,000 Course, Curriculum, and Laboratory Improvement grant from the National Science Foundation to develop a distributed laboratory environment in ECE. Now in its second year, the program has introduced portable, affordable lab experiments into lecture-based courses throughout the curriculum. (See related article: FERRI, page 3)
Bonnie Heck Ferri was presented with the IEEE Education Society’s 2007 Hewlett-Packard/Harriet B. Rigas Award at the Frontiers in Education Conference, held in Milwaukee, Wis. last October.

This IEEE award recognizes outstanding faculty women who have made significant contributions to electrical and computer engineering education.

As a professor and graduate affairs associate chair for the School, Dr. Ferri is responsible for one of the largest graduate ECE programs in the country.

A talented and highly respected teacher, Dr. Ferri is a leader in curriculum development and in classroom technology applications. In addition to her many educational contributions, Dr. Ferri has held leadership positions in the IEEE Control Systems Society and is involved with many K-12 outreach programs.

Led by Dr. Ferri, a team of ECE personnel received a $500,000 Course, Curriculum, and Laboratory Improvement grant from the National Science Foundation. Now in its second year, the program has introduced portable, affordable lab experiments into lecture-based courses throughout the curriculum. Areas covered include signals and systems, sensors, control systems, power systems, and computer engineering. Designed for ease of use by students and instructors, these modules reinforce theoretical concepts. The web components for each experiment include a tutorial on the fundamental concepts, video demonstrations, and on-line quizzes. Douglas B. Williams, Jennifer E. Michaels, Jill Auerbach, and Joel R. Jackson are also involved in this project.
On April 23, ECE held its seventh annual Roger P. Webb Awards Program at the Technology Square Research Building. Hitachi Telecom CTO David Foote (BEE ’80) and Georgia Power Vice President Leslie Sibert (BEE ’85) co-hosted the event, which honors the students, staff, and faculty who have shown exceptional dedication to their professions and studies. Hitachi Telecom, Areva NP, and Burns & McDonnell provided support for this event.

**FACULTY AWARDS**

Outstanding Junior Faculty Member Award
Ghassan AlRegib, Farrokh Ayazi

ECE Outreach Award
Ayanna Howard

ECE Mentor Award
Joy Laskar

Richard M. Bass/Eta Kappa Nu
Outstanding Teacher Awards
John F. Dorsey, George F. Riley

Distinguished Faculty Achievement Award
Russell D. Dupuis

**STAFF AWARDS**

Hats Off Performance Award
Linda Dillon, Rachel M. Ponder

Research Spotlight Award
Babak Momeni

Academic Spotlight Award
W. Whitfield Smith

**STUDENT AWARDS**

Outstanding ECE Sophomore Award
Tian Kai Woon

ECE Junior Scholar Award
Mitch Costley

ECE Undergraduate Research Award
Renaud Moussounda

Most Outstanding ECE Senior Co-op Award
David Fink

Outstanding Service to Georgia’s Community Award
Warren Rodgers

ECE Faculty Award
Thomas Hanley

Outstanding Electrical Engineering Senior Award
Reeve Ingle

Outstanding Computer Engineering Senior Award
Jose Vidal

ECE Senior Scholar Award
Michael Pierce, Navraj Singh, Mu-Hsin Wei

Colonel Oscar P. Cleaver Awards
Jiaqi Liang, Seyed Payam Alipour Motaallem

2008 ECE faculty awards: (l-r) Ayanna Howard, Farrokh Ayazi, Joy Laskar, John F. Dorsey, Gary S. May, George F. Riley, Ali Adibi (Georgia Tech Faculty Award winner), and Ghassan Al-Regib.

2008 ECE staff awards: (l-r) Judy Lorier (25-Year Service award recipient), Linda Dillon, Gary S. May, Babak Momeni, and Rachel M. Ponder.

2008 ECE undergraduate student awards: (l-r) Mitch Costley, David Fink, Reeve Ingle, Renaud Moussounda, Jose Vidal, Gary May, Hitachi’s David Foote, Michael Pierce, Navraj Singh, and Mu-Hsin Wei.

ECE 2008 graduate student awards: (l-r) Zhensheng Jia, Seyed Payam Alipour Motaallem, Gary May, Thomas Hanley, Majid Badieirostami, and Chris Beall.

ECE Graduate Teaching Assistant Excellence Award
Chris Beall

ECE Graduate Research Assistant Excellence Award
Majid Badieirostami, Zhensheng Jia
Over 2,300 students were enrolled in ECE graduate and undergraduate programs during FY 08, making the School’s programs the largest in the U.S. In the last academic year, 698 degrees were awarded to students at the main campus in Atlanta, Georgia Tech Savannah, and Georgia Tech Lorraine, and to students enrolled in the online master’s/video program.

Undergraduate electrical engineering and computer engineering majors may participate in three different academic initiatives at Georgia Tech—the International Plan, Cooperative Education Plan, and Research Option. Students who successfully complete these programs receive special degree designations on their diplomas.

<table>
<thead>
<tr>
<th>Campus/Program ECE Enrollments Fall 2007</th>
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<tbody>
<tr>
<td>59 Georgia Tech Lorraine</td>
</tr>
<tr>
<td>59 Georgia Tech Savannah</td>
</tr>
<tr>
<td>23 Georgia Tech Shanghai</td>
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<tr>
<td>117 Online Master's/Video</td>
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**STUDENT BODY PROFILE**
(Based on Fall 2007 Enrollment)

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<td><strong>11%</strong></td>
<td><strong>6%</strong></td>
<td><strong>&lt;1%</strong></td>
<td><strong>53%</strong></td>
<td><strong>&lt;1%</strong></td>
<td><strong>9%</strong></td>
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**Grand Total** **2,339**

**DEGREES AWARDED**
(Summer 2007-Spring 2008)

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<td><strong>336</strong></td>
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<td><strong>5%</strong></td>
<td><strong>0%</strong></td>
<td><strong>51%</strong></td>
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<td><strong>Total</strong></td>
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<td><strong>39%</strong></td>
<td><strong>1%</strong></td>
<td><strong>11%</strong></td>
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**Grand Total** **698**

*With home department in ECE
**Degree and enrollment totals include Georgia Tech Lorraine, Georgia Tech Savannah, and online/video master's.
Reeve Ingle Named Top 2007 Co-Op Student by ASEE

Richard “Reeve” Ingle was named 2007 Student of the Year by the Cooperative Education Division of the American Society of Engineering Education. A spring 2008 B.S.E.E. graduate with a minor in Spanish, Mr. Ingle had a 4.0 GPA while at Georgia Tech, and starting this fall, he will pursue Ph.D. studies in EE at Stanford.

Mr. Ingle completed four co-op work terms with NASA Johnson Space Center in Houston and an internship with the U.S. Department of Defense in Ft. Meade, Md. As a co-op student at NASA, he worked on many projects, including the design of a dashboard display unit, developing an RF spectrum map for the SCOUT Project (NASA’s “moon-buggy” robot rover), developing electrical systems drawings for the International Space Station Japanese Experiment Module, and investigating methods of cleaning clothing in space. He also trained to be a back-room flight controller in Mission Control Center, and was the only co-op student selected to support NASA robotics field testing at Meteor Crater, Ariz. in fall 2006.

IEEE Fellowships

Tapobrata Bandyopadhyay received the 2008 IEEE Components, Packaging, and Manufacturing Technology Society Ph.D. Student Fellowship Award for presenting the best student paper at the recent IEEE Electronic Components and Technology Conference. The award-winning paper was entitled “Microwave Design, Fabrication, & Characterization of a Novel Nano-Cu based Ultra-fine Pitch Chip to Package Interconnect.” Mr. Bandyopadhyay is advised by Rao R. Tummala, director of the Microsystems Packaging Research Center.

Diana Fuertes received a 2007-08 IEEE Microwave Theory and Techniques Society Undergraduate/Pregraduate Scholarship. A graduate researcher in John Papapolymerou’s Microwave Circuit Technology Group, Ms. Fuertes is working on the development of low-loss integrated filters and diplexers for wireless microwave and millimeter wave systems.

Anuj Madan received a 2007 IEEE Electron Devices Society Master’s Student Fellowship Award. His research is in the physics of silicon-based heterostructure field effect transistors, including both strained silicon CMOS and SiGe MODFETs. A member of the SiGe Devices and Circuits Group, Mr. Madan is advised by John D. Cressler and plans to pursue a doctorate in the same area.

Eta Kappa Nu Named Outstanding Chapter

For the third year in a row, the Beta Mu chapter of Eta Kappa Nu was named as a recipient of the Outstanding Chapter Award. A significant mark of distinction, this award recognizes a chapter’s service to their fellow students, their department, their university, and the surrounding community during 2006-07. Gary S. May, Steve W. Chaddick School Chair, accepted this award on behalf of HKN and the School at the Electrical and Computer Engineering Department Heads Association Annual Meeting, held in March 2008 in San Diego, Calif.

In the 50 years of the Outstanding Chapter Award’s history, no more than six chapters have won the award three years in a row, putting the Beta Mu chapter of HKN in a very distinguished group of past recipients.

Eta Kappa Nu is the international honor society for electrical and computer engineers. Led by Brent Schreibfeder and Mitch Costley during 2007-08, HKN participates in both academic and community service-oriented activities. The group held its regular...
Bridge to Business meetings and hosted information sessions about applying to graduate school in engineering and M.B.A. programs, applying for fellowships, and learning about the Ph.D. preliminary exam. Twelve student teams presented their original products that benefit local communities or address larger global issues. Using an evaluation process similar to what venture capitalists employ, the competition judges compared product feasibility plans to determine those most likely to succeed.

IEEE Student Branch

IEEE is the world’s leading professional association for the advancement of technology. Chaired by Adam McDaniel in 2007-08, the Georgia Tech student branch of IEEE provides students with ways to enhance their technical skills and professional development, as well as to build a sense of community among its members and ECE students.

Throughout the year, IEEE connected students with faculty and industry professionals. The group hosted 23 corporate presentations, two technical development workshops, and two tours of local companies. Ten ECE faculty members gave presentations about their work, so that students could learn about the latest research and make contacts for future graduate study.

Each year, the IEEE student branch hosts the Student-Professional Awareness Conference and participates in IEEE conferences. A day-long activity, S-PAC helps students to improve their professional skills and their knowledge about engineering and business. This year’s conference focused on job interview tips, setting up and running a business, and patent law. The students also participated in the 2008 IEEE Southeast Conference, held in Huntsville, Ala. They took home the Exemplary Student Branch Award and the Outstanding Student Branch of the Year Award for Region 3; they also placed first in the ethics competition.

Sixth Place Finish at 2007 Solar Decathlon


An international competition sponsored by the U.S. Department of Energy, the Solar Decathlon challenges students to design, build, and operate an 800-square-foot house that can generate enough solar energy to operate a household, a home-based business, and an electric car. Teams were judged in 10 different categories, seven of which focused on energy efficiency; others included design and comfort of the house.

Tech’s team was made up of participants from the Colleges of Engineering, Architecture, Management, and Sciences, including nine students from ECE—Nihar Patel, Amine Alami, Alan Ristow, George Stephopoulos, Seema Ghosh, David Nicol, Nola Li, Petko Petkov, and Matt DeVoe. ECE Professors Ajeet Rohatgi and Ian Ferguson served as faculty advisors.
Ph.D. students graduated

Ninety students received doctorates in 2007-08

Students are grouped by semesters of graduation; advisors, dissertation titles, and employment status are also listed.

**Summer 2007**

<table>
<thead>
<tr>
<th>Name</th>
<th>Advisor</th>
<th>Title</th>
<th>Employment/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kasyapa Balemarthy</td>
<td>Ralph</td>
<td>Electronic Equalization of High-Speed Multi-Mode Fiber Links</td>
<td>Member of technical staff, OFS Fitel-Optical Fiber Division, Hyderabad, India</td>
</tr>
<tr>
<td>Richard Blum</td>
<td>DeWeerth</td>
<td>An Electronic System for Extracellular Neural Stimulation and Recording</td>
<td>Senior design engineer, Integrated Design Technology, Duluth, Ga.</td>
</tr>
<tr>
<td>Shawn Burnham</td>
<td>Doolittle</td>
<td>Improved Understanding and Control of Magnesium-Doped Gallium Nitride by Plasma Assisted Molecular Beam Epitaxy</td>
<td>Research staff member, HRL Laboratories, LLC, Malibu, Calif.</td>
</tr>
<tr>
<td>Ilker Capoglu</td>
<td>G. Smith</td>
<td>Techniques for Handling Multi-Layered Media in the FDTD Method</td>
<td></td>
</tr>
<tr>
<td>Nattapon Chayopitak</td>
<td>Taylor</td>
<td>Performance Assessment and Design Optimization of Linear Synchronous Motors for Manufacturing Applications</td>
<td>Researcher, Industrial Control and Automation Laboratory, National Electronics and Computer Technology Center, Pathumthani, Thailand</td>
</tr>
<tr>
<td>Matthew Clark</td>
<td>Williams</td>
<td>Electronic Dispersion Compensation for Interleaved A/D Converters in a Standard Cell ASIC Process</td>
<td>Communication system engineer, Northrop Grumman IT-TASC, Raleigh, N.C.</td>
</tr>
<tr>
<td>Talal Jaafar</td>
<td>Riley</td>
<td>Simulation-Based Routing Protocols Analyses</td>
<td>Software engineer, Cisco, Research Triangle Park, N.C.</td>
</tr>
<tr>
<td>Meng Ji</td>
<td>Egerstedt</td>
<td>Graph-Based Control of Networked Systems</td>
<td>Senior energy analyst, Edison Mission Marketing and Trading, Boston, Mass.</td>
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<tr>
<td>Jong-Hoon Lee</td>
<td>Tentzeris</td>
<td>High Integrated Three Dimensional Millimeter-Wave Passive Front-End Architectures Using System-on-Package Technologies for Broadband Telecommunications and Multimedia Sensing Applications</td>
<td>Postdoctoral fellow, Georgia Tech, School of ECE, Atlanta, Ga.</td>
</tr>
<tr>
<td>Youngkoo Lee</td>
<td>Habietler</td>
<td>A Stator Turn Fault Detection Method and a Fault-Tolerant Operating Strategy for interior PM Synchronous Motor Drives in Safety-Critical Applications</td>
<td>Senior research engineer, HEV System Engineering Team, Hyundai/Kia Motors, Seoul, South Korea</td>
</tr>
<tr>
<td>Tommaso Melodia</td>
<td>Akyildiz</td>
<td>Communication and Coordination in Wireless Multimedia Sensor and Actor Networks</td>
<td>Assistant professor, Dept. of Electrical Engineering, State University of New York at Buffalo, Buffalo, N.Y.</td>
</tr>
<tr>
<td>Babak Momeni</td>
<td>Adibi</td>
<td>Design and Implementation of Dispersive Photonic Nanostructures</td>
<td>Postdoctoral fellow, School of ECE, Georgia Tech, Atlanta, Ga.</td>
</tr>
<tr>
<td>Souvik Mukherjee</td>
<td>Swaminathan</td>
<td>Layout-level Synthesis and Design-for-Manufacturability Methods for Embedded Passive RF Circuits</td>
<td>Texas Instruments, Dallas, Tex.</td>
</tr>
<tr>
<td>Pratap Muthana</td>
<td>Swaminathan/Tummala</td>
<td>Design of High Speed Packages and Boards Using Embedded Decoupling Capacitors</td>
<td>NVIDIA, San Jose, Calif.</td>
</tr>
<tr>
<td>Symeon Nikolau</td>
<td>Tentzeris/Papapolymerou</td>
<td>Design and Implementation of Compact Reconfigurable Antennas for UWB and WLAN Applications</td>
<td>Professor, Frederick University, Nicosia, Cyprus</td>
</tr>
<tr>
<td>Maneli Noorkami</td>
<td>Mersereau</td>
<td>Secure and Robust Compressed-Domain Video Watermarking for H.264</td>
<td>Program manager, Microsoft Corporation, Mountain View, Calif.</td>
</tr>
<tr>
<td>Name</td>
<td>Affiliation</td>
<td>Research Description</td>
<td>Current Position/Location</td>
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<td>------------------------</td>
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<tr>
<td>Jinsung Park</td>
<td>Laskar</td>
<td>A Highly Linear and Low Flicker-Noise CMOS Direct Conversion Receiver Front-End for Multiband Applications</td>
<td>Senior design engineer, Samsung Electronics Co., Ltd., South Korea</td>
</tr>
<tr>
<td>Dario Pompili</td>
<td>Akyildiz</td>
<td>Efficient Communication Protocols for Underwater Acoustic Sensor Networks</td>
<td>Assistant professor, Rutgers, the State University of New Jersey, Dept. of ECE, Piscataway, N.J.</td>
</tr>
<tr>
<td>Anand Raghavan</td>
<td>Laskar</td>
<td>Interference Cancellation for Collocated Wireless Radios</td>
<td>Design engineer, Freescale, Chicago, Ill.</td>
</tr>
<tr>
<td>Abhinav Saxena</td>
<td>Vachtsevanos</td>
<td>Knowledge-Based Architecture for Integrated Condition-Based Maintenance of Engineering Systems</td>
<td>Staff scientist, NASA Ames Research Center, Mountain View, Calif.</td>
</tr>
<tr>
<td>Ganesh Sundaramoorthi</td>
<td>Yezzi</td>
<td>Global Optimizing Flows for Active Contours</td>
<td>Postdoctoral research fellow, University of California, Computer Science Dept., Los Angeles, Calif.</td>
</tr>
<tr>
<td>Niti Suresh</td>
<td>Jayant</td>
<td>Mean Time between Visible Artifacts in Visual Communications</td>
<td>Research engineer, Georgia Tech, School of ECE/GCATT, Atlanta, Ga.</td>
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<tr>
<td>Sunita Venkataraman</td>
<td>Laskar</td>
<td>Systematic Analysis of the Small-Signal and Broadband Noise Performance of Highly Scaled Silicon-Based Field-Effect Transistors</td>
<td>Design engineer, Texas Instruments, Inc., Houston, Tex.</td>
</tr>
<tr>
<td>Mehmet Vuran</td>
<td>Akyildiz</td>
<td>Correlation-based Cross-layer Communication in Wireless Sensor Networks</td>
<td>Assistant professor, Dept. of Computer Science and Engineering, University of Nebraska, Lincoln, Neb.</td>
</tr>
</tbody>
</table>

**Fall 2007**

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Research Description</th>
<th>Current Position/Location</th>
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<tbody>
<tr>
<td>Richelle Adams</td>
<td>Riley/Wardi</td>
<td>Infinitesimal Perturbation Analysis for Active Queue Management</td>
<td>Assistant lecturer, The University of the West Indies, ECE Dept., St. Augustine, Trinidad and Tobago</td>
</tr>
<tr>
<td>Minsk Ahn</td>
<td>Laskar</td>
<td>Design and Analysis of High Power and Low Harmonic RF Front End for Multi-Band Wireless Application</td>
<td>Senior engineer, Samsung RFIC Design Center, Georgia Tech, Atlanta, Ga.</td>
</tr>
<tr>
<td>Jing Bai</td>
<td>Citrin</td>
<td>Optimization of Optical Nonlinearities of Quantum Cascade Lasers</td>
<td>Assistant professor, University of Minnesota, Dept. of ECE, Duluth, Minn.</td>
</tr>
<tr>
<td>Soumya Chandramouli</td>
<td>Laskar</td>
<td>A Novel Analog Decision-Feedback Equalizer in CMOS for Serial 10-Gb/Sec Data Transmission Systems</td>
<td>Senior circuit design engineer, National Semiconductor, Atlanta, Ga.</td>
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<tr>
<td>YuSun Chang</td>
<td>Copeland</td>
<td>Dynamic Optimal Fragmentation with Rate Adaptation in Wireless Mobile Networks</td>
<td>Postdoctoral fellow, Georgia Tech, School of ECE, Atlanta, Ga.</td>
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<tr>
<td>Arumugam Chandramalai-Kannan</td>
<td>Barry</td>
<td>Communication Strategies for Single User and Multiuser Slow Fading Channels</td>
<td>Staff systems scientist, Broadcom Corporation, San Diego, Calif.</td>
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<tr>
<td>Seong-O Choi</td>
<td>M. Allen</td>
<td>An Electrically Active Microneedle Electroporation Array for Intracellular Delivery of Biomolecules</td>
<td>Postdoctoral fellow, Georgia Tech, School of Chemical and Biomolecular Engineering, Atlanta, Ga.</td>
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<td>Lu Dong</td>
<td>Ingram</td>
<td>MIMO Selection and Modeling Evaluations for Indoor Wireless Environments</td>
<td>Senior hardware engineer, LinkQuest, Inc., San Diego, Calif.</td>
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<tr>
<td>Name</td>
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<td>Peter Kirby</td>
<td>Papapolymerou</td>
<td>Development of Signal Sources for Millimeter and Submillimeter Wave Output</td>
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<td>Teahyung Lee</td>
<td>Anderson</td>
<td>Algorithm-Based Efficient Approaches for Motion Estimation Systems</td>
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<td>Kent Nakashima</td>
<td>Rohatgi</td>
<td>Understanding of Defect Passivation and Its Effect on Multicrystalline Silicon Solar Cell Performance</td>
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<td>Rajesh Narasimha</td>
<td>McLaughlin/Ji</td>
<td>Application of Information-Theory and Learning to Network and Biological Tomography</td>
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<td>Marcos Orchard</td>
<td>Vachtsevanos</td>
<td>A Particle Filtering-Based Framework for On-Line Fault Diagnosis and Failure Diagnosis</td>
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<td>Bevin Perumana</td>
<td>Laskar</td>
<td>Low-Power CMOS Front-Ends for Wireless Personal Area Networks</td>
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<tr>
<td>Kiran PuttaSwamy</td>
<td>Loh (CoC)/H.S.-S. Lee</td>
<td>Designing High-Performance Microprocessors in 3-D Integration Technology</td>
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<td>Nazanin Rahnavard</td>
<td>Fekri</td>
<td>Coding for Wireless Ad-Hoc and Sensor Networks: Unequal Error Protection and Efficient Data Broadcasting</td>
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<td>Sira Rao</td>
<td>Jayant</td>
<td>Elastic Algorithms for Region-of-Interest Video Compression with Applications to Mobile Telehealth</td>
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<td>Saikal Sarkar</td>
<td>Laskar</td>
<td>Silicon-Based Millimeter-Wave Front-End Development for Multi-Gigabit Wireless Applications</td>
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<td>Padmanava Sen</td>
<td>Laskar</td>
<td>Estimation and Optimization of Layout Parasitics for Silicon-Based Millimeter-Wave Integrated Circuits</td>
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<td>Jae Hyeong Seo</td>
<td>Brand</td>
<td>Silicon-Based Resonant Microsensor Platform for Chemical and Biological Applications</td>
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<td>Guillermo Serrano</td>
<td>Hasler</td>
<td>High Performance Analog Circuit Design Using Floating-Gate Techniques</td>
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<td>Ajit Sharma</td>
<td>Ayazi</td>
<td>CMOS Systems and Circuits for Sub-Degree per Hour MEMS Gyroscopes</td>
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<td>Sudarshan Srinivasan</td>
<td>Manolios (CoC)</td>
<td>Efficient Verification of Bit-Level Pipelined Machines Using Refinement</td>
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<tr>
<td>Arun Subbiah</td>
<td>Blough</td>
<td>Efficient Proactive Security for Sensitive Data Storage</td>
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<td>Wansuk Yun</td>
<td>Swaminathan</td>
<td>Design, Modeling, and Characterization of Embedded Passives and Interconnects in Inhomogeneous Liquid Crystalline Polymer Substrates</td>
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<tr>
<td>Chunming Zhao</td>
<td>Zhou</td>
<td>Distortion-Based Crest Factor Reduction Algorithms in Multi-Carrier Transmission Systems</td>
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<tr>
<td>Wei Zhou</td>
<td>Habetler</td>
<td>Incipient Bearing Fault Detection for Electric Machines Using Stator Current Noise Cancellation</td>
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**Spring 2008**

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<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
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<tbody>
<tr>
<td>Reza Abdolvand</td>
<td>Ayazi</td>
<td>Thin-Film Piezoelectric-on-Substrate Resonators and Narrowband Filters</td>
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<tr>
<td>Toygar Akgun</td>
<td>Altunbasak</td>
<td>Resolution Enhancement Using Natural Image Statistics and Multiple Aliased Observations</td>
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<td>Chinnakrishnan Bal-</td>
<td>H.-H.S. Lee</td>
<td>Semantics-Oriented Low Power Architecture</td>
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<tr>
<td>Milind Borkar</td>
<td>McClellan</td>
<td>A Distributed Monte Carlo Method for Initializing State Vector Distributions in Heterogeneous Smart Sensor Networks</td>
</tr>
<tr>
<td>Tae-Young Chang</td>
<td>Sivakumar</td>
<td>User-Activity Aware Strategies for Mobile Information Access</td>
</tr>
<tr>
<td>Adam Cobb</td>
<td>J. Michaels</td>
<td>A State Estimation Framework for Ultrasonic Structural Health Monitoring of Fastener Hole Fatigue Cracks</td>
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<tr>
<td>Samuel Dambreville</td>
<td>Tannenbaum</td>
<td>Statistical and Geometric Methods for Shape-Driven Segmentation and Tracking</td>
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<tr>
<td>Qiang Fu</td>
<td>Juang</td>
<td>A Generalization of the Minimum Classification Error Training Method for Speech Recognition and Detection</td>
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<tr>
<td>Chao Ray Hsieh</td>
<td>Adibi</td>
<td>Ultra-Compact Holographic Spectrometers for Diffuse Source Spectroscopy</td>
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<tr>
<td>Neeraj Keskar</td>
<td>Rincón-Mora</td>
<td>High-Bandwidth, Wide L-C R&lt;sub&gt;u&lt;/sub&gt; Compliant Sigma-Delta Boost DC-DC Switching Converters</td>
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<td>Dong Kwon Kim</td>
<td>Citrin</td>
<td>Optical Properties of Asymmetric Double Quantum Wells and Optimization for Optical Modulators</td>
</tr>
</tbody>
</table>

Assistant professor, School of ECE, Oklahoma State University, Stillwater, Okla.

Software engineer, NVIDIA, Munich, Germany

Senior computer architect, Intel Corporation, Folsom, Calif.

Systems development engineer, Texas Instruments, Dallas, Tex.

Software engineer, Xicocm Wireless, Duluth, Ga.

Research engineer, Southwest Research Institute, San Antonio, Tex.

Strategy consultant, Boston Consulting Group, Zurich, Switzerland

Staff scientist, Broadcom Corporation, Irvine, Calif.

Research engineer, Prospect Photonics, Atlanta, Ga.

IC design engineer, Texas Instruments, Manchester, N.H.

Senior research engineer, Samsung Electronics, Suwon, Gyeonggi, South Korea
The ECE Student-Faculty Committee

The ECE Student-Faculty Committee promotes increased interactions and better relations among the School’s students and faculty. Varun Prasad and Jeffrey A. Davis were the student chair and faculty chair, respectively, during 2007-08.

During this past year, the ECE SFC co-sponsored Family Weekend in early October, giving parents a chance to visit ECE facilities and to meet faculty and administrators; the Committee also hosted lab tours for Atlanta area school groups throughout the entire year. The fourth annual ECE Fair was held in April 2008—giving students opportunities to learn more about the School and its research and educational programs. Throughout the year, this group and the Undergraduate Professional Communications Program coordinated production for ecesis—a webzine consisting of art, music, and written pieces—and hosted a launch party for the publication during the ECE Fair.

Women in Electrical and Computer Engineering

Women in Electrical and Computer Engineering aims to increase awareness of opportunities for women in ECE and to help women reach their full potential as engineers and leaders. Sarah Mazul served as the organization’s president during 2007-08.

In the last year, WECE worked with area middle schools and high schools. They hosted ECE lab tours for 178 students from six metro Atlanta area high schools and also took part in Youth Motivation Day activities at Douglass High School. The group co-sponsored the 2008 State of Georgia FIRST LEGO League Challenge for students ages 9-14.

WECE hosted many social and professional development events in 2007-08. The group’s annual Halloween party and bowling nights attract a wide cross-section of faculty, staff, and undergraduate and graduate students. Alumni and industrial sponsors continued to become increasingly involved with WECE, helping to sponsor not only the group’s main social activities, but also funding smaller social gatherings and speaking at seminars on workplace issues, business etiquette, technical topics, and graduate studies. This year, two of their major professional development activities were a job interview behavior workshop and a luncheon with managers and executives from Harris Corporation.

The largest undertaking for the ECE SFC is the planning and coordination of the annual State of Georgia FIRST LEGO® League Challenge, which was held on February 9, 2008 at the Georgia Tech Student Center. The ECE SFC co-hosts this annual event with the Center for Education Integrating Science, Mathematics, and Computing.

The Transformers, a home-schooled team from Marietta, Ga., took home first place after competing with 48 other teams. More than 1,600 students, ages 9 to 14, competed in one of nine qualifier tournaments during the fall months of 2007, with the winners competing in the February 9 event. This year’s Challenge theme was “Power Puzzle: Energy Sources Meeting the Global Demand.” Students built and programmed LEGO MINDSTORMS robots that implemented different energy choices for heating homes, fueling cars, charging cell phones, powering computers, and even downloading music to MP3 players.
ECE faculty members are international leaders in 10 areas of research and education – bioengineering, computer engineering, digital signal processing, electrical energy, electromagnetics, electronic design and applications, microsystems, optics and photonics, systems and controls, and telecommunications – and the School is either home to or a key player in more than 20 research centers and consortia.

One hundred fifteen faculty members were employed during 2007-08, with 80 percent holding tenure and all holding doctorates. The average age of the faculty was 47. Statistics detailing academic rank and diversity are provided below. A list of all ECE faculty members, their primary technical interest groups, and any consortium/center leadership can be found on pages 14-16.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Tenured</th>
<th>Diversity</th>
<th>Faculty Distinctions</th>
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<tbody>
<tr>
<td>Regents’ Professors</td>
<td>5</td>
<td>5</td>
<td>Funded chairs/professorships 32</td>
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<tr>
<td>Professors</td>
<td>61</td>
<td>60</td>
<td>Georgia Research Alliance Eminent Scholars 8</td>
</tr>
<tr>
<td>Associate Professors</td>
<td>31</td>
<td>27</td>
<td>National Academy of Engineering members 5</td>
</tr>
<tr>
<td>Assistant Professors</td>
<td>18</td>
<td>1</td>
<td>IEEE Fellows 37</td>
</tr>
<tr>
<td>Total*</td>
<td>115</td>
<td>12</td>
<td>Presidential Early Career Award in Science and Engineering recipients 5</td>
</tr>
</tbody>
</table>

**New Faculty**

**Saibal Mukhopadhyay, Assistant Professor**
Research interests: Low-power, variation tolerant, and reliable VLSI systems; memory design for VLSI applications; ultra-low power and fault tolerant nanoelectronics

**Jongman Kim, Assistant Professor**
Research interests: System-on-chip/multicore architectures; on-chip networks; memory-based solutions; high performance computing; 3D architecture

**Hongwei Wu, Assistant Professor**
Research interests: Computational biology/bioinformatics; functional genomics; comparative genomic analysis; computational systems biology; biological network modeling; computational intelligence theories and applications

**Fumin Zhang, Assistant Professor**
Research interests: Mobile sensor networks; autonomous underwater vehicles; motion planning in complex environments; power constrained control and energy harvesting; adaptive ocean and air sampling; geometric/nonlinear systems and controls

**CHAISED PROFESSORSHIPS**

**Edward J. Coyle**
*Arbutus Chair in Distributed Engineering Education; Georgia Research Alliance Eminent Scholar; and Director, Arbutus Center for Distributed Engineering Education*
Research interests: Feedback control and systems theory; game theory; multiagent systems

**Jeff Shamma**
*Julian T. Hightower Chair in Systems and Controls*
Research interests: Feedback control and systems theory; game theory; multiagent systems

**Wayne H. Wolf**
*Rhesa “Ray” S. Farmer, Jr. Distinguished Chair in Embedded Computing Systems and Georgia Research Alliance Eminent Scholar*
Research interests: Embedded computing architectures, software for embedded computing; methodologies and tools for embedded computing system design; smart cameras and phones; VLSI systems; biochips
American Institute for Medical and Biological Engineering

Robert J. Butera, Jr. was one of four Georgia Tech College of Engineering faculty named a Fellow of the American Institute for Medical and Biological Engineering, an umbrella group of 14 bio/biomedical engineering societies “for contributions to computational neuroscience, novel approaches to electrophysiology experiments, and neuroengineering.”

SPIE

Bernard Kippelen was named one of 72 new Fellows of SPIE and was honored for his achievements in organic optoelectronic applications. His research areas include the development of organic materials for organic light-emitting devices; the development of high-efficiency solar cells based on organic polycrystalline materials; the use of liquid crystals for switchable electroactive diffractive lenses; optically pumped organic lasers; and organic field-effect transistors. He has also served in various leadership roles for many SPIE conferences.

Institute of Electrical and Electronics Engineers

Citations for our newest IEEE Fellows are as follows:

J. Stevenson Kenney - for contributions to microwave power amplifier design, characterization, and linearization.

Vijay K. Madisetti - for contributions to embedded computing systems.

Waymond R. Scott, Jr. - for contributions to the detection of buried objects using ground penetrating radar.

William L. Melvin - for contributions to adaptive signal processing methods in radar systems (adjunct faculty member with GTRI).

Hans B. Püttgen - for contributions to international engineering education and electrical energy research development (Professor Emeritus, now with EPFL, Swiss Federal Institute of Technology in Lausanne).
REGENTS’ PROFESSORS

Mark G. Allen
Senior Vice Provost for Research and Innovation; Joseph M. Pettit Professor in Microelectronics; Co-Director, Center for MEMS and Microsystems Technologies
Ph.D., Massachusetts Institute of Technology Microelectronics

Thomas K. Gaylord
Julius Brown Chair Professor
Ph.D., Rice University
Optics and photonics

Russell M. Mersereau
Joseph M. Pettit Professor in Digital Signal Processing (retired May 1, 2008)
Sc.D., Massachusetts Institute of Technology Digital signal processing

Ajeet Rohatgi
Georgia Power Distinguished Professor; Director of the University Center of Excellence for Photovoltaics Research and Education
Ph.D., Lehigh University
Electrical energy; microsystems
2008 Georgia Sierra Club Community Award

Glenn S. Smith
John Pippin Chair in Electromagnetics
Ph.D., Harvard University
Electromagnetics; electronic design and applications

PROFESSORS

Ian F. Akyildiz
Byers Professor in Telecommunications
Ph.D., University of Erlangen Telecommunications

John R. Barry
Ph.D., University of California at Berkeley Telecommunications

Miroslav M. Begovic
Ph.D., Virginia Polytechnic Institute and State University Electrical energy

Douglas M. Blough
Co-Director, Center for Experimental Research in Computer Systems
Ph.D., The Johns Hopkins University Computer engineering

John A. Buck
Ph.D., University of California at Berkeley Electromagnetics; optics and photonics

Gee-Kung Chang
Byers Endowed Professor in Optical Networking and GRA Eminent Scholar
Ph.D., University of California at Riverside Optics and photonics; telecommunications

Abhijit Chatterjee
Ph.D., University of Illinois at Urbana-Champaign Computer engineering

David S. Citrin
Ph.D., University of Illinois at Urbana-Champaign Optics and photonics

Mark A. Clements
Joseph M. Pettit Professor in Digital Signal Processing (effective July 1, 2008); Director, Interactive Media Technology Center
Sc.D., Massachusetts Institute of Technology Bioengineering; digital signal processing

John A. Copeland
John H. Weibnauer, Jr. Technology Transfer Chair; GRA Eminent Scholar; and Director, Communications Systems Center
Ph.D., Georgia Institute of Technology Telecommunications

Edward J. Coyle
Arbustus Chair in Distributed Engineering Education; GRA Eminent Scholar; and Director, Arbustus Center for Distributed Engineering Education
Ph.D., University of Delaware Digital signal processing

John D. Cressler
Byers Professor
Ph.D., Columbia University
Electronic design and applications; microsystems

Deepak Divan
Director, Intelligent Power Infrastructure Consortium
Ph.D., University of Calgary Electrical energy

John F. Dorsey
Ph.D., Michigan State University Systems and controls
2008 Richard M. Bass/Eta Kappa Nu Outstanding Teacher Award

Russell D. Dupuis
Steven W. Chaddick Endowed Chair in Electro-optics; GRA Eminent Scholar; and Director, Center for Compound Semiconductors
Ph.D., University of Illinois at Urbana-Champaign Microsystems; optics and photonics

Iain T. Ferguson
Ph.D., University of St. Andrews in Scotland Microsystems; optics and photonics

Bonnie Heck Ferri
Associate Chair for ECE Graduate Affairs
Ph.D., Georgia Institute of Technology Computer engineering; systems and controls
2007 Hewlett Packard/Harriet B. Rigas Award, given by the IEEE Education Society

A. Bruno Frazier
Co-Director, Center for MEMS and Microsystems Technologies
Ph.D., Georgia Institute of Technology Bioengineering; microsystems

Thomas G. Habetler
Ph.D., University of Wisconsin at Madison Electrical energy

 Ronald G. Harley
 Duke Power Company Distinguished Professor
 Ph.D., London University
 Electrical energy
 2009 IEEE Richard Harold Kaufmann Award “for his contributions to monitoring, control, and optimization of electrical processes including electrical machines and power networks”

Joseph L. A. Hughes
Senior Associate Chair
Ph.D., Stanford University Computer engineering; microsystems; telecommunications
2007 Ronald J. Schmitz Award, given by the Frontiers in Education Conference

William D. Hunt
Ph.D., University of Illinois at Urbana-Champaign Bioengineering; microsystems

Mary Ann Ingram
ADVANCE Professor of Engineering
Ph.D., Georgia Institute of Technology Telecommunications

Nikhil S. Jayant
Executive Director, Georgia Centers for Advanced Telecommunications Technology; Director, Georgia Tech Broadband Institute; John Pippin Chair in Wireless Systems; and GRA Eminent Scholar
Ph.D., Indian Institute of Science, Bangalore Computer engineering; telecommunications

Biling-Hwang (Fred) Juang
Motorola Foundation Chair Professor and GRA Eminent Scholar
Ph.D., University of California at Santa Barbara Digital signal processing; telecommunications

David C. Keezer
Ph.D., Carnegie-Mellon University Computer engineering; microsystems

Bernard Kippelen
Associate Director, Center for Organic Photonics and Electronics; Associate Director, Materials and Devices for the Information Technology Research Center
Ph.D., Université Louis Pasteur Microsystems; optics and photonics
2008 SPIE Fellow “for achievements in organic optoelectronic applications”

Joy Laskar
Director; Georgia Electronic Design Center; Schlumberger Chair in Microelectronics
Ph.D., University of Illinois at Urbana-Champaign
Electromagnetics; electronic design and applications; microsystems
2008 ECE Distinguished Mentor Award

W. Marshall Leach, Jr.
Ph.D., Georgia Institute of Technology
Electromagnetics; electronic design and applications; microsystems
2006-07 IEEE Outstanding Branch Counselor and Advisor Award

Chin-Hui Lee
Ph.D., University of Washington
Digital signal processing

Ye (Geoffrey) Li
Ph.D., Auburn University
Telecommunications

Vijay K. Madisetti
Ph.D., University of California at Berkeley
Computer engineering; digital signal processing
2008 IEEE Fellow "for contributions to embedded computing systems"

Gary S. May
Steve W. Chaddick School Chair
Ph.D., University of California at Berkeley
Microsystems; systems and controls
2007-08 Class of the National Commission for Cooperative Education Hall of Fame

James H. McClellan
John and Marita McCarty Chair of Electrical Engineering; Director, Center for Signal and Image Processing
Ph.D., Rice University
Computer engineering; digital signal processing

Steven W. McLaughlin
Vice Provost for International Initiatives; Byers Professor
Ph.D., University of Michigan at Ann Arbor
Telecommunications

James D. Meindl
Joseph M. Pettit Chair in Microelectronics; Director, Microelectronics Research Center; and Founding Director, Nanotechnology Research Center
Ph.D., Carnegie-Mellon University
Microsystems

A.P. Sakis Mellopoulos
Georgia Power Distinguished Professor
Ph.D., Georgia Institute of Technology
Electrical energy; systems and controls

Henry L. Owen
Associate Director, Georgia Tech Information Security Center
Ph.D., Georgia Institute of Technology
Computer engineering; telecommunications

Krishna V. Palem (resigned September 6, 2007)
Ph.D., University of Texas at Austin
Computer engineering

John B. Peatman
Ph.D., Case Western Reserve University
Computer engineering

Andrew F. Peterson
Associate Chair for ECE Faculty Development
Ph.D., University of Illinois at Urbana-Champaign
Electromagnetics
2008 Fellow of the Applied Computational Electromagnetics Society

Stephen E. Ralph
Ph.D., Cornell University
Electromagnetics; Microsystems; optics and photonics

Waymond R. Scott, Jr.
Ph.D., Georgia Institute of Technology
Electromagnetics
2008 IEEE Fellow "for contributions to the detection of buried objects using ground penetrating radar"

Jeff S. Shamma
Julian T. Hightower Chair in Systems and Controls
Ph.D., Massachusetts Institute of Technology
Systems and controls

Paul G. Steffes
Associate Chair for ECE Research
Ph.D., Stanford University
Electromagnetics; telecommunications

Gordon L. Stüber
Joseph M. Pettit Professor in Communications
Ph.D., University of Waterloo
Computer engineering; telecommunications

Madhavan Swaminathan
Joseph M. Pettit Professor in Electronics; Deputy Director, Microsystems Packaging Research Center
Ph.D., Syracuse University
Computer engineering; electromagnetics

Allen Tannenbaum
Julian Hightower Professor
Ph.D., Harvard University
Bioengineering; systems and controls

David G. Taylor
Ph.D., University of Illinois at Urbana-Champaign
Systems and controls

Rao R. Tummala
Director, Microsystems Packaging Research Center; Joseph M. Pettit Chair in Electronics Packaging; GRA Eminent Scholar
Ph.D., University of Illinois at Urbana-Champaign
Computer engineering; Microsystems

George J. Vachtsevanos (retired August 31, 2007)
Ph.D., The City University of New York
Bioengineering; systems and controls

Erik I. Verriest
Ph.D., Stanford University
Optics and photonics; systems and controls

Yoral Y. Wardi
Ph.D., University of California at Berkeley
Computer engineering; systems and controls; telecommunications

Douglas B. Williams
Associate Chair for ECE Undergraduate Affairs
Ph.D., Rice University
Digital signal processing

D. Scott Wills
Sc.D., Massachusetts Institute of Technology
Computer engineering

Wayne H. Wolf
Rhema “Ray” S. Farmer, Jr. Distinguished Chair in Embedded Computing Systems and GRA Eminent Scholar
Ph.D., Stanford University
Computer engineering

G. Tong Zhou
Director, Georgia Tech Shanghai Initiative
Ph.D., University of Virginia
Bioengineering; digital signal processing

ASSOCIATE PROFESSORS

Ali Adibi
Director, Advanced Processing-tools for Electromagnetic/Acoustic Xtls
Ph.D., California Institute of Technology
Optics and photonics
2008 Georgia Tech Outstanding Faculty Leadership for the Development of Graduate Research Assistants Award; 2007 SPIE Technology Achievement Award

Yucef Altmubesak
Ph.D., University of Rochester
Digital signal processing

David V. Anderson
Ph.D., Georgia Institute of Technology
Computer engineering; digital signal processing

Farnoor Ayazi
Co-Director, Center for MEMS and Microsystems Technologies
Ph.D., University of Michigan at Ann Arbor
Electronic design and applications; Microsystems
2008 ECE Outstanding Junior Faculty Member Award

Oliver Brand
Co-Director, Center for MEMS and Microsystems Technologies
Ph.D., ETH-Zurich
Bioengineering; Microsystems

Robert J. Butera, Jr.
Ph.D., Rice University
Bioengineering; computer engineering
2008 Fellow of the American Institute for Medical and Biological Engineering “for contributions to computational neuroscience, novel approaches to electrophysiology experiments, and neuroengineering”

Jeffrey A. Davis
Ph.D., Georgia Institute of Technology
Computer engineering
W. Alan Doolittle  
Ph.D., Georgia Institute of Technology  
Microsystems  
2008 Georgia Tech Outstanding Achievement in Research Program Development Award

Magnus Egerstedt  
Ph.D., Royal Institute of Technology, Stockholm, Sweden  
Computer engineering; systems and controls

Faramarz Fekri  
Ph.D., Georgia Institute of Technology  
Digital signal processing; telecommunications

Paul E. Hasler  
Ph.D., California Institute of Technology  
Computer engineering; electronic design and applications

Ayanna Howard  
Ph.D., University of Southern California  
Systems and controls  
2008 ECE Outreach Award

Chuanyi Ji  
Ph.D., Georgia Institute of Technology  
Electronic design and applications; telecommunications  
2008 IEEE Fellow “for contributions to microwave power amplifier design, characterization, and linearization”

Arthur Koblasz  
Ph.D., California Institute of Technology  
Bioengineering

Kevin T. Kornegay  
Motorola Foundation Professor  
Ph.D., University of California at Berkeley  
Electronic design and applications; microsystems

Aaron D. Lanterman  
Ph.D., Washington University in St. Louis  
Digital signal processing

Sung Kyu Lim  
Ph.D., University of California at Los Angeles  
Computer engineering  
2007-08 Hesburgh Teaching Fellow

Jennifer E. Michaels  
Ph.D., Cornell University  
Digital signal processing; systems and controls

Linda S. Milor  
Ph.D., University of California at Berkeley  
Electronic design and applications

Vincent J. Mooney, III  
Co-Director, Center for Research on Embedded Systems and Technology  
Ph.D., Stanford University  
Computer engineering

Ioannis (John) Papapolymerou  
Director, Georgia Tech Analog Consortium  
Ph.D., University of Michigan at Ann Arbor  
Electromagnetics; electronic design and applications

George F. Riley  
Ph.D., Georgia Institute of Technology  
Computer engineering  
2007-08 Hesburgh Teaching Fellow; 2008 Richard M. Bass/Eta Kappa Nu Outstanding Teacher Award

Gabriel Rincón-Mora  
Ph.D., Georgia Institute of Technology  
Electrical energy; electronic design and applications

David E. Schimmel  
Ph.D., Cornell University  
Computer engineering

Raghupathy Sivakumar  
Ph.D., University of Illinois at Urbana-Champaign  
Telecommunications

Emmanouil M. Tentesiris  
Ph.D., University of Michigan at Ann Arbor  
Electromagnetics

Linda M. Wills  
Ph.D., Massachusetts Institute of Technology  
Computer engineering

Anthony J. Yezzi, Jr.  
Ph.D., University of Minnesota  
Bioengineering; computer engineering; systems and controls

ASSISTANT PROFESSORS

Pamela T. Bhatti  
Ph.D., University of Michigan at Ann Arbor  
Bioengineering; microsystems

Gregory D. Durgin  
Ph.D., Virginia Polytechnic Institute and State University  
Electromagnetics

Maysam Ghovanloo  
ON Semiconductor Junior Professor  
Ph.D., University of Michigan at Ann Arbor  
Bioengineering; electronic design and applications

Hsien-Hsin Sean Lee  
Ph.D., University of Michigan at Ann Arbor  
Computer engineering

Xiaoli Ma  
Ph.D., University of Minnesota  
Digital signal processing

Saibal Mukhopadhyay  
Ph.D., Purdue University  
Microsystems; computer engineering

Justin K. Romberg  
Ph.D., Rice University  
Digital signal processing  
Office of Naval Research Young Investigator Award

Sotirios (Sot) Samara  
Ph.D., University of Michigan at Ann Arbor  
Optics and photonics

Georgios Tzes  
Ph.D., University of Illinois at Urbana-Champaign  
Microsystems

ASSISTANT PROFESSORS

Abdallah Ouazazaden  
Director, International Research Unit on Telecommunications and Innovative Materials Research  
Ph.D., University of Paris VII  
Microsystems; optics and photonics

Paul L. Voss  
Demetrius T. Paris Professor  
Ph.D., Northwestern University  
Optics and photonics

Georgia Tech Savannah Faculty

PROFESSOR

Monson H. Hayes, III  
Associate Chair for ECE Programs at Georgia Tech Savannah  
Sc.D., Massachusetts Institute of Technology  
Digital signal processing

ASSOCIATE PROFESSORS

Christopher F. Barnes  
Ph.D., Brigham Young University  
Digital signal processing

P. Douglas Yoder  
Ph.D., University of Illinois at Urbana-Champaign  
Microsystems

ASSISTANT PROFESSORS

Randal T. Abler  
Ph.D., Georgia Institute of Technology  
Computer engineering

Benjamin D.B. Klein  
Ph.D., University of Illinois at Urbana-Champaign  
Optics and photonics

Elliot Moore, III  
Ph.D., Georgia Institute of Technology  
Digital signal processing  
2006 Presidential Early Career Award for Scientists and Engineers

Hongwei Wu  
Ph.D., University of Southern California  
Bioengineering; digital signal processing

Fumin Zhang  
Ph.D., University of Maryland at College Park  
Systems and controls

Ying Zhang  
Ph.D., University of California at Berkeley  
Microsystems

Georgia Tech Lorraine Faculty

PROFESSOR

Abdallah Ouazazaden  
Director, International Research Unit on Telecommunications and Innovative Materials Research  
Ph.D., University of Paris VII  
Microsystems; optics and photonics

ASSISTANT PROFESSOR

Paul L. Voss  
Demetrius T. Paris Professor  
Ph.D., Northwestern University  
Optics and photonics
professional education

During 2007-08, both active and retired ECE faculty members offered 27 professional education courses and three conferences through the Georgia Tech Professional Education Office to a total number of 1,085 attendees (593 for conferences, and 492 for courses). Below is a listing of dates, titles, and ECE-based instructors. All courses were taught at the Georgia Tech Atlanta campus unless indicated otherwise. Three ECE-sponsored conferences and four online courses are included in this list.

2007

June 18-22
Near-Field Antenna Measurements and Microwave Holography
Edward B. Joy (Boulder, Colo.)

July 1, 2007-June 30, 2008
Fundamentals of Engineering – Online Course
W. Russell Callen, Jr.

July 23-November 29
DSP for Practicing Engineers – Online Course
Douglas B. Williams

September 5-October 22
Fundamentals of Engineering
W. Russell Callen, Jr.

September 10-13
Signal Processing for Efficient Hardware Implementation
David V. Anderson

September 24-28
Fundamentals of RF and Wireless Engineering
Emmanouil M. Tentzeris, Ioannis (John) Papapolymerou, Joy Laskar

September 25-27
Power Distribution System Grounding and Transients
A.P. Sakis Meliopoulos, George Cockinides

October 1-5
Fundamentals of Synthetic Aperture Radar Signal Processing
Mark A. Richards

October 15-17
15th Annual IFIP International Conference
Vincent J. Mooney (administrator)

October 22-25
Power System Relaying: Theory and Application
A.P. Sakis Meliopoulos, George Cockinides

October 22-26
Far-Field, Anechoic Chamber, Compact, and Near-Field Antenna Measurements
Edward B. Joy

October 29, 2007-February 5, 2008
DSP for Practicing Engineers – Online Course
Douglas B. Williams

November 13-15
Signal Processing Refresher
Mark A. Richards

November 26-29
Synthetic Aperture Radar Image Formation Processing
Christopher F. Barnes (Las Vegas, Nev.)

November 7-9
Modern Energy Management Systems
A.P. Sakis Meliopoulos

December 3-7
Antenna Engineering
Edward B. Joy, Waymond R. Scott, Jr., and Glenn S. Smith (Las Vegas, Nev.)

2008

February 13-March 31
Fundamentals of Engineering
W. Russell Callen, Jr.

February 23-April 5
Electrical Engineering: Preparation for the P.E. Exam
W. Russell Callen, Jr.

March 17-20
Synthetic Aperture Radar Image Formation Processing
Christopher F. Barnes (Georgia Tech Savannah campus)

March 18-21
Fundamentals of Radar Signal Processing
Mark A. Richards (Denver, Colo.)

March 24-27
Fixed-Point Signal Processing Systems
David V. Anderson

March 25-28
Integrated Grounding System Design and Testing
A.P. Sakis Meliopoulos, George Cockinides

March 27-June 23
DSP for Practicing Engineers – Online Course
Douglas B. Williams

April 1-3
Signal Processing Refresher
Mark A. Richards

April 21-25
Antenna Engineering
Edward B. Joy, Waymond R. Scott, Jr., and Glenn S. Smith

May 19-20
11th Annual Fault and Disturbance Analysis Conference
A.P. Sakis Meliopoulos (administrator; Atlanta Fox Theatre)

May 22-23
62nd Annual Protective Relaying Conference
A.P. Sakis Meliopoulos (administrator; Atlanta Fox Theatre)

June 9-13
Fundamentals of Synthetic Aperture Radar Signal Processing
Mark A. Richards

Mark Richards, ECE principal research engineer and adjunct professor, received the Georgia Tech Professional Education Award at the annual Georgia Tech Faculty Staff Honors Luncheon on April 10, 2008. This award recognized Dr. Richards’ 20-plus years of teaching Georgia Tech professional education courses in radar system design, radar signal processing, and other radar-related areas.

June 16-20
Near-Field Antenna Measurements and Microwave Holography
Edward B. Joy (Boulder, Colo.)

June 18-20
Grounding, Harmonics, and Electromagnetic Influence Design Practices
A.P. Sakis Meliopoulos, George Cockinides

ECE Hosts Top Professional Conferences

International MOVPE Conference
Georgia Tech Lorraine and the city of Metz, France hosted the XIV International MOVPE Conference at the ARSENAL Center June 1-6, 2008. This conference is considered one of the most important worldwide meetings for presenting the latest advancements in materials sciences, their applications, and their technological growth.

Chaired by ECE Professor Abdallah Ougazzaden, the event focused on recent advancements in MOVPE and attracted 350 researchers from 29 countries participating in 226 presentations. Featured speakers included Albert Fert, 2007 Nobel Prize laureate in physics, and Georgia Tech ECE professors Russell D. Dupuis and Ian T. Ferguson.

IMS 2008

The 2008 International Microwave Symposium, which was held at Atlanta’s Georgia World Congress Center June 16-20, attracted over 9,000 attendees and set a record for industry participation. Microwave technologies are the forces behind cell phones, advanced sensors, RFID, and the fast-developing mobile Internet.

Chaired by Joy Laskar, this conference was eight years in the making and a joint effort of ECE, GEDC, and GTRI. IMS 2008 featured speakers of international renown, including Nobel Laureate Joe Taylor of Princeton University, and Mike Farmwald, founder of such companies as Rambus and Matrix Semiconductor and a leading venture capitalist.
**SnoMotes Go Where Scientists Fear to Tread**

Data about volatile ice sheets—the huge masses of glacier ice in Antarctica and Greenland—have until now been drawn largely from satellites and ground-based weather stations. Now researchers at ECE, led by Associate Professor Ayanna Howard, are working to create SnoMotes, autonomous robots that work as a team, to collect detailed data in icy environments without risking scientists’ safety. This data could give scientists a better understanding of the dynamics that affect the stability of ice sheets. (see cover photos)

**Intelligent Binoculars Mimic the Human Brain**

Led by ECE Associate Professor Paul Hasler, Georgia Tech researchers are helping to develop “intelligent binoculars” that mimic the low-level image processing done by the human brain. Called the Cognitive Technology Threat Warning System—or CT2WS, the device is expected to be far more capable than portable visual threat-warning equipment currently used by the U.S. military.

Dr. Hasler’s team will investigate the use of neuromorphic engineering to enable a CT2WS device. While the user would see a certain picture, the device actually scans a much wider space and would present any other potential objects of interest.

**GEDC Research Boosts Wireless Data Transfer**

A Georgia Electronic Design Center team, led by ECE Professor Joy Laskar, is investigating the use of extremely high radio frequencies to achieve broad bandwidth and high data transmission rates over short distances.

Within three years, this “multi-gigabit wireless” approach could result in personal area network applications, including next generation home multimedia and wireless data connections able to transfer an entire DVD in seconds. GEDC researchers have achieved wireless data-transfer rates of 15 gigabits per second at a distance of 1 meter, 10 Gbps at 2 meters, and 5 Gbps at 5 meters.

**Microsensor Measures Air and Water Pollutants**

ECE Associate Professor Oliver Brand and his colleagues in the School of Chemistry and Biochemistry have developed a miniature sensor that uses polymer membranes deposited on a tiny silicon disk to measure pollutants present in aqueous or gaseous environments. An array of these sensors with different surface coatings could be used during field-testing to rapidly detect many different chemicals.

Since this new sensor allows water and air samples to be analyzed in the field, it is an improvement over classical techniques that require samples be carried back to the laboratory for analysis.

**Avalanche Photodiodes Target Bioterrorism Agents**

ECE Professor Russell D. Dupuis and his colleagues have shown that a new class of ultraviolet photodiode could help meet the U.S. military’s need for compact, reliable, and cost-effective sensors to detect anthrax and other airborne bioterrorism agents.

New research shows that UV avalanche photodiodes offer the high gain, reliability, and robustness needed to detect these agents and help authorities rapidly contain such incidents. The team chose to develop avalanche photodiodes because the devices can detect the signature fluorescence of biological molecules in an air sample.

**Tongue-Controlled System Assists Disabled Individuals**

A new assistive technology developed by engineers at Georgia Tech could help individuals with severe disabilities lead more independent lives.

Developed by ECE Assistant Professor Maysam Ghovanloo and his group, this novel system allows individuals with disabilities to operate a computer, control a powered wheelchair, and interact with their environments simply by moving their tongues. The tongue-operated assistive technology, called the Tongue Drive system, was described on June 29 at the 2008 Rehabilitation Engineering and Assistive Technology Society of North America Annual Conference in Washington, D.C.

More information on these projects may be found in the media section of www.ece.gatech.edu
ECE has a long and successful history of start-up company activity through the Advanced Technology Development Center, a nationally recognized science and technology incubator that helps Georgia entrepreneurs launch and build successful businesses. VentureLab, a one-stop center for technology commercialization, assists faculty in evaluating the commercial value of invention disclosures and in determining whether to license the technology to industry or to begin a start-up company through ATDC or through independent means. VentureLab is currently evaluating over 10 ECE start-up opportunities.

**ATDC ECE Graduate Companies**

ASPl Digital (acquired by Polycom, 2001)
Co-Founders: Thomas P. Barnwell, Russell M. Mersereau, and Ronald W. Schafer

CardioMEMS
Co-Founder and CTO: Mark G. Allen

EGT  CSO: Nikil Jayant

Jacket Micro Devices*
CSO: Madhavan Swaminathan

Lancope  Founder: John A. Copeland

Nexidia  Co-Founder and Board Member: Mark A. Clemens

Quellian  CTO, Founder, and Board Member: Joy Laskar

RF Solutions (now the WiFi Division for Anadigics)
Co-Founder and Former CSO: Joy Laskar

* JMD is also a graduate of VentureLab

**ATDC ECE Start-Up Companies**

Asankya Networks  Co-Founder and CTO: Raghupathy Sivakumar

GTronix  Co-Founder, CSO, and Board Member: Paul E. Hasler

Innovolt  Chair, CTO, and Co-Founder: Deepak Divan

Qualtré  Co-Founder and CTO: Farrokh Ayazi

Suniva  Founder and CTO: Ajeet Rohatgi

* All of the above companies are also graduates of VentureLab

In May 2008, ATDC and VentureLab held their annual graduation ceremonies. Two ECE-founded companies—Qualtré and Suniva—graduated from VentureLab and are now ATDC members.

**Innovolt Launches CVSS Product into the Market**

At an April 22 press conference, Innovolt launched a new surge protector that marked the first major advance in surge suppression technology in more than 20 years. The new device uses patent-pending Current & Voltage Surge Suppressor technology developed by ECE Professor Deepak Divan that protects electronics equipment against potentially damaging power disturbances such as voltage surges, current surges, and under/over-voltage, as well as lightning strikes. Innovolt’s new CVSS products offer complete power protection of electronics equipment at an affordable price. Additionally, advanced diagnostics and energy monitoring functions provide end-users and service providers with information to reduce unscheduled downtime and total cost of ownership. Innovolt surge protection products are currently available for the residential, office, retail, industrial, and utility markets.

**Suniva Holds Bright Promise for Solar Energy**

Founded on technology developed by the Georgia Tech University Center of Excellence for Photovoltaic Research and Education, Suniva focuses on the development, manufacturing, and delivery of low-cost, high-efficiency silicon solar cells for clean power generation. In 2008, Suniva announced plans to build its first manufacturing facility at Technology Park in Norcross. The first of its kind in Georgia, this plant will initially employ about 100 people and will produce enough solar cells to power 10,000 homes, with plans to triple that capacity within a few years. Suniva also signed long-term supply agreements with REC and Solon AG, leading manufacturers in the solar power industry.
The ECE Development Office cultivates and coordinates the School’s development and fundraising efforts with industry, alumni, and other interested individuals and organizations, including the College of Engineering and the Institute’s Central Development Office. This office also manages the School’s Industrial Partnership Program, and it supports and coordinates all ECE consortia organized under the IPP umbrella. This group plans twice-yearly ECE Advisory Board meetings and the annual James R. Carreker Distinguished Lecture.

2007 College of Engineering Award Winners

**Engineering Hall of Fame**
Honors alumni who have made meritorious engineering and/or managerial contributions during their careers.

- **H. Allen Ecker**, BEE ’57, MSEE ’58
  *Executive Vice President*, Scientific-Atlanta, Inc. (now Cisco Service Provider Video Technology Group); Lawrenceville, Ga.

**Academy of Distinguished Engineering Alumni**
Recognizes alumni for contributions to their profession and to the institute, and for their active involvement in engineering, management, and the community.

- **Kevin A. Eyl**, MSEE ’81

- **Paul Freet**, BEE ’86
  *Technology Commercialization Catalyst*, VentureLab, Atlanta, Ga.

- **Jeffrey V. Giglio**, BEE ’77
  *President*, Inglett & Stubbs, Atlanta, Ga.

- **Gustavo R. Larrea**, EE ’59
  *Executive President*, Electroquil, Duke Energy Company
  Guayaquil, Ecuador

- **Adriel Longo**, BEE ’58
  *Board Chairman*, Bermúdez & Longo, S.E., Hato Rey, Puerto Rico

**Council of Young Engineering Alumni**
Recognizes alumni under age 40 who have demonstrated exemplary professional accomplishments within their profession, field, or organization.

- **Joseph W. Parks**, Jr., MSEE ’93, PhDEE ’98
  *Logic Technology Development*, Intel Corporation
  Beaverton, Ore.

2007 James R. Carreker Lecture

**Nan Mattai, Rockwell Collins Senior VP: The Aerospace & Defense Industry–Today & Tomorrow**

Nan Mattai, senior vice president for Rockwell Collins Engineering and Technology, delivered the eighth annual James R. Carreker Distinguished Lecture on October 11. She addressed the major industry trends as well as current challenges and opportunities.

According to Ms. Mattai, the future of the aerospace and defense industry continues to be shaped by a number of megatrends or driving factors. These include economics and geopolitics, technology, globalization, environmental regulation, and an aging aerospace workforce.

She expects that the demand in the airline industry is expected to increase three to five times over the next 20 years, meaning that improved safety and security are of utmost importance. Other pressing challenges include focusing on environmental concerns and achieving a “greener” footprint; improving the management and integration of expanded outsourced networks and global supply chain resources; and building a talented and motivated work force for the future.
An outside perspective is essential to maintaining the relevancy of the School’s programs to its alumni and corporate constituencies. The ECE Advisory Board, composed of 22 representatives, provides feedback in these areas during its formal, biannual meetings and throughout the year. For FY08, the ECE Advisory Board welcomed one new member.

**Alek Szlam** joined the ECE Advisory Board in fall 2008. Mr. Szlam is the chairman and CEO of Szlam Enterprises, Inc., an information technology and contact center services company. Previously, he was chairman of the board and CEO of Melita International, Inc. He is a member of the Georgia Tech College of Engineering Academy of Distinguished Engineering Alumni.

**C. Meade Sutterfield** stepped down from the ECE Advisory Board in spring 2007. During FY08, he served as the chair of the Georgia Tech Alumni Association, one of the most energetic and vibrant university alumni associations in the U.S. A member of the ECE Advisory Board since 1994, Mr. Sutterfield served as its chair from 2004-06. He is the co-founder, president, and CEO of SSPCS Corporation.

### Capital Campaign Goals

Georgia Tech constantly strives to remain among the highest-ranked engineering institutions in the nation, and ECE endeavors to stay among the top programs of its kind. The Institute is now in the quiet phase of a capital campaign known as the Campaign for Georgia Tech. Several ECE alumni are serving on the Institute Steering Committee, including Rodney C. Adkins (BEE ’81); Warren Batts (BEE ’64); Brook Byers (BEE ’68); and Ken Byers, Jr. (BEE ’68).

While the Campaign for Georgia Tech has $1 billion as its goal, ECE aims to raise at least $75 million. ECE Advisory Board Member Randy Poliner (BEE ’77) chairs a fundraising steering committee for the School, which includes Robert Dixon (BEE ’77), John Lanza (BEE ’87, MSEE ’88), Jesus Leon (EE ’74), and Slim Souissi (MSEE ’92, PhD ’94).

In addition to our $75 million goal for the Capital Campaign, an improved headquarters is needed for ECE. Long the home of our School, the Van Leer Building now has a multitude of cosmetic and structural issues, including a lack of space that has forced many faculty and staff to use leased space in a different area of campus. Extending the Van Leer Building would usher in a new vision—one that provides faculty and students with functional, accessible opportunities for collaborative learning and research.

Please direct any inquiries regarding how you can support ECE and Georgia Tech to Marci Reed, director of ECE development, at 404.894.0274 or marci.reed@ece.gatech.edu.
Memorial Gifts to ECE

There are many reasons and many ways to give to Georgia Tech and ECE. While every gift is important, many alumni and friends choose to celebrate a personal or professional milestone or to pay tribute to family members, friends, or former Tech classmates and professors. These gifts in honor or in memory will benefit the Institute and the School far into the future, leave a lasting legacy of the honoree. In FY 08, several memorial funds were established or endowed.

The Kevin Brennan Memorial Scholarship Fund  
Kevin F. Brennan enjoyed a 19-year career in ECE at Georgia Tech. In 2000, he was named the Byers Professor in Microelectronics, was later named an IEEE Distinguished Lecturer, and was also accorded the Class of 1934 Distinguished Professor Award. Dr. Brennan lost a valiant battle with cancer in 2003, at the age of 46. At the time of his death, the Kevin Brennan Memorial Scholarship Fund was established, and this year, gifts to the fund reached the $25,000 level, meaning the first scholarship will be awarded in fall 2008.

The John Harrell Brownlee Memorial Scholarship Fund  
John Harrell Brownlee graduated Georgia Tech summa cum laude with an EE degree in 1978. His friends describe him as a “personable genius.” According to recently retired ECE Regents’ Professor Russell M. Mersereau, “John, along with classmates Brian Beasley and Doug Kraul, were an outstanding (and very hard to forget) thersome in my senior-level systems course.”

It is no surprise, then, that when he passed away after battling lymph cancer for 24 years, his friends and family quickly contacted Tech to find a way to honor his memory. The John Harrell Brownlee Memorial Scholarship reached the endowment level shortly after Mr. Brownlee’s memorial service, and the first award to an undergraduate ECE student will be made this fall.

The William Sayle Memorial Scholarship Fund  
ECE lost a revered faculty member this year when William E. (Bill) Sayle passed away on February 2, 2008. Dr. Sayle held many leadership roles within ECE, professional associations, and the community. He worked tirelessly to enhance the participation of women and minorities in engineering. Toward the end of his career, he taught and served as director for the GTL undergraduate program after retiring from ECE in 2003. Prior to his death, discussions had begun about a scholarship in Dr. Sayle’s name for undergraduate students attending GTL. He was characteristically humbled by this gesture. A little more than half the funds necessary to endow the William Sayle Memorial Scholarship Fund have been raised to date.

Texas Instruments and Georgia Tech – Leading the Way in DSP

This year, Georgia Tech reached a coveted top spot at Texas Instruments. The Institute is number one in recruiting new hires, co-ops, and interns (tied with the University of Texas at Austin). Coupled with this endorsement of our academic programs, TI has renewed its funding of Georgia Tech’s research in digital signal processing, a relationship that stretches back over a decade. In 1997, Georgia Tech was selected to be part of TI’s DSP Leadership University Program, a collaborative three-university network that also includes Rice University and MIT. TI has committed $1 million over the next three years to support faculty-graduate student research teams in DSP. Headed by ECE Professor James H. McClellan, the program remains successful by having proactive individuals managing each side of the relationship. Semi-annual research reviews include one-on-one interaction among student researchers, faculty, and TI advocates. Georgia Tech’s longstanding partnership with TI through the DSP Leadership University program is no doubt a large driver in our rise to the top as a recruiting university for TI as well.

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<tr>
<th>GIFT CATEGORY</th>
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<tr>
<td>Endowed Student Support</td>
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<td>Endowed Program Enrichment</td>
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If you would like to make a contribution to this, or any ECE endowed or expendable fund, please contact the ECE Development Director at 404.894.0274.
### Glossary of Acronyms

#### Georgia Tech/ECE
- ATDC – Advanced Technology Development Center
- CEISMC – Center for Education Integrating Science, Mathematics, and Computing
- CoC – College of Computing
- CoE – College of Engineering
- CSIP – Center for Signal and Image Processing
- ECE – Electrical and Computer Engineering
- GCATT – Georgia Centers for Advanced Telecommunications Technology
- GEDC – Georgia Electronic Design Center
- GT – Georgia Tech
- GTF – Georgia Tech Foundation
- GTL – Georgia Tech Lorraine
- GTRI – Georgia Tech Research Institute
- IPP – Industrial Partnership Program
- RIM – Center for Robotics and Intelligent Machines
- SFC – Student-Faculty Committee
- TIG – Technical Interest Group
- WECE – Women in Electrical and Computer Engineering

#### Companies and Organizations
- ACES – Applied Computational Electromagnetics Society
- AIMBE – American Institute for Medical and Biological Engineering
- CPMT – Components, Packaging, and Manufacturing Technology Society (a technical interest society of IEEE)
- EDS – Electron Devices Society (a technical interest society of IEEE)
- FIRST – For Inspiration and Recognition of Science and Technology
- GRA – Georgia Research Alliance
- JMD – Jacket Micro Devices
- HKN – Eta Kappa Nu
- HP – Hewlett-Packard
- I2PASE – National Idea to Product Competition for Social Entrepreneurship
- IEEE – Institute of Electrical and Electronics Engineers
- IFIP – International Federation for Information Processing
- IMS – International Microwave Symposium

#### Governmental Agencies and Universities
- GSU – Georgia State University
- MIT – Massachusetts Institute of Technology
- NASA – National Aeronautics and Space Administration
- NSF – National Science Foundation

#### Technical or General Abbreviations
- 3-D – Three-Dimensional
- A/D – Analog-to-Digital Converter
- ASIC – Application Specific Integrated Circuit
- CEO – Chief Executive Officer
- CMOS – Complementary Metal Oxide Semiconductor
- CPU – Central Processing Unit
- CSO – Chief Science Officer
- CT2WS – Cognitive Technology Threat Warning System
- CTO – Chief Technical Officer
- CVSS – Current-Inrush Voltage Surge Suppressor
- DC – Direct Current
- DSP – Digital Signal Processing
- DVD – Digital Video Disc
- FY – Fiscal Year
- Gb – Gigabyte
- Gbps – Gigabytes per second
- GHZ – Gigahertz
- GPA – Grade Point Average
- GRE – Graduate Record Exam
- IC – Integrated Circuit
- L-C-R – Inductor, capacitor, and resistor combination at the output of the circuit
- MEMS – Microelectromechanical Systems
- MHz – Megahertz
- MODFET – Metal–Oxide–Semiconductor Field-Effect Transistor
- MODFET – Metal–Oxide–Semiconductor Field-Effect Transistor
- O/H – Overhead
- PC – Personal Computer
- PE – Professional Engineer, Professional Engineering
- PECASE – Presidential Early Career Award in Science and Engineering
- PM – Permanent Magnet
- PN – P-Type/N-Type
- PSRR – Power Supply Rejection Ratio
- Q – Quality
- R&D – Research and Development
- RF – Radio Frequency
- RFID – Radio Frequency Identification
- sec (or s) – Second
- SAT – Scholastic Aptitude Test
- SiGe – Silicon Germanium
- T/R – Transmit/Receive
- UV – Ultraviolet
- UWB – Ultra-Wideband
- VLSI – Very Large Scale Integration
- WLAN – Wireless Local Area Network
Cover photos and photo above: ECE Associate Professor Ayanna Howard works on a SnoMote, a robot designed to gather scientific measurements from icy environments, in the Human Automation Systems Lab at Georgia Tech. Dr. Howard and her colleagues from Pennsylvania State University and the University of Alaska Southeast in Juneau deployed a team of SnoMotes for a field test in June 2008 on Mendenhall Glacier in Juneau, Alaska.