

ECE Connection

School of Electrical and Computer Engineering | Fall 2007

New Faculty Chair Holders Represent Diverse Facets of ECE

By January 2008, four new faculty members will hold named or endowed faculty professorships in the School of ECE. These individuals are conducting exciting research, creating innovative approaches to engineering education, and developing products that will impact Georgia's economy and make a difference in people's lives.

"Wayne Wolf, Ed Coyle, Jeff Shamma, and Maysam Ghovanloo are all highly valuable additions to our faculty," said Gary S. May, Steve W. Chaddick School Chair of ECE. "They have proven records of converting research into useful applications and in guiding students in both the lab and classroom. We are very happy that they have chosen to come to Georgia Tech."

Embedded Computers and Smart Cameras:

Wayne Wolf

Rhesa "Ray" S. Farmer, Jr. Distinguished Chair in Embedded Computer Systems and Georgia Research Alliance Eminent Scholar



Dr. Wolf is an internationally recognized expert in smart camera technology and embedded computing systems. After a long, productive career at Princeton University, he joined ECE last July and has continued with his highly successful research and commercialization activities.

Embedded computer systems present interesting challenges, since they must be low in cost and power usage while providing high performance and con-

tinual service. Seven years ago, Dr. Wolf became chief technical officer for MediaWorks Technology, a start-up company devoted to systems-on-chips for consumer multimedia devices. The company designed integrated circuits that dramatically improve the cost and performance of devices like CD/MP3 players, digital cameras, and flat panel displays.

While at Princeton, Dr. Wolf and his group also developed new distributed smart-camera systems. These cameras cooperate in real time to analyze activities such as movements of people, vehicles, and other objects, and can be used in applications ranging from security and medicine to smart rooms that automatically track and adjust to the preferences of people in them.

In 2003, Verificon spun out of Princeton University to commercialize this technology. With Dr. Wolf serving as company chair, Verificon is finalizing two product lines. One system is designed for security in large areas like stadiums and airports. The other system analyzes customer activity in stores to help retailers better plan merchandise displays and will be deployed in a Los Angeles area store in late 2007. Verificon has several part-time programmers in Atlanta and plans to hire full-time employees in the area.

Since arriving at Georgia Tech, Dr. Wolf has started work on architectures for software radio and is developing a new graduate course in embedded computing. In addition, he and ECE Associate Professor Vincent J. Mooney are the local arrangements co-chairs for Embedded Systems Week, a collection of computer systems conferences scheduled for October 2008 in Atlanta.

Engineering Social Awareness: Edward J. Coyle

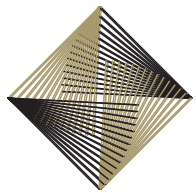
Arbutus Chair in Distributed Engineering Education, Georgia Research Alliance Eminent Scholar, and Director of the Arbutus Center for Distributed Engineering Education



A distinguished leader in computer and sensor networks, signal and image processing, and engineering education, Dr. Coyle will join ECE in January 2008 after many fruitful years at Purdue University. He plans to replicate and expand two programs—the Engineering Projects in Community Service (EPICS) Program and the Vertically Integrated Projects (VIP) Program—that he co-founded and led at Purdue. He will also lead the Arbutus Center in developing distributed delivery of educational materials.

In the EPICS Program, multidisciplinary undergraduate teams design, build, and deploy real systems to solve engineering-based problems for local community groups, while earning academic credit for their work. Each team includes freshmen through seniors who are advised by faculty and local engineers. A mutually beneficial experience, students learn about professional ethics, customer relations, and impacts of engineering. In turn, agencies gain access to technology and expertise that would normally be

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"Recruiting Excellent Faculty"

I have been the chair for the School of ECE for a little over two years. Now that I have settled in, people often ask me: what is my favorite part of the job? Invariably, I respond that recruiting and hiring faculty members is quite close to the top of the list. Perhaps the single most important factor associated with the reputation of a university is the quality of its faculty. Having the opportunity to shape and influence the composition of this group directly is very gratifying.

We are fortunate in the School of ECE in that our faculty members represent an impressive group of world-class scholars who are intellectually diverse and eminently capable of the pursuit of excellence in teaching and research. Maintaining the quality of our faculty requires constant effort.

ECE uses a recruitment model that seeks qualified candidates across the spectrum of electrical and computer engineering on an ongoing basis. The School publishes and maintains a position announcement that is adjusted annually based on current needs. Under

special circumstances, such as a search for an endowed chair, separate advertisements are prepared and circulated among the ECE community.

After an initial verification of qualifications, all faculty candidates are then routed to the appropriate technical interest groups (TIGs) for evaluation and feedback. This information is collected, summarized, and brought before the ECE Faculty Recruitment Committee (FRC). The FRC consists of an elected representative from each TIG, as well as Andrew Peterson, ECE associate chair for faculty development, and me. For endowed chair searches, the FRC is replaced by a specialized search committee. All such search committees are chaired by a senior faculty member (often also the holder of an endowed chair or professorship) and include a representative from the ECE Advisory Board.

The FRC or search committee receives and discusses input from TIGs on each candidate. If the candidate is deemed viable, an interview is scheduled. After the interview, the FRC or search com-

mittee collects feedback from interview participants. If the candidate is under consideration as a Georgia Research Alliance (GRA) Eminent Scholar, feedback from the GRA is also sought. If all recommendations are positive, I then solicit the approval of the College of Engineering to make and negotiate an offer.

This process has proved extremely fruitful over the past year. We have been able to attract two new GRA Eminent Scholars: Wayne Wolf, the Farmer Chair in Embedded Computer Systems, and Ed Coyle, the Arbutus Chair in Distributed Engineering Education. We have also recruited Jeff Shamma to become the Hightower Chair in Systems and Controls. Among new junior faculty members are Maysam Ghovanloo (who holds the ON Semiconductor Junior Professorship) and Saibal Mukhopadhyay in Atlanta, as well as Jongman Kim, Hongwei Wu, and Fumin Zhang in Savannah. I hope you will take the opportunity to read more about each of these exceptional individuals elsewhere in this issue of *ECE Connection*. |



Gary S. May
Steve W. Chaddick
School Chair
(at the ECE Spring Picnic)

2007 James R. Carreker Distinguished Lecture



Pictured (l-r) are Roger Gambrel, Senior Director, and Nan Mattai, Senior Vice President, both of Rockwell Collins, with Gary S. May, Steve W. Chaddick School Chair of ECE.

Nan Mattai, Senior VP for Rockwell Collins

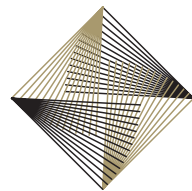
Nan Mattai, senior vice president for Rockwell Collins Engineering and Technology, delivered the eighth James R. Carreker Distinguished Lecture on October 11. Ms. Mattai's talk, "The Aerospace & Defense Industry—Today & Tomorrow," addressed the major industry trends as well as current challenges and 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 said 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.

In her current role with Rockwell Collins, Ms. Mattai is responsible for guiding the future directions, investment decisions, and development of advanced technologies to meet the needs of various parts of the business. She has been with Rockwell Collins since 1993.



ECE Faculty Appointed to Provost Office Leadership Roles

Mark G. Allen and Steven W. McLaughlin were named to top leadership roles in the Georgia Tech Office of the Provost and Executive Vice President for Academic Affairs during fall 2007. Dr. Allen now serves as senior vice provost for research and innovation, and Dr. McLaughlin is the vice provost for international initiatives.

"Mark and Steve are exceptionally talented people who will serve Tech very well in their new positions," said Gary S. May, Steve W. Chaddick School Chair of ECE. "We all wish them the very best and will provide them with our fullest support."

Mark G. Allen, Senior Vice Provost for Research and Innovation

In this new post, Dr. Allen reports to Provost and Executive Vice President of Academic Affairs Gary B. Schuster. He succeeds Charles Liotta, who has returned to the faculty after a long and successful tenure in this position.

Dr. Allen has been on the ECE faculty since 1989, where he is a Regents' Professor, the Joseph M. Pettit Professor in Microelectronics, and a co-director of the Center for MEMS and Microsystems Technologies. He also holds a joint appointment with the School of Chemical and Biomolecular Engineering.

Dr. Allen is the co-founder and chief technology officer of CardioMEMS, a successful biotechnology start-up company that produces innovative cardiovascular sensors based on microelectromechanical systems (MEMS) technology that he developed. The EndoSure sensor was the first implantable pressure sensor that combines wireless systems and MEMS to receive U.S. Food and Drug Administration clearance and now makes testing safer and more convenient for abdominal aortic aneurysm patients.

As a member of the provost's senior leadership team, Dr. Allen will be key in setting the Institute's research and eco-



Steven W. McLaughlin (l) and Mark G. Allen now hold key senior leadership roles at Georgia Tech.

nomic development agenda and strategic direction. He will not only manage Tech's \$458 million research portfolio, but will also oversee commercialization activities, ensuring that the Institute takes maximum advantage of the intellectual property developed in its research labs.

"I'm excited about the opportunity to serve Georgia Tech in this new capacity and hope to continue the success we have experienced in research and technology transfer," said Dr. Allen. "Georgia Tech is already a recognized leader in these areas, and I look forward to helping us realize the significant potential for further growth that is vitally important to Tech's future."

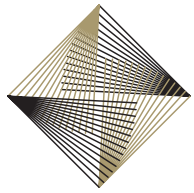
Steven W. McLaughlin, Vice Provost for International Initiatives

Dr. McLaughlin reports to Senior Vice Provost for Academic Affairs Anderson D. Smith and takes on a newly defined position in serving as the point person for all international initiatives at Georgia Tech.

A member of the ECE faculty since 1996, Dr. McLaughlin also holds the Byers Professorship. He was the first Georgia Tech recipient of a Presidential Early Career Award for Scientists and Engineers for his leadership in developing high-capacity, nonbinary optical recording formats.

Dr. McLaughlin has held faculty assignments and research leadership positions at Georgia Tech Lorraine since 2003 and has most recently served as its deputy director. In that role, he was the primary liaison between the campuses in Metz, France and Atlanta and was involved in all activities at the 300+ student operation. As director of research, Dr. McLaughlin led the formation of the Georgia Tech-Centre National de la Recherche Scientifique research unit (UMI 2958), a unique Franco-American research laboratory in the areas of advanced materials and secure networks. Throughout his career, he has also led funded research and business development initiatives in Portugal, India, Korea, Japan, and China.

Dr. McLaughlin is excited about his new role, as most U.S. universities are in the midst of assessing how they will approach globalization, and Tech is clearly on the cutting edge. "I believe that 'international' will continue to be a key differentiator for Georgia Tech in the next several decades," he said. "There are so many exciting initiatives that have already been launched and continue to develop at Georgia Tech that have such a huge impact on our students and faculty. I am looking forward to working with all parts of the campus as the existing initiatives continue to evolve and new ones develop." |



Ofer Finkler at a Glance

All-Atlantic Coast Conference (ACC)

2006 and 2007 Academic Men's Swimming and Diving Team

Two-time ACC Academic Honor Roll selection

2006 College Swimming Coaches Association of America Academic All-American Honorable Mention pick

2007 ACC Scholar-Athlete Award

2007 ACC Postgraduate Scholarship

2007 ESPN the Magazine Academic All-America Men's At-Large Team

Ofer Finkler Excels in Athletics, Academics

Ofer Finkler's interest in engineering emerged early in life. As a five-year-old, he was curious about the workings of his mother's new toaster and unscrewed all the pieces trying to solve the mystery of how the appliance worked. When his father, an electrical engineer, discovered the scattered remains, he spent several hours repairing the toaster and explaining the process to his son. This incident sparked in Ofer an early desire to learn more about how things work, a fundamental concern of engineering.

Now 25 years old, Ofer has achieved outstanding accomplishments in both academics and sports during his impressive college career at Georgia Tech. He is an exceptional swimmer and the winner of numerous awards for his successes as a student and an athlete. Ofer graduated in May 2007 with his bachelor's degree in electrical engineering, posting an impressive 3.95 GPA. Currently enrolled in ECE's joint B.S./M.S. program, he began work on his master's degree this fall.

Ofer was recruited to Tech as a sophomore from Penn State because of his superior academic and athletic performance. "I was already familiar with Georgia Tech through some of my friends, who were students at the time," said Ofer. "As my interest in engineering



grew, I knew I wanted to be in an environment that supported and excelled in that field."

As an undergraduate, Ofer worked as a senior teaching assistant for several computer and mechanical engineering courses. He also participated in Tech's Undergraduate Research Opportunities Program.

Microelectronics fascinated Ofer as an undergraduate, and he grew increasingly interested in micro-electro-mechanical systems (MEMS) and their many applications. As a graduate student, he is focusing on MEMS technology, including fabrication processes and the underlying physics. He began work this fall as a graduate research assistant with Associate Professor Levent Degertekin, who has a joint appointment with ECE and the School of Mechanical Engineering. Ofer's research with Dr. Degertekin involves atomic force microscopes (AFMs), which are used to study biomolecules and characterize the molecular forces associated with them.

Ofer's diligent commitment to his studies is paralleled by a similar commitment to swimming. As an undergraduate, he swam with the Georgia Tech Swimming and Diving Varsity team, which involved more than 24 hours of training each week. He had many successes as a member of several school-record relay teams and holds top-five times in school history in the 50- and 100-yard individual freestyle events. He was twice awarded the Tommy Towles Scholar-Athlete Award, which is presented to the student-athlete who possesses the highest level of performance, scholarship, and leadership in making Tech a better school and improving the swimming and diving program.

While Ofer's course is set for the next year as he pursues research and earns his master's degree at Tech, his future plans are still unfolding. A doctorate in electrical engineering, specializing in microelectronic device physics, is one likely possibility. Afterwards, he is considering working in the microelectronics industry or pursuing a career in academia. Whichever direction Ofer's career takes, his overarching goal remains the same: "My hope is that someday I will be able to use what I have learned to ignite the same spark for knowledge in others that my dad fostered in me." |

GEORGIA TECH HONORS

Eighteen ECE students, faculty, and staff were honored at various Georgia Tech functions in Spring 2007 for their outstanding achievements in teaching, research, service, administrative performance, and academics.

Class of 1940 W. Roane Beard Outstanding Teacher Award
John A. Buck

Class of 1940 W. Howard Ector Outstanding Teacher Award
Gregory D. Durgin

Outstanding Service Award James H. McClellan

Outstanding Continuing Education Award A. Bruno Frazier

Outstanding Faculty Leadership for the Development of Graduate Research Assistants Award John D. Cressler

Outstanding Faculty Research Author Award Joy Laskar

Outstanding Research Program Development Award
Ajeet Rohatgi

Outstanding Staff Performance Award Harry L. Beck

Sigma Xi Awards Banquet, April 4, 2007

Sigma Xi Best Dissertation Award Karthikeyan Sundaresan
Advisor: Raghupathy Sivakumar

Georgia Tech Student Honors Day, April 17, 2007

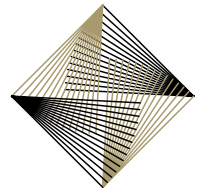
Center for the Enhancement of Teaching and Learning/BP Outstanding Teaching Assistant Award Hal Hollis

Henry Ford II Scholar Award Jacob Huang, Chad Kersey

J.E. McDaniel Award Philip Brown

Georgia Tech Faculty Women's Club Scholarship
Reeve Ingle, Andrew McDowell

James G. and Mary G. Wohlford Scholarship
Oliver Barrett, Reeve Ingle



2007 Roger P. Webb Awards

On April 25, the School of ECE held its sixth annual Roger P. Webb Awards Program at the Georgia Tech Student Center Ballroom. Steve W. Chaddick (BEE '74, MSEE '82), chair of the ECE Advisory Board, hosted the event, which honors the students, staff, and faculty who have shown exceptional dedication to their professions and studies, ECE, Georgia Tech, and the community as a whole. Representatives from AREVA NP, Inc. and Hitachi Telecom also took part in this event.

STUDENT AWARDS

Outstanding ECE Sophomore Award Jagdish Ramakrishnan
Awarded by Eta Kappa Nu, the honor society for ECE, to the sophomore electrical or computer engineering student with the highest scholastic average (plaque, \$250 from Hitachi Telecom).

ECE Junior Scholar Award Jose Vidal, Jr.
Student of junior standing with the highest GPA in ECE (plaque, \$250 from Hitachi Telecom).

ECE Undergraduate Research Award Trang Thai
Student who demonstrated an unusually strong aptitude for research (plaque, \$250 from Hitachi Telecom).

Most Outstanding ECE Senior Co-op Award Ryan Hutchinson
ECE senior co-op student considered of the highest caliber by his/her co-op employer (plaque, \$250 from Hitachi Telecom).

Outstanding Service to Georgia's Community Award Ryan Pirkel
Student who participated and organized community activities, motivating other students to do the same (plaque, \$250).

ECE Faculty Award Satya Bhan
Electrical or computer engineering student who, in the opinion of the ECE faculty, did the most to improve the educational environment within ECE or Georgia Tech and contributed significantly to both student welfare and student-faculty interactions (plaque, \$250).

Outstanding Electrical Engineering Senior Award Niranjan Ganeshkumar
Awarded by Eta Kappa Nu, to the senior electrical engineering student with a very high scholastic average and with an active role in extracurricular activities (plaque, awardee's name engraved on a plaque in the Van Leer Electrical Engineering Building, \$750 from AREVA NP).

Outstanding Computer Engineering Senior Award Eric Fontaine
Awarded by Eta Kappa Nu, to the senior computer engineering student with a very high scholastic average and with an active role in extracurricular activities (plaque, awardee's name engraved on a plaque in the Van Leer Electrical Engineering Building, \$750 from AREVA NP).

ECE Senior Scholar Award Joshua Alexander Beavers, Blake Brannon, Philip Brown, Yew Ching Chen, Louis Howe, Scott McCans, Christopher Alexander Poen, Chin Huang Yong
Electrical or computer engineering senior(s) with the highest academic average (plaque and cash award).

Colonel Oscar P. Cleaver Awards Qing Li, Chenchi Luo
Outstanding graduate students in ECE, as determined by scores made on the doctoral preliminary examinations during 2006-07 (plaque, cash award).

ECE Graduate Teaching Assistant Excellence Award Mohanned Sinnokrot
Teaching assistants are necessary to ensure that every student has the opportunity for personal attention during their course of study (plaque, \$500).

ECE Graduate Research Assistant Excellence Award Mehmet Can Vuran, Chao Ray Hsieh
GRAs who demonstrated particular excellence in performing their duties (plaque, \$500).

STAFF AWARDS

Hats Off Performance Award Peter Huynh, Marilouise Mycko
Classified staff members who demonstrated exceptional job performance and/or service to ECE above and beyond the call of duty (plaque, \$1,000).

Research Spotlight Award Siva Yegnanarayanan
Researcher who made a significant contribution to ECE research efforts (plaque, \$1,000).

Academic Spotlight Award Jill Auerbach
Researcher, classified employee, or general faculty member who made a significant contribution to the ECE teaching or academic program (plaque, \$1,000).

FACULTY AWARDS

Outstanding Junior Faculty Member Award Sung Kyu Lim
Most outstanding assistant professor during 2006-07 (plaque, \$1,000).

ECE Outreach Award Jeffrey A. Davis
Leadership and/or significant participation in outreach activities to interest and involve K-12 students in engineering, to increase participation of women and underrepresented minorities in engineering, and/or to recruit such students to ECE (plaque, \$1,000).

Richard M. Bass/Eta Kappa Nu Outstanding Teacher Awards Jeffrey A. Davis, W. Marshall Leach, Jr.
Most outstanding classroom instructors—one junior faculty member and one senior faculty member—as determined by the ECE senior class (plaque, \$2,500).

ECE Mentor Award Sudhakar Yalamanchili
Mentoring of junior faculty—in connection with teaching or research activities over an extended period—was judged to be outstanding (plaque, \$1,000).

Distinguished Faculty Achievement Award Russell M. Mersereau
Senior faculty member who has made significant contributions throughout his/her career (plaque, \$5,000).

(A) Faculty award winners—pictured with Gary S. May, Steve W. Chaddick School Chair—are (l-r) Russell M. Mersereau, Sung Kyu Lim, Jeffrey A. Davis, and W. Marshall Leach, Jr.

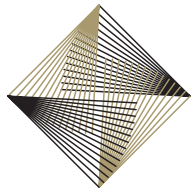
(B) Staff award winners—pictured with Gary S. May are (l-r) Peter Huynh, Jill Auerbach, Marilouise Mycko, and Siva Yegnanarayanan.



(C) Graduate student award winners pictured with Gary S. May (center) are (l-r) Selcuk Uluagac, Mehmet Can Vuran, and Mohanned Sinnokrot.

(D) Graduate student award winners. (l-r) Cressel Anderson, Mehmet Can Vuran, Hal Hollis, and Chao Ray Hsieh, with Gary S. May pictured in the middle.

(E) Undergraduate student award winners. Top row (l-r): Scott McCans, Eric Fontaine, Jagdish Ramakrishnan, Niranjan Ganeshkumar. Bottom row (l-r): Yew Ching Chen, Ryan Hutchinson, Joshua Beavers, Satya Bhan, Philip Brown, Gary S. May (Steve W. Chaddick School Chair), Jose Vidal, Jr., Blake Brannon, Hitachi Telecom CTO David Foote, Trang Thai, and AREVA Principal Project Manager Steve Weldon.



"The program provides a strong international component along with the elements that made SURE a success: challenging research, faculty and graduate student mentorship, a competitive stipend, and experience in writing and communicating results."

—Paul Voss
Assistant Professor and
GTL SURE Program Director

SURE Program Goes International to Georgia Tech Lorraine

Thirty-two students gained valuable technical experience during the 2007 Summer Undergraduate Research in Engineering/Science (SURE) Program, held at the Atlanta campus at Georgia Tech, and for the first time ever through SURE International at Georgia Tech Lorraine (GTL), the Institute's campus in Metz, France.

Sponsored by the National Science Foundation (NSF) and Intel Corporation, SURE provides qualified underrepresented minority students with hands-on research experience and a realistic look at graduate school life. Hailing from 25 different universities throughout the U.S. and Puerto Rico, the SURE students worked with faculty and graduate student mentors from seven different engineering specialties and from computer science.

During the 10-week program, students lived on the Atlanta and GTL campuses. When not conducting research, they attended weekly seminars and research progress meetings that were teleconferenced to GTL. Students visited nearby companies in the metro Atlanta area, France, and Luxembourg. They also visited entertainment and cultural venues in both countries. While at GTL, students had the opportunity to travel on their own to the surrounding area—six countries are within a four-hour train ride from Metz.

Last January, SURE Program Director Gary S. May, in collaboration with ECE Assistant Professor Paul Voss, secured three years of funding for SURE International from NSF. This new initiative allows up to five students to work with GTL faculty and their university partners in Metz, France, providing a total immersion in an international research environment.

At the end of the program, students gave both oral and written summaries on their research and presented their work to faculty members and fellow program participants. Projects were quite diverse, ranging from detecting illegally parked vehicles in video traffic surveillance, evaluating the stability of steel frame structures, and examining RNA structures to improve prevention and treatment of diseases.

Since its inception in 1992, about 80 percent of SURE participants have continued on to graduate school, with 50 percent of those deciding to attend Tech. "Programs like SURE—and now SURE International—are so vital because having qualified scientists and engineers is critical to U.S. competitiveness in a global economy," Dr. May said. "Providing students with interesting projects and frequent interactions with faculty and other students makes a huge difference in their decisions to pursue advanced studies in these areas." |

Coulter Foundation Supports New SJTU Program

While China is recognized today as an economic powerhouse, the China that Wallace H. Coulter, Class of 1934, first experienced could not have been more different. Mr. Coulter was an X-ray equipment salesman based in Shanghai in the 1930s, when China was largely impoverished and the Japanese were waging a bitter war in the north. Yet his years in Shanghai led to an enduring interest in Chinese art, culture, and society. Mr. Coulter later became co-founder and chairman of Coulter Corp., a medical diagnostics company, but he continued to follow the social evolution occurring in China throughout his life.

Continuing this tradition of embracing the Chinese people and their culture, the Wallace H. Coulter Foundation has pledged \$1 million to support an innovative Georgia Tech graduate program in Shanghai over the next five years. The dual master's degree program between Georgia Tech and its partner, Shanghai Jiao Tong University (SJTU), enables SJTU students to earn a non-thesis master's degree from Tech's School of ECE and a thesis master's degree in a closely related discipline from SJTU. Selected Georgia Tech courses are taught by Tech faculty during the summer and fall semesters.

The Coulter grant will support a minimum of 10 Chinese students per year in pursuing the dual master's degree. Criteria of the fellowship include being from a low-income family and being the first in the family to attend college. Each student must



Fellowship recipient Qingji Zheng teaches English at Fenfa Primary School for Peasant Workers Children, located near SJTU, each Saturday.

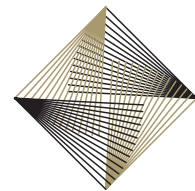
have the required academic credentials for admission to both the Georgia Tech and SJTU graduate schools. Fellowship recipients will be required to provide community service during each year they are pursuing their degree.

"Mr. Coulter had great respect and admiration for the people of China," said Sue Van, president of the Wallace H. Coulter Foundation. "The Coulter Foundation is pleased to partner with Georgia Tech and Shanghai Jiao Tong University to support these worthy students."

Tong Zhou, director of the Georgia Tech-Shanghai Initiative and an ECE professor, has played a substantial role in establishing Georgia Tech's presence in Shanghai. Dr. Zhou, who earned her doctoral degree in electrical engineering at the University of Virginia, grew up in Tianjin, China. She joined Tech's faculty in 1995. |

"Georgia Tech, SJTU, and the Coulter Foundation are a wonderful partnership. The perspectives of Georgia Tech faculty coupled with the resources of SJTU and the Coulter Foundation add up to a unique educational experience for Chinese and American students alike."

—Tong Zhou
Professor and Georgia Tech
Shanghai Initiative Director



Industry, Friends, and Family Provide Student Support

Mayhue Awarded New NVIDIA Scholarship

Justin Mayhue, a senior in computer engineering, will be awarded the first Henry Jefferson Barnes Memorial Scholarship in Computer Engineering.

The scholarship fund was established last fall, when friends and family of Hank Barnes (BSCmpPE '02) came together to honor the Georgia Tech alumnus, following his untimely death in a car accident in October 2006. Along with Hank's family, NVIDIA Corporation, where he had been employed, reached out to his co-workers, who contributed generously. NVIDIA matched the employee gifts and the funds exceeded the \$25,000 minimum for an endowment at Georgia Tech.

Intel Program Brings Research to Life for Undergraduates

The Intel Opportunity Scholars Program (IOS) is an innovative, academic enrichment partnership between Intel Corporation and the School of ECE and the College of Computing at Georgia Tech. Now in its fifth year, the program's primary aim is to retain female and underrepresented, undergraduate level minority students in ECE and computer science.

The IOS program integrates hands-on research experience with the academic curriculum, which has been shown to increase student satisfaction and success within their program of study, as well as increasing the chances of the scholar pursuing graduate studies, said Jill Auerbach, the program's co-director. At the heart of the IOS is the research-based mentoring partnership that matches undergraduate students with PhD student researchers.

IOS research groups expose undergraduate scholars to the laboratory environment, where they work with research faculty, graduate students, and other IOS



IOS Scholar Ashley Gray (l) and her PhD mentor Yamille Del Valle won third place at the 2007 IEEE Power Engineering Society General Meeting poster competition. Their faculty advisor is Ronald G. Harley.

undergraduate peers. The PhD student mentors regularly talk with the scholars about course schedules, class performance, and other issues that relate to their overall well-being.

Several times a year, the scholars showcase their work to the ECE community and Intel representatives. They receive a stipend, along with an hourly wage for the time spent on research, and attend seminars and training programs meant to enhance their experience at Georgia Tech.

Dustin Dyer Earns New Honeywell Scholarship

Wherever Dustin Dyer has attended school or held a job, he has given his best in the classroom, on the job, and in the community. To reward such overall excellence, Honeywell International named Dustin among its inaugural recipients of the 2007 Honeywell Innovators Scholarship.

A master's degree candidate in ECE, Dustin is one of only eight students in the U.S. and one of 18 in the world selected for this honor. The program provides these students with a scholarship for their final year of undergraduate or graduate studies and with a paid internship at a Honeywell facility. This past summer,

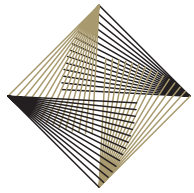


Dustin interned with Honeywell's Automation and Control Solutions Division in Plymouth, Minn. and is completing his final semester of graduate school at Georgia Tech.

While at Honeywell, Dustin conducted modeling and simulations of high frequency antenna designs targeted at creating commercial, low cost, long range, passive RFID tags. He also prototyped and tested a new cavity ring-down laser spectroscopy platform, which shows promise for trace gas detection in the parts-per-trillion regime.

A student at Tech since August 2006, Dustin worked as a technical writing consultant for ECE's Undergraduate Professional Communications Program, grading assignments and helping students revise and prepare technical documents. Before pursuing his graduate studies, Dustin earned his bachelor's degree in agricultural engineering at the University of Georgia, where he was a teaching assistant for a microcontroller programming course and held two summer undergraduate research fellowships.

Not content to focus only on his studies and work, Dustin makes time for community service activities, mostly in charitable fundraising and community construction and repair projects. "I think that wanting to improve the lives of others is really the foundation of the engineering profession, and it was inherently a deciding factor in my career choice," he said. |



Summertime...Let the Fun Begin!

Visit www.ece.gatech.edu/highlights to read more about these activities, which take place each year.



Rockdale County students came to Georgia Tech's Technology Square for a demonstration featuring robots from the Human-Automation Systems (HumAnS) Laboratory. ECE Associate Professor Ayanna Howard directs the lab, and the demo was conducted by three of her graduate students: Sekou Remy, Chung Hyuk Park (lower photo, right), and Stephen Williams (top photo). The visiting students, 48 rising ninth-graders and their peer mentors, attend Rockdale Magnet School for Science and Technology (RMSST).

The robotics demonstration was part of RMSST's "Summer Adventure at Georgia Tech," an annual two-day event that includes lunch at the Varsity, an overnight stay in a dormitory, a campus tour, and leisure time at Tech's Aquatic Center. The demo took place at the Technology Square Research Building.



It was party time at The Glade, located behind the President's house, when ECE held its annual **Spring Picnic** in April. Over 300 faculty, staff, and students enjoyed food, drinks, live music, and a little competition which included a volleyball game between students and faculty. The outstanding graduate teaching assistants, outstanding senior, and outstanding teacher awards are also given at this event. The picnic, sponsored by Eta Kappa Nu, received additional financial support from the Southern Company.



Forty-four middle school aged girls participated in the Technology, Engineering, and Computing (TEC) Camp, a highly interactive and hands-on program designed to inspire campers to consider college majors and careers in these important fields. TEC camp allowed sixth and seventh grade girls to take part in hands-on activities including robotics, energy, power, nanotechnology, bioengineering, and digital logic.



Twenty-four middle school-aged girls attended the **FIRST LEGO League (FLL)** Summer Camp. This new camp introduced these students to FLL, an international robotics program that promotes the excitement of discovery, science, and technology by having teams of students use their intelligence and imagination to build robots that perform specific tasks and missions. Their assignment for the week was Mission Mars, where students worked in teams, addressing the challenges of traveling to Mars, and once there, how to live and travel on it.

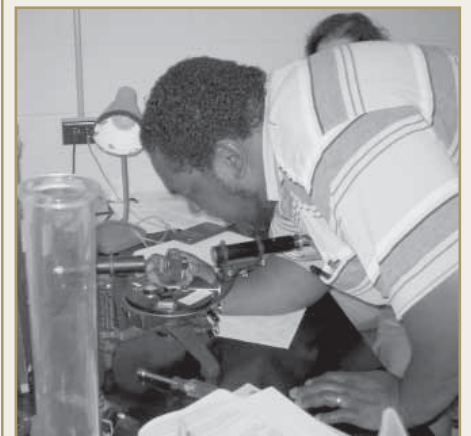


High school sophomores, juniors, and seniors, mostly from the metro Atlanta area, participated in Hands-On-Tech - **HOT Days@GT**, organized by ECE. The one-week long sessions introduced students to electrical and computer engineering concepts.

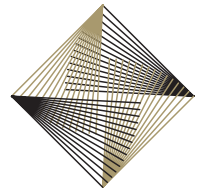
Summer Camp Isn't Just for Kids

Georgia Tech's 2007 Summer Teacher Experience in Packaging, Utilizing Physics (**STEP-UP**) Program concluded on July 27 with a presentation featuring the research findings of this year's six participants. STEP-UP is an eight-week research experience for metro Atlanta high school physics teachers. The four component program provides: a hands-on modern physics course; a module course on microelectronics and electronic packaging; a research experience at the Microsystems Packaging Research Center (PRC) labs; and a series of classroom adaptation workshops.

Sponsored by the School of ECE in partnership with the School of Physics and the PRC, the STEP-UP Program is funded by the National Science Foundation.



DeKalb School of Arts teacher Wesley Hunt measures the emission spectrum of a sodium arc lamp.



Research in the News

ECE Faculty Companies Honored at ATDC Celebration

On May 10, Georgia Tech's Advanced Technology Development Center (ATDC) held a Billion Dollar Celebration as part of its annual Entrepreneurs Showcase & Celebration. Since 1999, ATDC companies have raised more than \$1 billion in venture capital funding. The celebration also honored those companies who graduated this year from ATDC and VentureLab.

ATDC is a science and technology incubator that helps Georgia entrepreneurs launch and build successful companies. An ATDC company "graduates" when it reaches more than \$1 million of growing revenue, becomes a value acquisition, raises significant venture funding, or receives clearance to begin trials with the Food and Drug Administration. VentureLab is a one-stop center for technology commercialization that helps Tech faculty, researchers, and graduate students form start-up companies to commercialize their technology innovations.

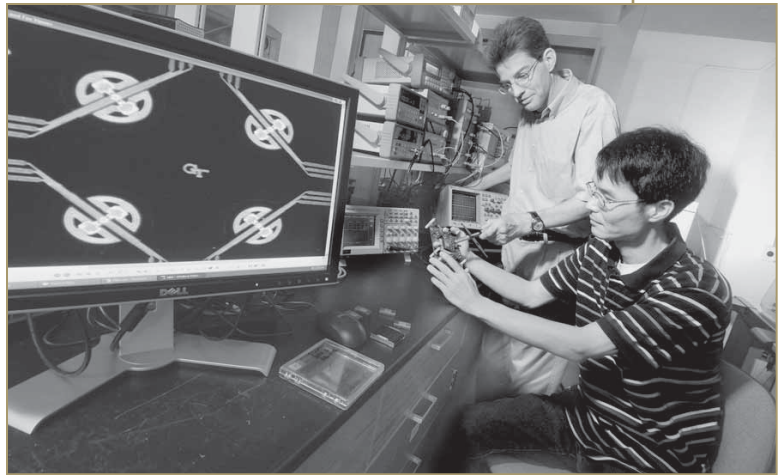
Jacket Micro Devices (JMD), an ECE-affiliated company, was one of six companies to graduate from ATDC this year. JMD designs and produces multi-layer organic radio frequency modules and integrated components. JMD's patented process delivers the industry's smallest high-performance system-on-package modules for emerging wireless and broadband applications. JMD's chief science officer is Madhavan Swaminathan, Joseph M. Pettit Professor in Electronics at ECE and deputy director of Tech's Microsystems Packaging Research Center (PRC). Rao Tummala, ECE's Joseph M. Pettit Chair in Electronics Packaging and founding director of the PRC, serves on JMD's Advisory Board.

Of VentureLab's seven 2007 graduating companies, two have ECE faculty involvement—Asankya Networks and Innovolt. Asankya provides intelligent networking solutions that optimize the performance and security of real-time traffic on multi-site wide area networks. Raghupathy Sivakumar, ECE associate professor, is Asankya's founder and chief technology officer. Innovolt products protect electronic devices from electricity surges using state-of-the-art technology. Deepak Divan, ECE professor, invented Innovolt's core technology and serves as chair and chief technology officer for the company. Dr. Divan is also director of Tech's Intelligent Power Infrastructure Consortium.

Microsensor Measures Air and Water Pollutants

ECE and chemistry researchers 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.

The heart of the disk-shaped sensor is a microbalance that measures the mass of pollutant molecules. "When pollutant



chemicals get adsorbed to the surface of the sensor, a frequency change of the vibrating microbalance provides a measure of the associated mass change," said ECE Associate Professor Oliver Brand.

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. This research, funded by the National Science Foundation, was presented at the American Chemical Society's 234th National Meeting.

Oliver Brand, an associate professor in ECE, and graduate student Jae Hy-eong Seo look at a circuit board used to operate the microsensors chip.

GEDC Team Wins \$3.5 Million to Develop Analog Frequency-Scanning Devices

An ECE research team in the Georgia Electronic Design Center received a \$3.5 million grant to develop analog spectral processors (ASPs). These portable communications devices use tiny analog chips to scan a broad range of radio-frequency bands, from 20 MHz to 6 GHz, for open channels. The project's principal investigator is Farrokh Ayazi, an ECE associate professor and co-director of the Center for MEMS and Microsystems Technology (CMMT).

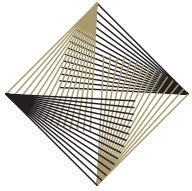
ASPs rely on micro-electromechanical systems (MEMS), analog machines that operate at the microscale—one millionth of a meter. Micromechanical circuits have a number of advantages over electronic digital chips, including using less power and providing better communications quality. ASPs have multiple applications, from improving military communications to enhancing civilian radio and cell-phone performance.

"What we're proposing is to solve the cognitive radio problem in the analog domain rather than the digital domain, with virtually no added power," said Dr. Ayazi. "The ultimate goal is to integrate ASPs with high-speed electronics on a single chip and bring unprecedented capabilities to the wireless world."



Farrokh Ayazi holds prototypes of the reconfigurable narrow-band MEMS filter arrays used in analog spectral processing.

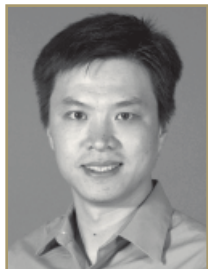
More details about these stories may be found at www.ece.gatech.edu/media/news.



GT-Atlanta

**Saibal Mukhopadhyay**

GT-Savannah

**Jongman Kim****Hongwei Wu****Fumin Zhang**

ECE Adds Eight New Faculty

ECE welcomes four named chairs who are featured on page 1 (Drs. Coyle, Ghovanloo, Shamma, Wolf), one new faculty member at the Atlanta campus (Dr. Mukhopadhyay), and three (Drs. Kim, Wu, Zhang) at Georgia Tech Savannah.

Edward J. Coyle

Arbutus Chair in Distributed Engineering Education, Georgia Research Alliance Eminent Scholar, and Director of the Arbutus Center for Distributed Engineering Education

BEE '77, University of Delaware
MSE '80, Princeton University
PhD '82, Princeton University
Area: Digital signal processing, telecommunications

Maysam Ghovanloo

ON Semiconductor Junior Professor
BSEE '94, University of Tehran (Iran);
MS Biomedical Engineering '97, Amirkabir Institute of Technology (Iran); MSEE '03, University of Michigan at Ann Arbor;
PhDEE '04, University of Michigan at Ann Arbor
Areas: Bioengineering, electronic design and applications

Jongman Kim

Assistant Professor
BSEE '90, Seoul National University
MSEE '01, Pennsylvania State University; PhDCSE '07, Pennsylvania State University

Area: Computer engineering

After graduating with his doctorate, Dr. Kim joined the Georgia Tech faculty in August 2007, where he is working on projects related to multicore designs, Network-on-Chip (NoC)/System-on-Chip (SoC) architectures, memory-based solutions, and 3D architectures. He has also designed effective fault-tolerant techniques for handling transient and permanent errors in on-chip networks and would like to pursue projects in nanoscale system designs.

Before pursuing graduate studies at Penn State, Dr. Kim worked at LG Electronics and Neopoint Inc., and participated in the development of handheld devices/PDA, AMPS(EIA/TIA-553), CDMA(IS-

95, IS-95A/B and J-STD-008) cellular phone and wireless internet platform. He is a member of IEEE and ACM/SIGARCH.

Saibal Mukhopadhyay

Assistant Professor
BS Electronics and Telecommunications Engineering, '00, Jadavpur University (India); PhD ECE '07, Purdue University
Area: Computer engineering

Dr. Mukhopadhyay joined the ECE faculty after graduating with his doctorate from Purdue. His research interests include modeling and analysis of nanoscale silicon/non-silicon devices, circuit design techniques for low power and robustness in nanometer technologies, and technology circuit co-design methodologies for VLSI systems.

He has published over 50 papers in refereed journals and conferences and has filed 5 U.S. patents. The 2005 recipient of the Semiconductor Research Corporation Technical Excellence Award, Dr. Mukhopadhyay earned Best Paper Awards at IEEE Nano in 2003, International Conference on Computer Design in 2004, and SRC Techcon in 2005.

Jeff S. Shamma

Julian T. Hightower Chair
BSME '83, Georgia Tech
PhD Systems Science and Engineering '88, Massachusetts Institute of Technology
Area: Systems and controls

Wayne H. Wolf

Rhesa "Ray" S. Farmer, Jr. Distinguished Chair in Embedded Computer Systems and Georgia Research Alliance Eminent Scholar
BEE '80, Stanford University
MSEE '81, Stanford University
PhDEE '84, Stanford University
Area: Computer engineering

Hongwei Wu

Assistant Professor
BEng in Automatic Control '97, Tsinghua University (China); MEng in Pattern Recognition/Intelligent Systems '99, Tsinghua University; MSEE '02, University of Southern California; PhD '04, University of Southern California

Areas: Bioengineering, Digital signal processing

Before joining Georgia Tech, Dr. Wu was a postdoctoral research associate at Oak Ridge National Lab and at the University of Georgia in the field of computational biology/bioinformatics. Computational biology/bioinformatics is a highly interdisciplinary field, ranging from the acquisition and understanding of comprehensive and high-definition data sets, to the construction of quantitative models and computer simulations, and to the systemic analyses of complex biological phenomena.

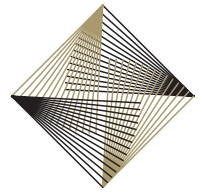
Dr. Wu's research interests are also focused on multi-dimensional genome annotations; computational systems biology; biological network modeling, estimation, simulation, and prediction; and computational intelligence theories and applications to computational biology/bioinformatics, pattern recognition, and signal processing.

Fumin Zhang

Assistant Professor
BSEE '95, Tsinghua University
MSEE '98, Tsinghua University
PhD '04, University of Maryland at College Park
Area: Systems and controls

Prior to joining Georgia Tech, Dr. Zhang was a lecturer and postdoctoral research associate in the Department of Mechanical and Aerospace Engineering at Princeton University.

Dr. Zhang's research is focused on integrating cooperative control theory and distributed sensing algorithms with real world applications that are constrained by environmental disturbances and limited power. One of his projects involves developing mobile sensor networks that can monitor large areas of the ocean and atmosphere. He has also developed motion planning algorithms and motion control laws for underwater robots to explore and sample ocean fields that have been implemented and tested on underwater gliders. |



Patricio Vela, Paul Voss Appointed to Junior Professorships

Patricio Vela Named to Goizueta Foundation Professorship

ECE Assistant Professor Patricio Vela was selected from a campus-wide field of Hispanic/Latino faculty applicants to receive the Goizueta Foundation Junior Faculty Rotating Professorship. Tech faculty members chosen for this position are selected for their academic accomplishments and commitment to mentoring students and faculty. Dr. Vela's appointment was effective July 1, and he will hold the position for three years.

The Goizueta professorship will allow Dr. Vela, working closely with the Georgia Tech Goizueta Foundation Programs, to recruit, advise, and mentor Hispanic/Latino students and faculty and to increase their presence on the Georgia Tech campus. It will also support Dr. Vela's education and research activities.

Georgia Tech is one of the largest producers of Hispanic/Latino engineers in the world, due both to its high quality engineering programs and targeted recruitment and retention of Hispanic students. These efforts have been supported generously by The Goizueta Foundation, which was established in 1992 by Roberto C. Goizueta, the late CEO and chairman of the board of directors of The Coca-Cola Company.

Born in Mexico City, Mexico, Dr. Vela came to Georgia Tech as a postdoctoral researcher in computer vision and joined the ECE faculty in 2005 as a member of the systems and controls technical interest group. He is interested in the role that computer vision can play in achieving control-theoretic objectives of (semi-) autonomous systems, as well as in control of nonlinear systems, typically robotic systems.

Paul Voss Appointed to Paris Professorship

On October 2, Paul L. Voss was named to the Demetrius T. Paris Junior Professorship in the School of ECE. An assistant professor specializing in optics and photonics at the Georgia Tech Lorraine campus, Dr. Voss is the third ECE faculty member to hold this position. Linda Wills and Aaron Lanterman previously held this title.

Created by the ECE Advisory Board to commemorate the outstanding service of the late Demetrius Paris to the School and Georgia Tech, the professorship provides seed monies to encourage innovation and educational and research program development for a junior faculty member.

Dr. Voss' research has involved experimental and theoretical study of optical amplifiers that make use of nonlinear mixing to provide gain. These amplifiers, called fiber parametric amplifiers, can also wavelength convert signals. In addition, they can also serve as sources of entangled photons for quantum key distribution. He has identified theoretically and verified experimentally the fundamental limits on the performance of these devices for optical communications and quantum key distribution. He also developed ultrasensitive detection techniques for photon counting and quantum optical homodyne tomography. His research at Georgia Tech involves the development of novel and improved devices and systems for optical communications and for quantum communications.

After earning his Ph.D. in ECE and pursuing postdoctoral studies at Northwestern University, Dr. Voss joined the Georgia Tech faculty in January 2006. |



"ECE has an abundance of talented young faculty members. Patricio and Paul are involved in exciting areas of education and research, and we look forward to many accomplishments from them."

– Gary S. May
Steve W. Chaddick
School Chair of ECE.

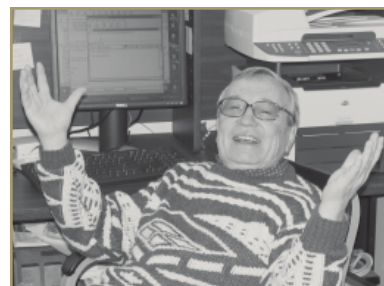
Vachtsevanos Retires after 23 Years of Service

ECE Professor George J. Vachtsevanos retired on August 31 after 23 years of service to ECE and Georgia Tech. He continues to work part-time, advising his remaining Ph.D. students and teaching professional education courses.

Dr. Vachtsevanos joined the Georgia Tech faculty in 1984, after spending a year as a visiting professor. Most recently, he has led the Intelligent Control Systems Laboratory (ICSL), a group that conducts research on fault diagnosis and failure prognosis of complex dynamical systems and that has produced over 30 Ph.D. graduates in the last 18 years. In particular, ICSL specializes in rotorcraft and hierarchical/intelligent control of unmanned aerial vehicles (UAVs), but has also performed

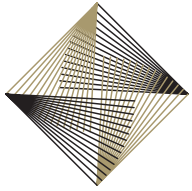
research in areas like food processing, automated textile processes, and epileptic seizure detection.

Dr. Vachtsevanos has served as the co-PI for DARPA's Software Enabled Control Program with Professor Daniel Schrage in the School of Aerospace Engineering, directing the development and flight testing of novel fault-tolerant control algorithms for UAVs. A longtime proponent of professional education, Dr. Vachtsevanos teaches a four-day short course, "Fault Diagnosis and Prognosis for Engineering Systems," and has published over 250 technical papers. In the last five years, he has been honored with the ECE Distinguished Professor Award and the Georgia Tech Class of 1934 Outstanding Interdisci-



plinary Activities Award.

"Throughout his career, George has easily crossed topical boundaries and produced exciting results in many different areas," said Gary S. May, Steve W. Chaddick School Chair of ECE. "His impact on ECE and Georgia Tech will be felt for many years to come."



Faculty News

Ali Adibi received the 2007 SPIE Technology Achievement Award, given by the International Society for Optical Engineering, for his outstanding achievements in volume holography and photonic crystals.

Abhijit Chatterjee and his students were the inaugural recipients of the 2007 Margarida Jacome Award from the University of California at Berkeley Gigascale Research Center (GSRC). They were honored for their work on "VIZOR: Virtually Zero Margin RF."

John D. Cressler and his recently graduated Ph.D. students, Ram Krithivasan and Yuan Lu, will receive the IEEE Electron Devices Society 2007 George E. Smith Award in December. This honor is given annually for the best paper to appear in *IEEE Electron Devices*, considered the flagship microelectronics devices journal for the IEEE. Dr. Cressler and his team are being honored for their paper, "Half-TeraHertz Operation of SiGe HBTs."

Bonnie Heck Ferri received the Hewlett-Packard/Harriet B. Rigas Award from the IEEE Education Society. The award honors female faculty members who have significantly benefited electrical and computer engineering education through excellence in teaching, encouraging and supporting increased participation of women in both fields, demonstrated scholarship and research, development of educational technology that enhances student learning, and/or service to the engineering profession.



Gary G. Gimmestad was elected as a Fellow of SPIE for his work in remote sensing technology, including LIDAR systems for atmospheric characterization and air quality monitoring. An adjunct professor in ECE, Dr. Gimmestad's primary appointment is with the Georgia Tech Research Institute.

Kevin T. Kornegay was nominated as the June 2007 featured scientist for the Banneker Institute for Science and Technology. The Banneker Institute was founded, with support from Congress, to combine many existing initiatives that address low performance and participation rates of African-Americans in science- and math-related studies and professions.

W. Marshall Leach, Jr. is the recipient of the 2006-07 IEEE Outstanding Branch Counselor and Advisor Award. Dr. Leach has most recently served as the Georgia Tech IEEE student branch counselor from 2003 until the end of 2006 and also served in this capacity from 1972-82.

James D. Meindl was named an Eminent Member of Eta Kappa Nu, the honor society for electrical and computer engineers.

Gabriel Rincón-Mora received a special service award from the IEEE Circuits and Systems Society during the 50th anniversary of the Midwest Symposium on Circuits and Systems 2007. He was honored for his service and contributions to the conference as technical program chair, a post that he held for two straight years.

Rao Tummala received the 2007 David Feldman Outstanding Contributions Award, given by the IEEE Components, Packaging, and Manufacturing Technology Society for outstanding leadership in executive or managerial directions. |

In Memoriam: Richard P. Kenan and Tina Prestridge

The School of ECE wishes to express its condolences to the families and friends of ECE Professor Emeritus Richard P. Kenan and Tina Lambert, assistant director for business operations at the Microelectronics Research Center.

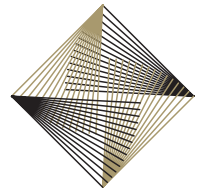
Richard P. Kenan, age 75, passed away on March 18. Memorial services were held March 22 at the Unitarian Universalist Congregation of Atlanta.

Before joining ECE in 1986 as a professor in microelectronics and optics, Dr. Kenan worked at Battelle Memorial Institute for 24 years, where his research concentrated on magnetism, the band structure of insulating solids, optics, and integrated optics. A Fellow of the Optical Society of America, he invented a number of integrated optical devices and held 10 U.S. patents. He earned both of his degrees in physics, his bachelor's in 1955 at Georgia Tech and his doctorate at Ohio State University in 1962.

While at Georgia Tech, Dr. Kenan led the ECE Undergraduate Curriculum Committee and helped to establish the School's computer engineering degree program. He also served as president of the Georgia Tech chapters of both the American Association of University Professors and Toastmasters. In 1999, Dr. Kenan retired from Georgia Tech after 12 years of service.

Tina Prestridge passed away on June 22 after a courageous five-year battle with breast cancer. A memorial service was held for her on July 16 at the Georgia Tech campus.

Mrs. Prestridge was most recently the assistant director for business operations for the Microelectronics Research Center (MiRC). She began working at MiRC in 1998 and earned her master's degree in management technology from Georgia Tech in 2002.



New Faculty Chair Holders (continued from page 1)

too costly. Dr. Coyle also co-founded the National EPICS Program, which supports and coordinates EPICS sites at Purdue and 17 other universities, including Georgia Tech.

The VIP Program assembles teams of sophomores through seniors who work with graduate students and faculty on research and development projects. The *eStadium* VIP team has developed multimedia applications accessible to sports fans via WiFi or 3G cellular networks. The first system to support on-demand viewing of replays inside the stadium, *eStadium* allows fans to see current game statistics, monitor official play-by-play descriptions, email the coach, and track other game scores. Sensor networks and cognitive radio also have roles in this project. He plans to work with the Georgia Tech Athletic Association to bring *eStadium* to Tech football fans next season.

On April 5, 2008, Dr. Coyle will host the National Idea-to-Product Competition for Social Entrepreneurship at Georgia Tech, where student teams show their original products that address local or global social needs. Competition judges will then compare product-feasibility plans and choose those most likely to succeed.

Creating Autonomous Systems: **Jeff S. Shamma**

Julian T. Hightower Chair

A widely respected expert in systems and controls, Dr. Shamma came to ECE last July after eight years at UCLA. His research is in feedback control systems, and most recently "cooperative control", which involves control and coordination of distributed decision-making agents in uncertain and potentially hostile environments.

As a PhD student, Dr. Shamma's work on gain-scheduling or "linear parameter varying systems" established the first sound theoretical foundation for this control system design practice, bringing new stability and performance results to the field. Today, LPV systems are a standard topic at all major controls conferences.

Dr. Shamma studies autonomous vehicle systems and sensor deployment. With autonomous vehicle systems, a pilot may serve as a coach for multiple vehicles or vehicles may determine their own goals. In sensor deployment, he devises ways for sensors to decide their ultimate destinations. By creating distributed frameworks, these systems are better able to self-organize, adjust to adverse elements or constant changes, recognize overlap, or acquire more data.

While at UCLA, Dr. Shamma began researching social networks and game theory with economics faculty and is forming partnerships with ISyE faculty at Georgia Tech. Social network formation centers on having "buddies," where linkages can change as easily as they are established, and arise anywhere from competitive businesses to homeland security. He also develops control and game theoretic models equipped with

decision-making methods for military operations environments influenced by the presence of social dynamics.

Since arriving at Tech, Dr. Shamma has been recruiting students and developing a senior level course, Game Theory and Multiagent Systems. He is creating the Multi Vehicle Systems Lab, where he will focus on larger scale problems like motion coordination, strategic reaction to sensed data, and information routing across ad hoc and mobile communication networks. Dr. Shamma will also examine "mixed-initiative" systems, where human operators control multiple vehicle teams.

Improving Quality of Life: **Maysam Ghovanloo**

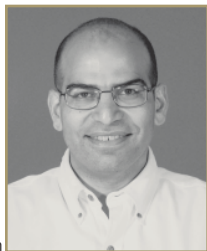
ON Semiconductor Junior Professor

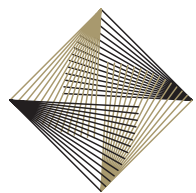
When Dr. Ghovanloo was a student in Iran, he combined his interests in electrical engineering and medicine by studying and developing medical devices, and continued that focus as a PhD student at the University of Michigan. After spending three years on the ECE faculty at North Carolina State University, he joined Georgia Tech last June.

While at Michigan, Dr. Ghovanloo created Interestim, a wireless microsystem for stimulating the central nervous system using micromachined probes, which can be used in neuroprosthetic devices that replace sensory functions impaired by injury or disease. For the past few years, he has also worked on deep brain stimulators for people with moving disorders such as Parkinson's disease. Challenges in these projects include reducing implant size and power consumption, so that it would be minimally invasive.

Dr. Ghovanloo studies brain-machine interfacing (BMI) technology to establish a direct or indirect pathway between the human brain and an external device such as a computer. BMIs are useful for people severely paralyzed by a neuromuscular disease or physical injury. While at N.C. State, Dr. Ghovanloo began developing an assistive technology, known as Tongue Drive, which would allow a quadriplegic to control his environment using his tongue movements. While wearing a wireless headset or mouthpiece, the user can operate doors, computers, telephones, and motorized wheelchairs, just by moving his tongue. Funded by the Christopher and Dana Reeve and the National Science Foundations, Dr. Ghovanloo has filed a patent on this device and is refining it in his GT-Bionics Lab.

Currently, he is forming partnerships with biomedical engineering faculty, Emory University neuroscientists, the Georgia Tech Center for Assistive Technology and Environmental Access, and the Shepherd Center in Atlanta. Dr. Ghovanloo is excited about his work and encourages students to pursue this fun, rewarding area that can make a true difference in people's lives. |





Randy Poliner Leads ECE Capital Campaign Efforts



As Georgia Tech has grown, alumni devotion to particular colleges and schools has developed within the context of general loyalty to the Institute. As a result, Georgia Tech has focused on offering alumni opportunities to express that devotion by designating their contributions to programs or causes of personal significance. Rather than simply making a generic contribution, alumni are invited to support specific academic programs, facilities, fields of scholarship or research, faculty, or fellowships and scholarships for students.

As the largest school in the College of Engineering, ECE continues to set aggressive fundraising goals to grow our capacity to attract the best and brightest students, and to ensure a well-rounded educational experience. We must also remain competitive with our peer institutions by recruiting and retaining the highest caliber faculty, and supporting their innovative education and research efforts.

To meet this lofty charge, ECE often seeks guidance from key volunteers who are knowledgeable and supportive of our long-term objectives. Recently, ECE Advisory Board Member Randy Poliner, BEE '77, agreed to chair a fundraising steering committee for the School. "As the largest producer of electrical and computer engineers in the country, Georgia Tech's ECE program must have adequate resources to remain at the forefront of education and research in a rapidly changing field," Mr. Poliner said. "I am honored to be asked to help shape a strategy for success."

In addition to his bachelor's degree from Georgia Tech, Mr. Poliner received his MSEE from Carnegie Mellon in 1980 and MBA from Harvard in 1983. Mr. Poliner resides in Florida, and is currently president of Antares Capital Corporation, a private venture capital firm. In addition to founding Antares, Poliner held COO and CEO positions at three successful, venture backed companies.

"Randy has had a great career that touches upon traditional and nontraditional electrical and computer engineering oppor-

tunities," said Gary S. May, Steve W. Chaddick School Chair. "He will bring great insight and valuable new contacts to ECE."

As a student at Tech, Mr. Poliner was involved in many activities, including ANAK, Eta Kappa Nu, and Student Government. As a professional, he has been involved in numerous civic and alumni organizations. He joined the ECE advisory board in 1993, is a trustee of the Georgia Tech Alumni Association, and is involved with the Harvard Business School Fund. Mr. Poliner's son, Graham, received his BEE from Tech in 2002.

Dr. May and the ECE development staff look forward to working with Mr. Poliner on our fundraising efforts. |

Intel Makes \$5.4 Million Equipment Gift

Intel Corporation has generously donated eight pieces of semiconductor microfabrication and metrology equipment valued at nearly \$5.4 million to Georgia Tech's Microelectronics Research Center (MIRC).

These tools include metal, semiconductor, and dielectric plasma etchers; wafer inspection tools; and a wafer polisher. According to MIRC Associate Director Kevin P. Martin, each piece of equipment is a major addition to the Center's tool set and increases the micro- and nano-fabrication capabilities that the MIRC can offer the Georgia Tech research community.

The plasma etching tools will expand the existing plasma processing tool set and allow for more and greater segregation of materials and processes, thus leading to better and more consistent results for cleanroom users. The wafer inspection tools will permit users to better monitor process conditions that in turn will improve their yields. The MIRC is presently installing one of the wafer inspection tools in the MIRC cleanroom, located in the Joseph M. Pettit Building.

Plans for the remainder of this donation are to install the equipment in the Marcus Nanotechnology Research Center Building Cleanroom. The Marcus Nanotechnology Research Center Building is scheduled to open in fall 2008. |

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College Station, Tex.

Michael R. McQuade
DuPont Company
Wilmington, Del.

Jock Ochiltree
Saint Augustine, Fla.

Joseph Parks
Intel Corporation
Beaverton, Ore.

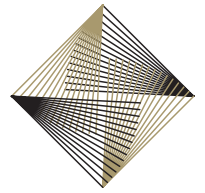
Randall E. Poliner
Antares Capital Corporation
Melbourne, Fla.

Thomas J. Quigley
Broadcom Corporation
Franklin, N.C.

Ron Slaymaker
Texas Instruments, Inc.
Dallas, Tex.

C. Meade Sutterfield
SSPCS Corporation
Atlanta, Ga.

Alek Szlam
Szlam Enterprises, Inc.
Alpharetta, Ga.



Alumni News

Michael St. John (BEE '84) is a chief engineer with SAIC/AMTI in Hanahan, S.C.

Michel Azar (MSEE '87) is the CEO of Megatek International, the number one implementer of Microsoft Dynamics NAV in the Middle East, Persian Gulf, and North Africa. He lives in Jounieh, Lebanon.

Chris Thaxton (BSEE '88) is now an assistant professor of physics at Appalachian State University. After graduating from Georgia Tech, he was an engineer at the IBM Hardware Development Lab in Research Triangle Park, N.C. In 2004, Mr. Thaxton received his PhD in physics from North Carolina State University. He currently teaches computational physics, electromagnetic field theory, microprocessors and interfacing, and the physics of transducers. His research focuses on computational geophysics. He lives in Boone, N.C. with his wife, Tonya, and son, Nick.

Doug Turner (BEE '88) recently became president and owner of Control Southern, Inc. in Suwanee, GA, the local business partner for Emerson Electric's Process Management Division. The company delivers plant floor automation solutions to wet process industries in the Southeast. He, and his wife Julie (BIE '87) reside in East Cobb with their three children.

Jeffery Williams (BEE '90) is an electrical engineer with the Centers for Disease Control in Atlanta.

Stewart Forscher (BCmpE '97) and his wife, Ashlee, adopted their first son, Owen Asanali, on August 3 in Semey, Kazakhstan. Mr. Forscher is a senior staff software systems engineer with Broadcom Corporation. The family resides in Alpharetta, Ga.

Navid Yazdani (BEE '97) and his wife, Anne, welcomed the birth of their first child, Lucas Aiden, on March 23. He is a member of the technical staff at MIT Lincoln Laboratory in Lexington, Mass.

ECE Remembers...

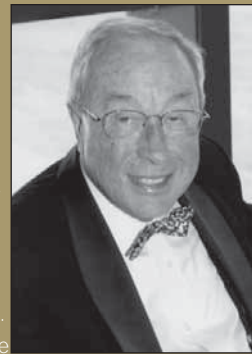
John Pippin, Technology Leader and Entrepreneur

John Pippin, founder of EMS Technologies, Inc. and a dedicated Georgia Tech alumnus, died on July 13 after a prolonged illness. He was 79 years old.

An early pioneer of the state's electronics industry, Dr. Pippin also served as chairman, president, and CEO of EMS, based at Technology Park in Norcross, Ga. He established the company in 1968 with eight employees and retired as company chairman in 1998. A forerunner in the use of ferrite technology for space applications, EMS is an important supplier to the U.S. Department of Defense and a leader in wireless and satellite communication solutions.

Dr. Pippin earned his BEE and MSEE from Georgia Tech in 1951 and 1953, respectively, and later earned his Ph.D. in applied physics from Harvard University in 1958. In the early 1990s, he was an inaugural inductee in the Georgia Technology Hall of Fame and the Georgia Tech College of Engineering Hall of Fame. He established two ECE faculty chair positions in 1998—the John Pippin Chair in Electromagnetics, held by Glenn S. Smith, and the John Pippin Chair in Wireless Systems, held by Nikil Jayant.

"John was exceptionally generous to Georgia Tech and to ECE with both his time and financial support," said Gary S. May, Steve W. Chaddick School Chair. "His innovative contributions have helped Georgia become a key player on the world's technology stage. We will miss him and his invaluable guidance."



Sang-Yeon Cho (PhD '03) is an assistant professor in the Department of Electrical and Computer Engineering at New Mexico State University in Las Cruces.

Erdem Matoglu (PhD '04) now lives in Austin, Tex. and is an engineer at IBM.

Alaric Craig (MSEE '05) is working with Goldman Sachs in Jersey City, N.J.

Jian Zhu (PhD '06) is a research engineer at Polaris Wireless in Santa Clara, Calif.

Anirudh Prasad (MS '07) is a design engineer with Intel Corporation in Folsom, Calif.

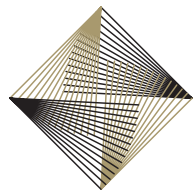
Jon Comeau (PhD '06) received a best student paper award at the 2007 IEEE Bipolar/BiCMOS Circuits and Technol-

ogy Meeting. The meeting was held in Boston in late September/early October. The title of Dr. Comeau's winning paper is "A Monolithic 5-Bit SiGe BiCMOS Receiver for X-Band Phased-Array Radar Systems." M. A. Morton, W.-M. L. Kuo, T. Thrivikraman, J. M. Andrews, C. M. Grens, J. D. Cressler, J. Papapolymerou, and M. Mitchell are his co-authors.

Cleon Davis (PhD '07) is featured in the September/October issue of the National Society of Black Engineers Magazine. He is now on senior staff at the Johns Hopkins University Applied Physics Laboratory in Laurel, Md.

Yu Feng (MSECE '07) is a software engineer with Cisco in Santa Clara, Calif. |

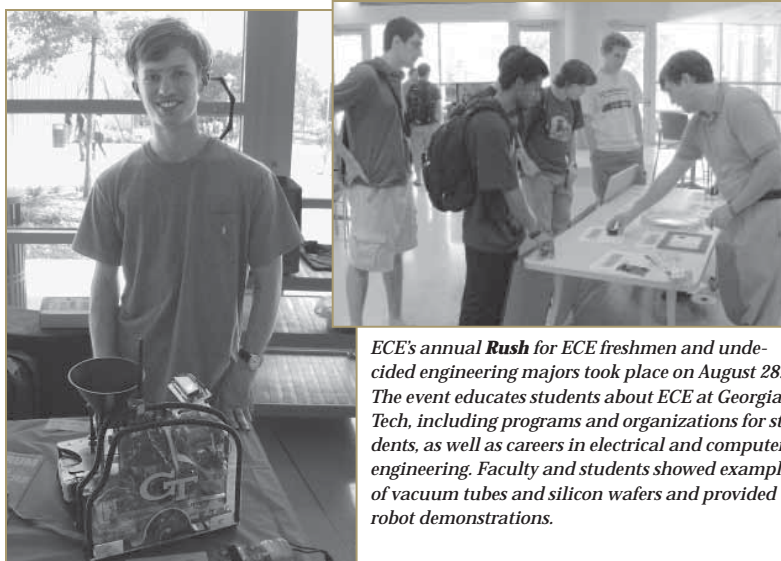
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2007 Events Showcase ECE



*The August 15 Caribbean-themed **Graduate Orientation** was attended by approximately 200 students, faculty, and staff. New graduate students had the chance to learn more about the School and meet the faculty and staff, while enjoying refreshments and music provided by a steel drum player.*



*ECE's annual **Rush** for ECE freshmen and undecided engineering majors took place on August 28. The event educates students about ECE at Georgia Tech, including programs and organizations for students, as well as careers in electrical and computer engineering. Faculty and students showed examples of vacuum tubes and silicon wafers and provided robot demonstrations.*



ECE held its third annual **ECE Fair** on April 9 at the Klaus Atrium. More than 300 students attended the event, which was hosted by ECE's Student Faculty Committee (SFC).

ECE faculty and graduate students answered questions about ECE's 10 technical interest groups (TIGs). Other booths presented programs for studying and working abroad, cooperative education, and internships. Eta Kappa Nu, Women in Electrical and Computer Engineering, and SFC were on-site providing information and recruiting. IEEE was also represented; their booth included a demonstration of a basketball-playing robot created by Tech's 2007 South-eastCon Hardware Competition team.

For the first time, corporations were invited to give students an idea of employment opportunities associated with each TIG. Industry representatives, including Burns & McDonnell, Georgia Power, Reflex Security, Rockwell Collins, and Texas Instruments, shared information about their companies and areas of specialization with fair attendees. Another first was an undergraduate and graduate student research poster and proposal competition. |

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