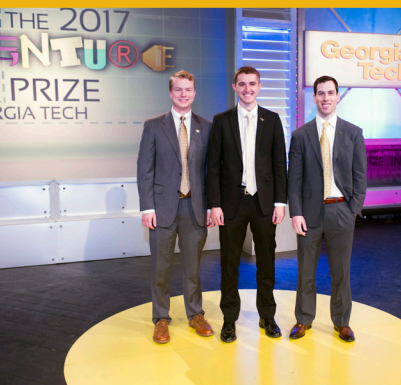SCHOOL OF

ELECTRICAL [+] COMPUTER
ENGINEERING

Georgia Tech | School of Electrical and Computer Engineering

[2016-2017 Annual Report]

[+] From the Chair

I am proud to share with you the 2016-2017 annual report for the Georgia Tech School of Electrical and Computer Engineering (ECE). Our diversity, in both people and technical interests, is one of our greatest strengths, as seen by our accomplishments and accolades.

In FY 17, we acquired $53.5 million in research funding, almost $2 million more than last year. These funds help us to address myriad challenges facing our global society, such as cybersecurity, clean energy and transportation, healthcare delivery, and electronic device development.

For the second year in a row, we granted the largest number of undergraduate degrees in over a decade while the number of graduate degrees awarded returned to its usual level after a record-breaking year in FY 16. Our students do amazing things to make our world better through programs at Georgia Tech, and now more than ever, through their own initiatives.

I began my service as ECE's interim chair on September 15, 2017, the same date that Steve McLaughlin began his tenure as dean of the College of Engineering. While this next year will be one of transition as the search for our new school chair proceeds, I look forward to continuing our momentum and vital work with your help – our corporate and government partners, alumni, and friends.

Sincerely,

Raheem A. Beyah
Interim Steve W. Chaddick School Chair
Motorola Foundation Professor

[+] Leadership Transitions

These last few months have been a period of transition and change in Georgia Tech and ECE leadership, but the tireless commitment to providing collegial leadership for the School and for our students, faculty, and staff remains constant. When Steven W. McLaughlin was appointed as dean of the College of Engineering, Raheem A. Beyah assumed the role as the Interim Steve W. Chaddick School Chair for ECE.

Steven McLaughlin Named Dean of the College of Engineering

Following a national search, Steven W. McLaughlin, professor and the Steve W. Chaddick School Chair for the School of ECE, became the dean of Georgia Tech's College of Engineering (CoE) and Southern Company Chair on September 15.

He succeeded Gary S. May, who stepped down as the CoE dean and was appointed as the chancellor of the University of California, Davis this past summer.

As dean, McLaughlin is responsible for directing the nation's largest engineering program. At his public presentation held during the search process, he shared his thoughts on the future of the College in the 21st century. During the talk titled "Being Fearless in an Age of Acceleration," he outlined a vision in which the College will "think bigger, act bolder, and collaborate more."

McLaughlin served as ECE's chair since September 2012. From 2007 to 2012, he was vice provost for International Initiatives, a position in which he provided oversight and strategic direction for Georgia Tech's global engagement, education, and economic development initiatives. During that

[+] ECE Overview

National Rankings,
U.S. News & World Report

#4
E.E. undergraduate program

#6
Cmp.E. undergraduate program

#6
E.E. graduate program

#5
Cmp.E. graduate program

2,620
overall total

1,465
total undergraduate enrollment, FY 17

868 B.S.E.E.
597 B.S.Cmp.E.

17% females
19% underrepresented minorities

1,155
total graduate enrollment, FY 17

551 M.S./M.S.E.C.E.
1 M.S. Bioengineering
563 Ph.D.
11 Ph.D. Bioengineering
25 Ph.D. Robotics
4 Non-degree seeking

17% females
8% underrepresented minorities

810
overall total

375
total undergraduate degrees awarded, FY 17

244 B.S.E.E.
131 B.S.Cmp.E.

15% female graduates
16% underrepresented minorities

435
total graduate degrees awarded, FY 17

311 M.S.E.C.E.
97 Ph.D.
27 P.M.S.E.E.*

15% female graduates
5% underrepresented minorities

Professional Master's in Sustainable Electrical Energy

---

time, McLaughlin also served as the Steven A. Denning Chair in Global Engagement. He was a Ken Byers Professor from 2005 to 2012 and was previously deputy director of Georgia Tech-Lorraine. He has been on the ECE faculty since 1996, where he is a member of the telecommunications technical interest group.

Raheem Beyah Tapped as ECE Interim Chair

Raheem A. Beyah was appointed as the Interim Steve W. Chaddick School Chair for ECE, effective September 15, and will hold this position until a new, permanent school chair is named. The search for a new school chair began in September 2017.
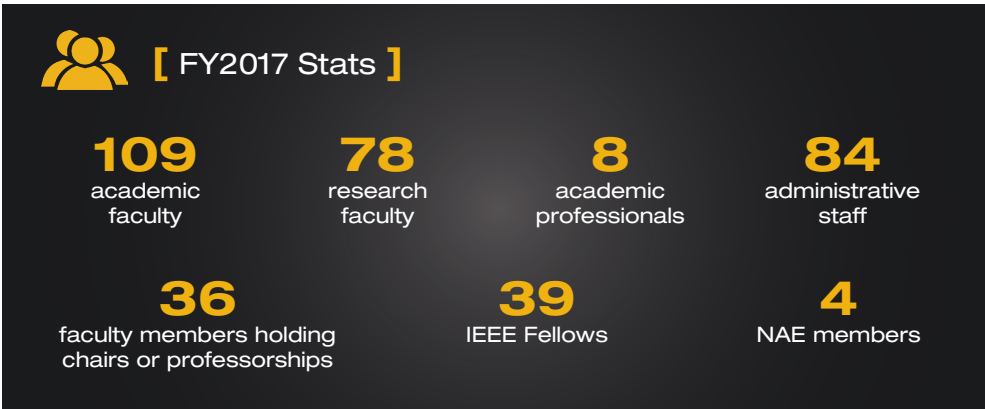
A member of the ECE faculty since 2011, Beyah holds the Motorola Foundation Professorship, leads the Communications Assurance and Performance Group, and is a member of the Institute for Information Security and Privacy. He also serves

as ECE's associate chair for Strategic Initiatives and Innovation and is a member of the computer systems and software technical interest group.

A two-time Georgia Tech ECE alumnus, Beyah earned his M.S. and Ph.D. degrees in 1999 and 2003, respectively. He graduated with his B.S.E.E. degree in 1998 from North Carolina A&T State University. Prior to returning to Georgia Tech, he was an assistant professor in the Department of Computer Science at Georgia State University, a research faculty member with the Communications Systems Center, and a consultant with Andersen Consulting's (now Accenture) Network Solutions Group.

Beyah has been a strong leader in initiatives among multiple units and colleges and within the College of Engineering. Along with two faculty members in the George W. Woodruff School of Mechanical Engineering, Beyah co-founded the Academic and Research Leadership Network in 2012. Beyah has also served as director of the Georgia Tech Summer Undergraduate Research Experience program since 2012.

[+] Faculty & Staff

[FY2017 Stats]

109 academic faculty

78 research faculty

8 academic professionals

84 administrative staff

36 faculty members holding chairs or professorships

39 IEEE Fellows

4 NAE members

[New Faculty]

Asif Khan Assistant Professor, Microsystems, VLSI Systems and Digital Design

[Faculty Awards]

ECE faculty members were honored by Georgia Tech and external groups for their excellence in teaching, educational innovation, outreach, research, and commercialization.

External Awards

Raheem A. Beyah | Distinguished Scientist, Association for Computing Machinery; 2017 Emerging Scholar, *Diverse: Issues in Higher Education*

Wenshan Cai | ONR Young Investigator Award

Morris B. Cohen, Alenka Zajic | NSF CAREER Awards

Mark A. Davenport | Sloan Research Fellowship

Bonnie H. Ferri | IEEE Undergraduate Teaching Award

Ayanna M. Howard | Invention Ambassador Program (AAAS and Lemelson Foundation) and the 2017 Women Making A Mark (*Atlanta* magazine)

Geoffrey Ye Li | IEEE Communications Society Award for Advances in Communication

Russell M. Mersereau | IEEE Fourier Award for Signal Processing

Fatih Sarioglu | Beckman Young Investigator Award

Hua Wang | IEEE Microwave Theory and Techniques Society Outstanding Young Engineer Award

Georgia Tech Awards

Ghassan AlRegib | Steven A. Denning Faculty Award for Global Engagement

Muhannad Bakir, Madhavan Swaminathan, Emmanouil (Manos) Tentzeris | Outstanding Achievement in Research Program Development Award (honored with ME's Suresh
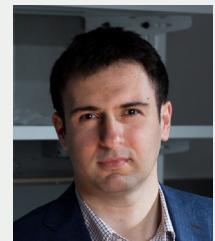

Above: (2nd from left to right) Madhavan Swaminathan and Muhannad Bakir with President G.P. "Bud" Peterson at the Georgia Tech Faculty and Staff Honors Luncheon. Right, top: Morris Cohen, bottom: Fatih Sarioglu.

Sitaraman, Samuel Graham, and Peter Hesketh and ISyE's Chuck Zhang)

Pamela T. Bhatti | Class of 1934 Outstanding Interdisciplinary Activities Award

Mark A. Davenport | Class of 1940 W. Roane Beard Outstanding Teacher Award

Deepak M. Divan | Outstanding Achievement in Research Innovation Award

Omer T. Inan | Sigma Xi Young Faculty Award

Mary Ann Weitnauer | Class of 1934 Outstanding Service Award

Alenka Zajic | LexisNexis Dean's Excellence Award

[+] Students & Student Groups

ECE student groups provide outlets for community building, K-12 outreach and service, and professional development. Our students also participate in interdisciplinary clubs and many different social, professional, and cultural organizations.

[Student Groups]

Eta Kappa Nu • IEEE • ECE Ambassadors • The Hive • Women in Electrical and Computer Engineering

[Award Winners]

Our students were honored at ECE's annual Roger P. Webb Awards Program and at campus award ceremonies. This past spring, George Tzintzarov was a co-recipient of Georgia Tech's highest accolade given to a graduating senior.

Georgia Tech Awards

George Tzintzarov | Love Family Foundation Scholarship

Nelson Lourenco, Reza Pourabolghasem, and **Dogancan Temel** | Sigma Xi Best Doctoral Thesis Awards

Roger P. Webb Awards

George Tzintzarov | Outstanding Electrical Engineering Senior Award

Ethan Everett | Outstanding Computer Engineering Senior Award

Motaz Alfarraj, Hesam Moradinejad | ECE Graduate Teaching Assistant Excellence Awards

Prashant Nair, Dogancan Temel | ECE Graduate Research Assistant Excellence Awards

Above: George Tzintzarov with Provost Rafael Bras at the Georgia Tech Student Honors Day. Below, left: ECE undergraduate student award winners. Below, right: ECE graduate student award winners. Both groups of ECE students are pictured with Senior Associate Chair Mary Ann Weitnauer (bottom left in both photos).

[+] Students & Student Groups

Omojaro Honored with President's Volunteer Service Award

Olatide Omojaro, a second year computer engineering major, received a President's Volunteer Service Award from former U.S. President Barack Obama. Omojaro was recognized for his work with the African Research Academies for Women (ARA-W), where he tracks student participant data and the students' progress in their studies and careers after they finish the program.

ARA-W is a research experience program that encourages undergraduate female students at universities in Ghana to pursue studies in STEM fields. The organization is also working to include female university undergraduate students in Nigeria.

K-12 Students Take Part in "A Day of Light" Workshop

A team of volunteers, led by ECE Ph.D. student Sean Rodrigues, held a mini workshop series on March 18, 2017 titled "A Day of Light." The workshop, funded by a SPIE outreach cycle grant, presented fun optics concepts to over 200 K-12 students from metro Atlanta and introduced them to careers in the field.
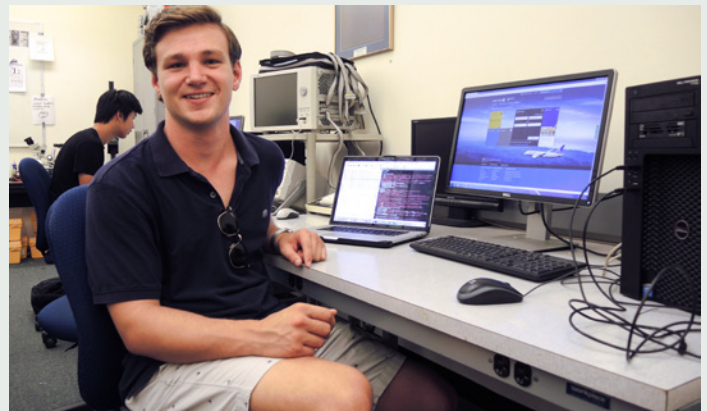
The workshop was one of a series of science outreach events that were organized by the Center for Education Integrating Science, Mathematics, and Computing (CEISMC). CEISMC also helped the workshop to influence a greater sphere of students, especially those from Hispanic and Latin American backgrounds.

Amanzi Solar Wins Top Prize in Ideas to Serve Competition

Student-founded startup Amanzi Solar won first place in the Ideas Track of the Ideas to Serve Competition on April 19, 2017. The competition is organized by the Institute for Leadership and Entrepreneurship in the Scheller College of Business.

The Amanzi Solar team includes computer engineering major Alex Simoneaux, electrical engineering major Jake Smith, materials science and engineering doctoral student Matt Smith, and mechanical engineering doctoral student Luke Yates. Their startup developed a patent-pending thermal management system for solar panels that can provide a net power increase of 15%. Amanzi Solar also participated in the CREATE-X program Idea to Prototype.
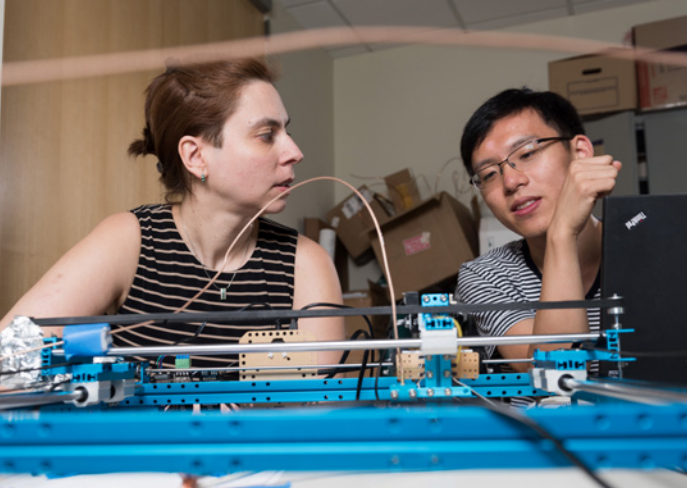

Pickren Donates Five Million Air Miles to Student Organizations

Ryan Pickren, a senior computer engineering major, donated five million United Airlines miles to Georgia Tech student organizations that participate in charity work. The gift is one of the largest in-kind donations made to the Institute by a current undergraduate student.

Pickren earned miles in United's Bug Bounty Program, which incentivizes researchers to identify and report potential security issues that could affect the company's websites, apps, or online portals. Since the program's inception, Pickren has been the most successful participant, earning more than twice as many miles as any other participant.

[+] Research & Education Highlights

Monitoring Side-Channel Signals Could Detect Malicious Software on IoT Devices

A $9.4 million DARPA grant could lead to developing a new technique for wirelessly monitoring internet of things devices for malicious software — without affecting their operation. The technique will rely on receiving and analyzing side-channel signals, electromagnetic emissions produced unintentionally by electronic devices as they execute programs.

By comparing these unintended side-channel emissions to a database of what the devices should do when operating normally, researchers can tell if malicious software has been installed. ECE Associate Professor Alenka Zajic leads this project; her collaborators are Professors Milos Prvulovic and Alessandro Orso from the School of Computer Science and a research team from Northrop-Grumman headed by Matthew Welborn.

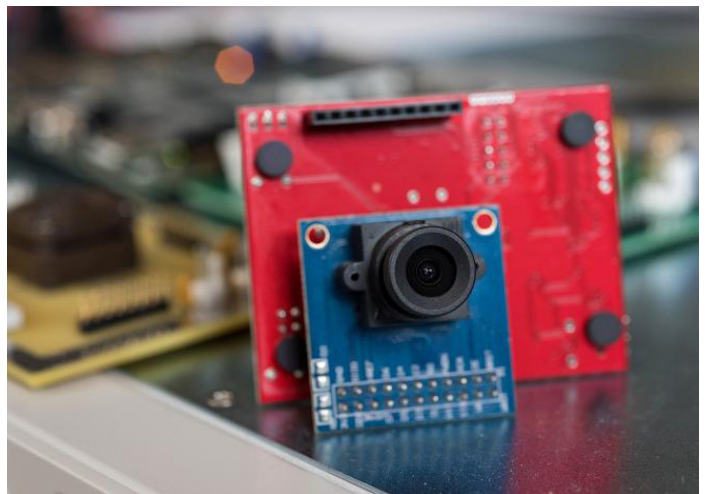## $17 Million Contract Will Help Establish Science of Cyber Attribution

Georgia Tech was awarded a $17.3 million cybersecurity research contract from the U.S. Department of Defense to help establish new science around the ability to quickly, objectively, and positively identify the virtual actors responsible for cyberattacks, a technique known as "attribution."

While the tools and techniques to be developed won't point directly to the individuals responsible, the initiative will provide proof of involvement by specific groups, identifiable by their methods of attack, consistent errors, and other unique characteristics. Led by ECE Assistant Professor Manos Antonakakis, the project involves Georgia Tech and Institute for Information Security & Privacy researchers in collaboration with other academic institutions and companies.

Master of Information Security Degree Expands across Three Schools

Students now can prepare for a cybersecurity career in a newly expanded degree program at Georgia Tech.

Because cybersecurity no longer is confined to computer science, three specialization tracks — policy, energy systems, and information security — will be offered to broaden Georgia Tech's Master of Science in Information Security. The degree, historically housed in the College of Computing, has been renamed the Master of Science in Cybersecurity and is delivered through three schools — ECE, the School of Public Policy, and the School of Computer Science, effective May 1, 2017.

Researchers Develop a Low-power Always-on Camera with Gesture Recognition

Smart devices that wake up with voice commands have gained popularity in recent years, and now Georgia Tech researchers have taken it one step farther: an always-on camera developed by Arijit Raychowdhury, the ON Semiconductor Junior Professor in ECE, and Justin K. Romberg, the Schlumberger Professor in ECE.

Designed with a combination of low-power hardware and energy efficient image processing software, the always-on camera is capable of watching for specific gestures without draining batteries or running up electricity bills. The camera could be used in various applications, such as camera systems in remote locations where efficiency is crucial. Other possibilities include specialized surveillance, robotics, and consumer electronics with hands-free operation.

[+] Research & Education Highlights

Buzzing the Vagus Nerve Just Right to Fight Inflammatory Disease

Georgia Tech researchers have figured out how to keep what helps in medical treatment, while blocking what harms, in a type of therapy to fight serious chronic inflammatory diseases. They have developed an implanted device that electrically stimulates the vagus nerve and that also inhibits unwanted nerve activity in a targeted manner.

This innovation of adding an inhibiting signal could increase the clinical efficacy and therapeutic benefit of existing treatments. Robert J. Butera, a jointly appointed professor in ECE and the Wallace H. Coulter Department of Biomedical Engineering, leads this project.
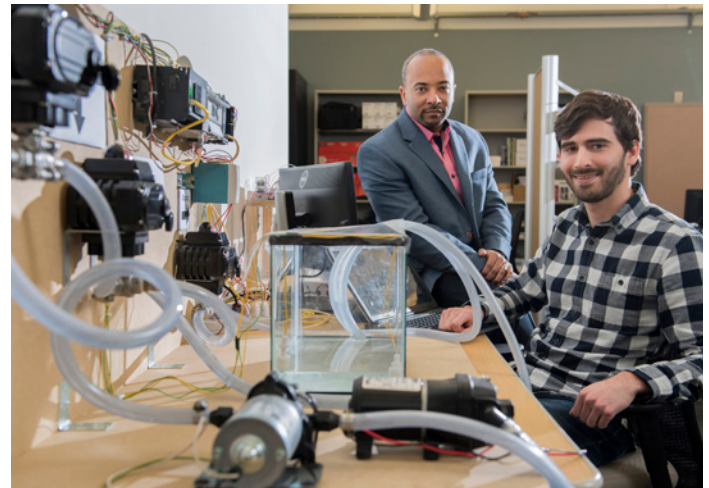

Georgia Tech Announces New Educational Collaboration with Shenzhen and Tianjin University

A new educational collaboration among Georgia Tech, the city of Shenzhen, and Tianjin University in China will expand global opportunities in science, technology, and engineering education.

Spearheaded by ECE Professor G. Tong Zhou, the Georgia Tech Tianjin University Shenzhen Institute will offer majors in ECE, computer science, industrial design, environmental engineering, and analytics. Georgia Tech will coordinate the graduate programs at this institute, and Tianjin University will coordinate the undergraduate programs.
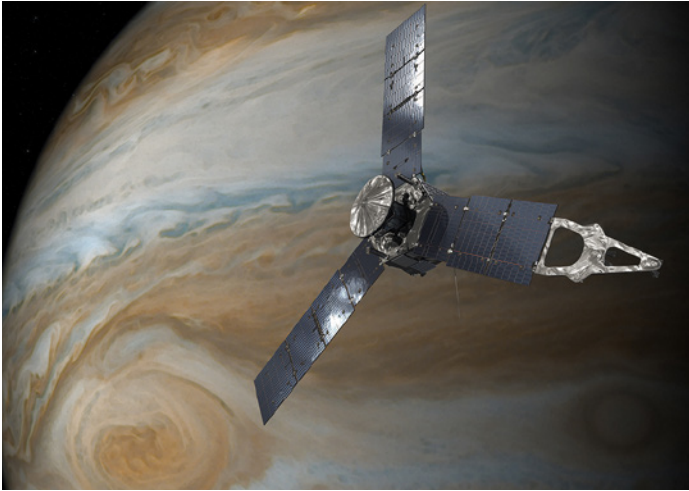
This initiative will also present new opportunities for U.S.-based students, including study abroad programs and internships, and will expand Georgia Tech's China Summer Program.

Simulated Ransomware Attack Shows Vulnerability of Industrial Controls

Georgia Tech cybersecurity researchers have developed a new form of ransomware that took control of a simulated water treatment plant. The simulated attack was designed to highlight vulnerabilities in control systems used to operate industrial facilities and building management systems. This research, led by Interim Steve W. Chaddick School Chair and Motorola Foundation Professor Raheem A. Beyah, is believed to be the first demonstration of ransomware compromising real programmable logic controllers.
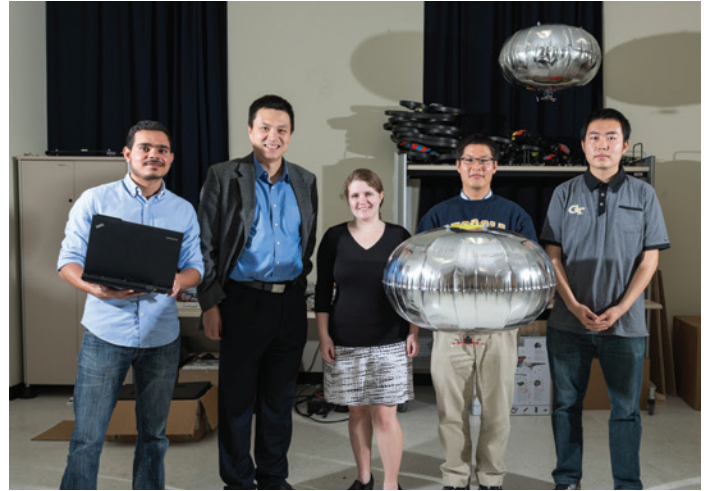
Ransomware generated an estimated $200 million for attackers during the first quarter of 2016. Though no real ransomware attacks have been publicly reported on the process control components of industrial control systems, the attacks have become a significant problem for patient data in hospitals and customer data in businesses.

Juno Spacecraft Reveals Chaos, Deep Clouds at Jupiter

In a paper in *Science*, the Juno Science Team, which includes ECE Professor Paul G. Steffes, published its first observations of Jupiter, describing a chaotic scene of varying amounts of ammonia, cyclones, and bands of storms that extend far deeper beneath the planet's clouds than previously thought.

Juno has circled Jupiter since entering its orbit on July 4, 2016 and has completed six passes of the planet. Steffes has been receiving measurements from Juno's microwave radiometer since last fall. The instrument measures radio waves from the planet's deep atmosphere to provide hints of Jupiter's composition.

Georgia Tech Roboticists Building Face-Detecting Blimps

Georgia Tech researchers, led by ECE Professor Fumin Zhang, have built autonomous blimps that recognize hand gestures and detect faces. The blimps, 3D-printed onto a gondola frame carrying sensors and a mini camera, attach to either an 18- or 36-inch diameter balloon. The smaller blimp can carry a five-gram payload while the larger one supports 20 grams.

The autonomous blimps detect faces and hands, allowing people to direct the flyers with movements. All the while, the machine gathers information about its human operator, identifying everything from hesitant glares to eager smiles. The goal is to better understand how people interact with flying robots.

Georgia Tech Team Places Third in EcoCAR 3

Georgia Tech won third place overall and second place in the technical part of the Year Three phase of EcoCAR 3, a four-year student competition sponsored by the U.S. Department of Energy and General Motors, where teams design, build, and integrate their hybrid-electric designs into a 2016 Chevrolet Camaro. Tech's team also received additional technical prizes for their work.

Part of the Vertically Integrated Projects Program, the Georgia Tech EcoCAR 3 team consists of undergraduate and graduate students and three faculty advisors from ECE, Mechanical Engineering, Chemical and Biomolecular Engineering, and Computer Science. ECE students held many core leadership roles on the team due to the work that was prioritized this year.

[+] Commercialization

For over 30 years, ECE faculty members and students have founded successful startup companies through the Advanced Technology Development Center (ATDC). They can also work on commercializing their technologies through VentureLab. Students may also take part in the InVenture Prize at Georgia Tech, a student-led competition for undergraduate students and recent bachelor's degree graduates of Georgia Tech.

15 patents issued, FY 17

55 invention disclosures, FY 17

199 patents issued in last five years

CPR+ Advances to 2017 InVenture Prize

CPR+ was among the six finalists for the 2017 InVenture Prize, held on March 15 at the Georgia Tech Ferst Center for the Arts.
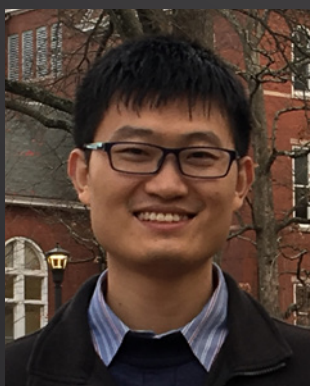
The team developed a CPR mask that allows an untrained bystander to perform CPR by walking the user through each step of the process. While some previously existing apps can assist users through the CPR steps, they cannot measure a victim's heart rate and breath rate like CPR+ does. The inventors of CPR+ are Dave Ehrlich and Ryan Williams, both computer engineering majors, and Samuel Clarke, a mechanical engineering and computer science major.

StarMobile Graduates from ATDC

StarMobile graduated from ATDC at its 2017 Startup Showcase, held on May 11 at the Georgia Tech Hotel and Conference Center. A company can graduate from ATDC if it has achieved one or more of these milestones: producing a recurring annual revenue run rate of $1 million or more; demonstrating significant customer traction; or being acquired in the past year.

Established in 2012, StarMobile, a disruptive, cloud-based solution that delivers enterprise mobility at a fraction of the cost and time of any other approach, was acquired by PowWow Mobile in October 2016. StarMobile was founded by Raghupathy Sivakumar, who holds the Wayne J. Holman Chair in ECE.

Zhang, Xia Receive TechConnect National Innovation Award

ECE Associate Professor Ying Zhang and her Ph.D. student Zongyang Xia received a TechConnect National Innovation Award during the 2017 TechConnect World Innovation Conference and Expo, held May 14-17 in Washington, D.C.

The winning technology is entitled "Noise suppression scheme based on phase locked loop for non-contact vital sign detection." Potential applications include biomedical monitoring, healthcare, fitness monitoring, physical monitoring of astronauts/drivers/pilots, and search and rescue operations.

[+] Development

The ECE Development Office cultivates and coordinates the School's fundraising efforts with industry, alumni, and other interested people and organizations. This group manages the Corporate Affiliates Partnership Program, the ECE Career Fair, and other networking and social activities to promote alumni and corporate involvement.

For more information, contact Martina Emmerson Hubbarth, director of ECE Alumni Development, at 404.894.0274; Etta Pittman, director of ECE Corporate Development, at 404.894.6888; or Anna Walker, assistant director of ECE Development, at 404.894.2273.

[FY 17 Donors]

We would like to thank the following corporations, non-profit organizations, and individuals for contributing $4,786,651 to the School and its affiliates during FY 17.

INDIVIDUALS | C. Dean Alford • William H. Allen • Antonio R. Alvarez Anonymous 111 • Anonymous 160 • Brian M. Banner • Susan P. Banner • Steve A. Barton • Gina DeSimone Bauer • Russell T. Beason, Jr. • Harry L. Beck • Teresa Beck Roberta A. Bienfait • Kevin Brennan (posthumous) • Suzy Briggs • H. Austin Brown John H. Brownlee • Robert John Butera, Jr. • Kenneth G. Byers, Jr. • Qiang Brian Chen Harriett C. Coleman • Thomas J. Coleman • Thomas R. Collins • Wang Cong • J. Alvin Connelly • Mary N. Connelly • James A. DeBardelaben • R. Thomas Dyal • Aldo A. Ferri Bonnie H. Ferri • Frank A. Field • Janice L. Gaylord • Thomas K. Gaylord • Shirley B. Gurley • Thomas B. Gurley • Larry Heck • Martina E. Hubbarth • Arlen J. Kirchoff, Jr. Luan Le-Chau • Jeffrey A. Leber, CFP • Lila S. Loewy • Robert G. Loewy • Kenneth E. MacKenzie • Nicole R. MacKenzie • Norma J. McLees • Ben R. McRee • Frederica Z. Meindl • John B. Peatman • Etta Pittman • Darrell W. Preble • Wesley C. Sanders William A. Sanders • Gene Sapp, Jr. • John T. Slaughter • Paul G. Steffes • Rajagopal Subramanian • Madhavan Swaminathan • Kristin Ann Turgeon • Judith Vanderboom Anna Walker • Anita Wathen-Brownlee • Sabine Wathen • Patricia T. Webb • Roger P. Webb • Douglas B. Williams • Kay Williams

FOUNDATIONS / NON-PROFIT ORGANIZATIONS | Breast Cancer Research Foundation • Community Foundation for Brevard, Inc. • Corning Glass Works Foundation • Eastman Chemical Foundation • Eaton Charitable Fund • ExxonMobil Foundation • Frances Wood Wilson Foundation, Inc. • General Motors Foundation, Inc. Georgia Power Foundation • Harvey Hubbell Foundation • IBM International Foundation Motorola Solutions Foundation • Norfolk Southern Foundation • Silicon Valley Community Foundation • Simons Foundation • Southern Company Charitable Foundation • The Marcus Foundation, Inc. • Vanguard Charitable Endowment

PROFESSIONAL, RESEARCH, & ACADEMIC ORGA-NIZATIONS | Electric Power Research Institute • Eta Kappa Nu Society • King Fahd University of Petroleum & Minerals • National Rural Electric Coop Association Radio Club of America, Inc. • Rutgers University • SCEEE • Tennessee Valley Authority

COMPANIES | 3M Worldwide • ABB Inc-Automation Technologies • Airbus North America • AirWatch • Ajinomoto Company, Inc. • Aluma-Form, Inc. • Ameren Corporation American Electric Power Company, Inc. • American Transmission Company, LLC • Asahi Glass America, Inc. • Atotech Deutschland GmbH • AVX Corporation • Benevity Community Impact Fund of AEF • Boeing Company • Booz Allen Hamilton • Caterpillar Forest Products • Cisco Systems, Inc. • Coherent, Inc. • Comcast Corporation • ConocoPhillips Corporation • Consolidated Edison Company of New York • Digi-Key Corporation Dolby

Speed Wireless Provides $2.1 Million for Research Funding

Speed Wireless provided $2.1 million to fund electronics research in ECE. A team from the company visited campus on May 23, 2017 to present a check to Steven W. McLaughlin and to tour ECE facilities.

Part of the total — $1.1 million — is for research in the Georgia Tech Electronics and Micro-Systems Lab, led by Hua Wang, who holds the Demetrius T. Paris Junior Professorship. His project is focused on developing ultra-high-speed broadband integrated circuit front-ends that support next-generation commercial 5G mm-Wave MIMO systems. The remaining $1 million is an unrestricted cash gift to support advanced electronic research.
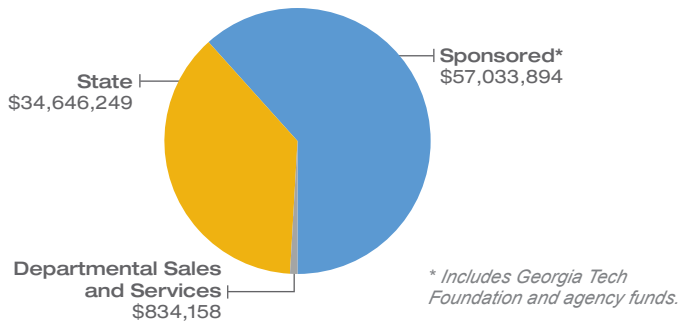
Laboratories • Dow Chemical Company • Earnway Technology Development, Ltd. Eaton Lighting Solutions • Entergy Corporation • EPCOS AG • Ericsson, Inc. • ESI, Inc. Exelon Corporation • ExxonMobil Corporation • Florida Power & Light Company • Ford Motor Company • Fujitsu Laboratories, Inc. • General Cable Corporation • Georgia Power Company • GigaLane Company, Ltd. • GlobalFoundries • GRESCO • H.C. Starck GmbH Harris Corporation • Hitachi Metals, Ltd. • Hubbell Power Systems • Inphi Corporation Intel Corporation • International Paper Corporation • INVISTA • Jiangsu Changjiang Electronics Technology Company • John Deere World Headquarters • Keysight Technologies • Kulicke & Soffa Industries, Inc. • Lam Research Corporation • Linear Technology Corporation • Lockheed Martin • LyondellBasell Industries • Microdesigns Microsoft Corporation • MKS Instruments • Murata Manufacturing Company, Ltd. Namics Corporation • National Corporate College Consultants, Inc. • Neustar, Inc. • NGK Spark Plug Company, Ltd. • Nitto Denko Technical Corporation • Northrop Grumman NOVA-Borealis Compounds, LLC • OPE, LLC • Oracle Corporation • Orbital ATK, Inc. PacifiCorp • PacTech USA, Inc. • Panasonic Corporation of North America • Pendar Technologies, LLC • Pepco Energy Services • Perkins Coie • PG&E Corporation • PPL Corporation • Procter & Gamble Company • PROLEC GE International, S. de R.L. de C.V. Prysmian Cables and Systems • Qorvo • Qualcomm, Inc. • Rohm and Haas Company S&C Electric Company • San Diego Gas & Electric Company • SCANA Corporation Schott North America, Inc. • Semiconductor Research Corporation • Shinko Electric Industries Company, Ltd. • Silicon Creations, LLC • Smart Wire Grid, Inc. • South Carolina Electric & Gas Company • Southern California Edison Company • Southern States, LLC Speed Wireless Technology Company, Ltd. • SUSS MicroTec Photonic Systems, Inc. Taiwan Semiconductor Manufacturing • Tango Systems, Inc. • Taylor Exhibition Services, Inc. • TE Connectivity • Texas Instruments • The Chamberlain Group, Inc. • The Gillette Company • The Home Depot • Tokyo Tekko Company, Ltd. • Traffic Troopers, Inc. • Tyco Electronics • Unimicron Technology Corporation • Union Pacific Corporation • United Technologies Corporation • Veeco Compound Semiconductor • Viakable • Virginia Power and Electric Company • VMWare, Inc. • WEC Energy Group, Inc. • XYZTEC bv

[+] Finances

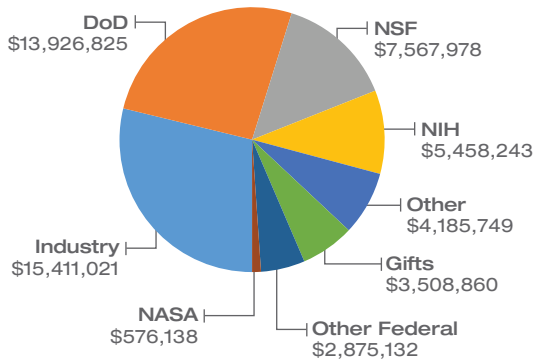The School spent $92,514,301 from state, sponsored research, and departmental sales and services sources. This money mostly pays for faculty, staff, and researcher salaries, and the rest is used for materials and supplies, travel, and equipment in support of our research and educational missions.

Research funding for FY 17 totaled $53,509,945 from grants and contracts, an increase of almost 3.5% over last year, and includes support received through the Georgia Tech Foundation. Of that total, 29% came from industry, 56% came from federal government sources, 7% came from Georgia Tech Foundation gifts, and 8% came from other sources. Sponsored funding acquired by ECE and its affiliated research centers made up 16% of Georgia Tech's research funding portfolio (excluding GTRI) and 28% of the research funding in the College of Engineering, the largest share of any CoE unit.

FY 17 Expenditures

State
$34,646,249

Sponsored*
$57,033,894

Departmental Sales
and Services
$834,158

* Includes Georgia Tech
Foundation and agency funds.

FY 17 Research Funding

DoD
$13,926,825

NSF
$7,567,978

NIH
$5,458,243

Other
$4,185,749

Gifts
$3,508,860

Other Federal
$2,875,132

NASA
$576,138

Industry
$15,411,021

[+] Alumni

ECE Graduates Honored at College of Engineering Alumni Awards

Three ECE alumni were honored at the 2017 Georgia Tech College of Engineering Alumni Awards Induction Ceremony, held April 8 at the Four Seasons Hotel in Atlanta.

ACADEMY OF DISTINGUISHED
ENGINEERING ALUMNI

Larry P. Heck
MSEE '89, PhD EE '91
Director of Research
Google, Inc.
Mountain View, California

Teresa H. Shea
BSEE '81
Executive Vice President/
Director of Cyber Reboot
In-Q-Tel
Arlington, Virginia

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