Department of Electrical Engineering and Computer Science

The Department of Electrical Engineering and Computer Science (EECS) is MIT's largest department, with 127 faculty conducting research in four major labs: the Computer Science and Artificial Intelligence Laboratory (CSAIL), the Laboratory for Information and Decision Systems (LIDS), the Microsystems Technology Laboratories (MTL), and the Research Laboratory of Electronics (RLE). EECS is also home to a growing portion of MIT's student body: in the 2015–2016 academic year, 1,204 undergraduate students, 195 MEng students, and 633 doctoral students were enrolled in the department.

Departmental Leadership Changes

Administrative Officer Agnes Chow retired after 11 years with the Department of Electrical Engineering and Computer Science and 32 years at MIT.

Educational and Outreach Initiatives

Whether it is through conducting groundbreaking research or creating the next generation of global innovators, our faculty, students, and staff are working to make a better world through transformative technologies and new approaches to discovery and learning. To this end, EECS has launched approximately 30 key initiatives over the past five years aimed at enhancing the faculty, student, and postdoc experience and strengthening the department's outreach activities. Now moving past their launch period, these well-received programs are growing beyond EECS, with new participation in other departments, in the School of Engineering, at the Institute level, and outside of MIT.

SuperUROP

The Advanced Undergraduate Research Opportunities Program, or SuperUROP, is an undergraduate program that gives students the research toolkit they need to tackle real-world problems. Students in the program participate in a yearlong research experience and enroll in 6.UAR Preparation for Undergraduate Research. For the first time this year, SuperUROP expanded to include students throughout the School of Engineering, and enrollment has more than doubled in the four years since the program began, from 80 students to 178. The work of many of these students has been featured in in top journals and conferences.

StartMIT

Entrepreneurship plays a vital role in deploying new ideas and technologies. To give our students more exposure to the elements of entrepreneurship, EECS launched Start6, a 2.5-week Independent Activities Period (IAP) subejct, in 2014. This year Start6 had a makeover as StartMIT, and the program includes students and postdocs from all departments. Students and postdocs had the opportunity to work closely with successful entrepreneurs and innovators including Ethernet co-inventor and 3Com founder Bob Metcalfe, the 2015–2016 MIT Visiting Innovation Fellow. StartMIT students also received first access to the MIT Sandbox Innovation Fund, a program that launched in January 2016 to connect students with tailored educational experiences and mentoring; in addition, qualified students and teams were awarded between $1,000 and $25,000

to nurture their ideas. Designed to be flexible and synergistic with MIT classwork and research, Sandbox will support students throughout their time on campus. Accepted proposals will be accompanied by milestones and/or co-curricular requirements tailored to the needs of the individual student or team. All participants will be matched with mentors through efforts leveraging the alumni and non-alumni networks in the area.

Rising Stars Workshop

In November 2015, EECS hosted the annual Rising Stars in EECS workshop, which brought 61 women graduate students and postdocs considering careers in academic research to the campus for three days of academic talks, networking, and skill-building sessions. In addition to receiving an introduction to the skills they need to navigate the early stages of an academic career, participants were able to expand their network and make lasting connections, opening the doors for collaborations and professional support in years to come. Carnegie Mellon University will host Rising Stars in EECS in fall 2016.

At this year's workshop, participants and speakers candidly discussed how to tackle common issues such as dual-career hiring (when an applicant's significant other is also seeking a job in academia), work-life balance, and family leave policies. Attendees also presented their research at a poster session and gave talks about it. All sessions were designed to help demystify what many young female faculty describe as the "black box" of academic hiring and the tenure process. EECS department head Anantha Chandrakasan chaired the workshop and Professors Regina Barzilay, Dina Katabi, and Asu Ozdaglar served as technical program co-chairs.

Figure 1. 2015 Rising Stars participants (photo by Gretchen Ertl).

Postdoc6

Postdoc6, entering its fourth year, is committed to ensuring that postdocs across EECS-affiliated labs have access to the resources they need to build a vibrant postdoc community—opening the door to the many opportunities available to them at MIT. This year, the department created a new workshop to develop leadership and teamwork skills for postdocs. The workshop also featured training for follow-up peer groups to provide ongoing support networks.

Undergraduate Student Advisory Group in EECS

One of the earliest initiatives of the new department leadership in 2011 was the formation of the Undergraduate Student Advisory Group in EECS (USAGE), a standing committee whose members provide critical student input on curriculum development and enhancements as well as on departmental processes and culture. USAGE has made essential contributions to the development of initiatives such as SuperUROP, the EECS undergraduate research conference (EECScon), and the new Undergraduate Student Lounge, and has highlighted the importance of participation and leadership in the department's large undergraduate student population.Members of the inaugural USAGE serving 2011-12. Also, USAGE has played a crucial role in advising the department on the design and implementation of the new undergraduate curriculum.

Helping Graduate Students Learn to Communicate Effectively

This spring, EECS launched two initiatives to help graduate students learn to communicate effectively: a six-credit subject, 6.S977 Technical Communication Skills, and the Communication Lab, a peer coaching program (based on programs in the Department of Biological Engineering and the Department of Nuclear Science and Engineering) designed to help students with their writing, speaking, and visual design. Communication lab director Jaime Goldstein and Professor Dirk Englund trained five EECS graduate students and three postdocs to become communication advisors in both the class and the lab. In their first semester, the communication advisors hosted 95 peer-coaching appointments for 42 unique visitors in the department. The for-credit 6.S977 subject combined lectures from field experts and workshops led by the communication advisors.

Women's Technology Program

2016 marks the 15th summer of the Women's Technology Program (WTP), which was founded by EECS in 2002. The WTP mission is to encourage high school girls with demonstrated math and science talent to pursue engineering and computer science by introducing them to these subjects in a hands-on, team-based format. WTP runs each year from the last week in June through the third week in July.

WTP added a mechanical engineering curriculum track in 2006. The two tracks have separate classes, staff, and budgets but operate as one interdepartmental program. WTP director Cynthia Skier SB '74, SM '81, who is based in EECS, manages the many administrative operations shared by the two tracks.

For summer 2016, 60 students (40 for WTP-EECS and 20 for WTP-ME) were selected from a record applicant pool (up 30% from 2015) of 503 female 11th-grade high school

students from across the country. The WTP high school students will all apply to colleges in fall 2016 and have not yet had opportunities to explore engineering or computer science. WTP allows them to learn more about their aptitude in these fields and shows them some of the exciting research being done here at MIT.

In total, 586 students have attended WTP-EECS since it began. The 40 summer 2016 students are still finishing high school, and the 546 others are college age or older. Of the 466 who have declared college majors or earned undergraduate degrees, more than 64% are in a field of engineering or computer science. Another 21% are in math or science fields, and 80 students have not yet declared majors (mostly college freshmen and sophomores).

WTP-EECS students also develop an interest in MIT (although this is not a stated goal). Of the 546 college-age WTP-EECS alumnae, 215 (39%) have chosen to attend MIT. They also return as staff to mentor current WTP students; in summer 2016, four of the 16 WTP-EECS staff and three of the WTP-ME staff were WTP-EECS alumnae. Assistant Professor Tamara Broderick, an alumna of the initial 2002 WTP-EECS program, now serves as a faculty guest speaker, describing her career path and research to current WTP students.

Figure 2. Students in the 2016 WTP class learn to solder (photo by Audrey Resutek).

Undergraduate Program

Enrollment

As noted above, 1,204 undergraduate students and 195 MEng students were enrolled in the department in AY2016. Undergraduate enrollment was split across the four majors offered by the department, with 86 students (7%) in 6-1 (electrical science and engineering), 441 (37%) in 6-2 (electrical engineering and computer science), 594 (49%) in 6-3 (computer science and engineering), and 83 (7%) in 6-7 (computer science and molecular biology).

Curriculum Revisions

New undergraduate degree requirements have been approved for EECS majors beginning with the class of 2020 (students entering MIT as freshmen in fall 2016). The new curriculum puts more choice in students' hands while providing a solid grounding in the essential elements of an education in electrical engineering and computer science.

The changes introduce greater flexibility into degree requirements, allowing students to tailor the breadth and depth of their studies to fit their interests. Students will now choose a single introductory (level 0) laboratory subject from an expanded list, reducing the number of introductory requirements from two to one. This will allow earlier engagement with core subject areas.

The new curriculum will serve students with a broad range of backgrounds by providing a smoother introduction to software construction. The introductory software engineering subject, 6.005 Elements of Software Construction, has been split into two new subjects: 6.009 Fundamentals of Programming, which focuses on building medium-sized programs in Python, and 6.031 Elements of Software Construction, which addresses large-scale software engineering programs in Java.

Students in the class of 2017, 2018, or 2019 may continue using the old requirements or switch to the new requirements starting in fall 2016. The graduate requirements for the master's of engineering degree are unchanged.

The new curriculum was overseen by the Curriculum Implementation Committee, led by Leslie Kaelbling.

Advising Initiatives

Led by undergraduate officer Christopher J. Terman, the undergraduate office undertook three new advising initiatives with the goal of improving communications between students and their advisors. The EECS academics and advising forum uses a popular online Q&A framework to answer students' questions about registration, degree requirements, selection, and life in general as an EECS major. During AY2016, there were 4,947 responses to 1,365 questions. The average response time was a fast 52 minutes, largely due to the tireless efforts of Anne Hunter, the EECS undergraduate administrator. A total of 996 students have signed up to receive notifications of new postings, and there were approximately 400 unique visitors to the forum each day during the spring 2016 term.

The undergraduate office also asks instructors from our introductory, foundation, and header subjects to flag students who, at midterm, are in danger of receiving a D or F final grade. The subject staff reach out to these students, suggesting ways to obtain additional help and to identify additional study resources. The flags are forwarded to the students' advisors so that they can work with the students to make the appropriate subject corrections. We also added an online system to collect in a timely manner student and advisor feedback on end-of-term subject flags, which are discussed with the Committee on Academic Performance.

Minor in Computer Science

Knowledge of computer science is becoming more important in other fields, including the physical sciences, the humanities, and economics. It is clear from the significant increase in computer science enrollments over the past few years that students majoring in fields outside of electrical engineering and computer science feel the need to learn computer science. The computer science minor introduced by EECS in fall 2016 provides a structured, simple, and flexible program for students who want to major in other fields but become proficient in computer science.

The computer science minor requires a total of six subjects. There are four required subjects: 6.00, 6.042J, 6.009, and 6.006. These classes teach programming and computational thinking (6.00), mathematical skills required for computational thinking (6.042J), program design and implementation (6.009), and algorithms (6.006).

Students will take another two subjects chosen from two lists with the additional restriction that they take one class from the advanced list. The basic subject list comprises classes that are foundational in nature: computer organization (6.004), inference (6.008), and artificial intelligence (6.034). The advanced subject list consists of classes in software engineering (6.031), computer systems (6.033), machine learning (6.036), complexity theory (6.045J), design of algorithms (6.046J), and large-scale software design (6.170).

The effort to implement the new minor was led by Srini Devadas.

Department Teaching Laboratories

Directed by Professor Karl Berggren, the Department Teaching Laboratories continue to support their mission of providing accessible, indispensable locations for EECS faculty, students, and staff members to learn both deep technical theory and practice.
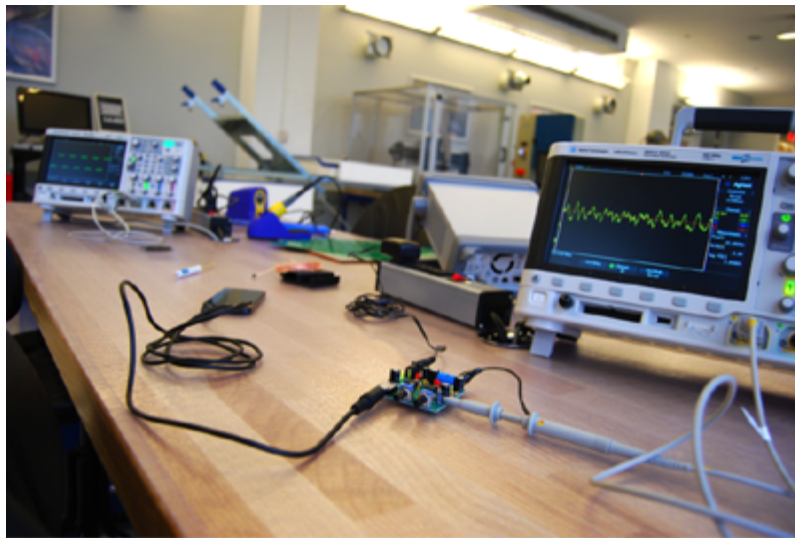

Figure 3. The Department Teaching Laboratories grant access to a wide selection of tools and instrumentation (photo by Karl Berggren)

The past two semesters supported heavy use from over 24 classes across the spectrum of electrical engineering and computer science, ranging from classic foundational subjects with revamped curricula (e.g., 6.302 Feedback Systems) to new s (e.g., 6.S08 Interconnected Embedded Systems and 6.S062 Mobile and Sensor Computing).

During the academic year, the laboratories (25,378 square feet in size) are open and staffed with instructors six days per week, and they serve as regular classroom locations and study areas for undergraduates and graduates alike to focus on both academic pursuits and personal technical projects.

The labs are regularly showcased during visiting tours, community outreach efforts, and industry events. During MIT's campus-wide open house on April 23, 2016, hundreds of visitors were given tours of the lab space, demonstrations of machine capabilities, and firsthand views of actual EECS student projects. The labs continue this outreach support during IAP and summer periods, when programs such as WTP provide an intense academic camp for high school girls who have not previously had the opportunity to explore engineering subjects. Industry leaders such as Cypress Semiconductor regularly hold two-day boot camps for members of the MIT community to explore the latest embedded system development suites available in the hardware industry, and student attendees receive both free training and materials to integrate into their class work.

Figure 4. During the April 2016 open house, Gerzain Mata '16 provides a demonstration of his self-balancing robot built for 6.302 Feedback Systems (photo by Audrey Resutek).

The Engineering Design Studio (EDS) within the Department Teaching Laboratories is increasingly a campus hub for students to design, prototype, and fabricate ideas that require professional machines and tools. As a machine shop with a focus on EECS education, EDS further expanded its equipment selection for electronics fabrication, adding a Stratasys uPrint SE for industrial-grade 3D printing and a CNC printed circuit

board mill. EDS has also begun to offer its own subejct, 6.S193 Introduction to EECS Prototyping. This three-unit class provides an overview of technologies ranging from printed circuit board design to laser cutting and allows students to create projects using these techniques. The subejct's first session in fall 2015 received an average student rating of 6.6 out of 7.

Thanks to the introduction of MIT's Project Manus and the Mobius mobile application, EDS's full equipment catalog and capabilities are available for any user to explore. With this increased presence on campus, EDS has been steadily seeing demand growth from visitors across all departments—there was a 500% increase in unique visitors from spring 2015 to spring 2016—and this rise in demand is expected to continue.
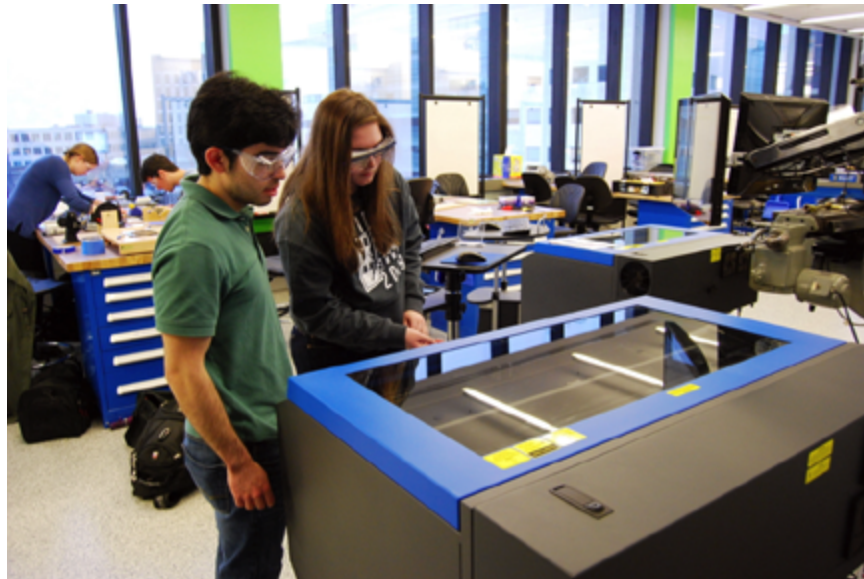

Figure 5. Felipe Garza G, a teaching assistant for 6.S079 Practical Magic, instructs a first-year student on using the laser cutter in EDS (photo by Karl Berggren).

VI-A MEng Thesis Program

The department's VI-A Master of Engineering Thesis Program is in its 99th year. Twenty-four students applied to VI-A for summer 2016 positions at nine participating companies. Ten students were selected as members of the incoming VI-A class. As of June 2016, there were six undergraduates and seven MEng students in the program. The program provides leading-edge technology thesis opportunities with a full calendar year of tuition support for all VI-A MEng students who are company funded by the VI-A Fellowship Program. Participating companies continue to offer challenging and well-mentored projects. We hope that recent improvements in thesis opportunities and funding will result in an increase in the number of students applying to the program.

Three new companies partnered with VI-A this year: Microsoft (Redmond, WA), Cadence (San Jose, CA), and the First Republic Bank (San Francisco, CA). Both Microsoft

and the First Republic Bank will have students on their first VI-A work assignments during summer 2016.

There have been numerous inquiries from companies interested in the VI-A Program, and we hope that we can obtain new members in the near future. Tomás Palacios serves as director of the program.

Graduate Program

The EECS graduate program offers high-quality academics with a broad range of advanced subject offerings. Moreover, our graduate students make leading contributions to an extremely wide range of research activities in all areas of science and nanoscience, health care and medical instrumentation and imaging, energy and energy efficiency, business, manufacturing, robotics, management of big data, machine learning and its applications, and advances in technology. The exciting research opportunities for our graduate students continue to attract excellent applicants striving to change the world in collaboration with their student peers and our faculty and research staff supervisors.

The 2016 admissions season resulted in 2,757 applications from all parts of the world. From these applications, 218 students were admitted into our graduate program (approximately 8% of applications). In the fall 2016 semester, 118 new students will join our graduate program (including joint graduate programs), 25 of whom are women and six of whom are members of underrepresented minority groups. Approximately 49% of the new students will be funded by prestigious fellowships. These internally and externally funded fellowships provide incoming graduate students with flexibility in selecting their desired research groups and projects in accordance with their interests and career goals. For the fourth consecutive year, all students admitted into our graduate program were provided full financial support for their first year in the form of a fellowship, a research or teaching assistantship, or support provided by EECS; their remaining years are typically funded by the research supervisor.

At present, there are 613 active students in the EECS graduate student population, with 128 women students (21% overall); 58% of these students have an international citizenship. The graduate student body is 55% electrical engineering (25% women) and 45% computer science (17% women). More than 210 current students are supported by fellowships, training grants, and internships. In addition to the fellowships awarded at the time of admission (7% EECS and 20% MIT Presidential Fellowships), our students have received fellowships from the US government (33%), from US industry (5%), from foundations (6%), and from foreign countries (18%). Our graduate students have won a number of scholarship awards, including the prestigious Hertz Fellowship, the Howard Hughes Medical Institute Fellowship, five Siebel Scholarships, and two Dimitris N. Chorafas Foundation Prizes. EECS graduate students also have received highly competitive industrial fellowships from Canon, Microsoft, Facebook, and Google, as well as the Texas Instruments Fellowship for Women in Microelectronics.

In AY2016, EECS graduated students in September, February, and June. Total numbers of advanced degrees awarded were as follows: 149 master of engineering degrees, 88 master of science degrees, 85 doctor of philosophy degrees, and two doctor of science

degrees. EECS awarded joint master of science degrees with the Technology and Policy Program (four degrees), Leaders for Global Operations (three degrees), Civil and Environmental Engineering (three degrees), Mechanical Engineering (one degree), and Materials Science and Engineering (one degree). In summary, 324 students obtained an advanced degree from EECS in AY2016.

Along with a graduate student body that is diverse in nationality, EECS strives to achieve a graduate student community that is diverse in gender, ethnicity, and race. To make inroads to support the diversity of applicants, the graduate office staff and faculty regularly participate in MIT's Institute-wide recruiting efforts. In addition to supporting MIT's Minority Summer Research Program (MSRP), EECS supports the GEM (National Consortium for Graduate Degrees for Minorities in Engineering and Science) GRAD (Getting Ready for Advanced Degrees) Lab and the CONVERGE graduate preview weekend held in the fall. Also, graduate office staff represented the department at the annual meeting of the Society of Women Engineers held in Nashville. Networking and mentoring seminars are offered each fall (with reunions in the spring) for women as well as for individuals who may benefit from weekly group meetings and discussions. Three different networking seminars are currently offered for various groups of incoming graduate students.

Graduate Student Associations

The graduate student body organizes itself within the EECS Graduate Student Association (GSA) and Graduate Women in Course VI (GW6). All current graduate students are invited to participate in all events sponsored by these two organizations. As examples of these activities, this year GSA offered an informational panel discussing preparation of master's and PhD theses and held relaxed and informal dinners with EECS faculty guests. In addition, GSA's student volunteers are instrumental in the success of the EECS visit days (described below) and the new student orientation in August, designing, organizing, and delivering a multitude of welcoming activities for newly admitted graduate students. GW6 complements GSA's work with opportunities for socializing, networking, and intellectual enlightenment.

EECS Visit Days for Newly Admitted Graduate Students

EECS organizes a visit weekend in March for all admitted applicants across our graduate program. The goal is to provide an opportunity for admitted applicants to envision their lives as graduate students working on research and academics, to view firsthand the multitude of opportunities provided by the MIT environment and the Boston area, and to learn more about the graduate program. Most importantly, the visit weekend allows admitted applicants the chance to meet and interact with potential research supervisors, view laboratories, chat with research groups and potential classmates, and visit graduate dormitories and living spaces. During the event, EECS graduate officer Leslie Kolodziejski describes the academic requirements of the graduate program. One-on-one interactions are viewed as especially important during the visit weekend, and hence there are a variety of opportunities for such interactions.

Faculty Notes

Faculty promotions:

> Associate professor without tenure: Adam Chlipala, Yury Polyanskiy, Vinod Vaikuntanathan
>
> Associate professor with tenure: Constantinos Daskalakis, Wojciech Matusik, Michael Watts
>
> Full professor: Elfar Adalsteinsson, Luca Daniel, Polina Golland, Jing Kong, Antonio Torralba

Faculty on sabbatical leave:

Constantinos Daskalakis	Fall 2015
Randall Davis	Fall 2015/spring 2016
Erik Demaine	Fall 2015/spring 2016
Peter Hagelstein	Spring 2016
Piotr Indyk	Spring 2016
David Karger	Fall 2015/spring 2016
Jing Kong	Fall 2015
Jeffrey Lang	Spring 2016
Charles Leiserson	Fall 2015/spring 2016
Martin Rinard	Fall 2015
Ronitt Rubinfeld	Fall 2015/spring 2016
Antonio Torralba	Fall 2015/spring 2016
George Verghese	Spring 2016
Nikolai Zeldovich	Fall 2015

Faculty on junior research leave:

Timothy Lu	Fall 2015
Vivienne Sze	Spring 2016

Faculty on family release:

Frederic Durand	Spring 2016
Nikolai Zeldovich	Spring 2016

Faculty on leave:

William Freeman	Fall 2015/spring '16
David Gifford	Fall 2015
Devavrat Shah	Fall 2015/spring 2016
Russell Tedrake	Spring 2016

Retired faculty:

> Dimitri Bertsekas
>
> Charles Sodini
>
> Albert Meyer

The department notes with sadness the passing of the following faculty: Abraham Bers, Marvin Minsky, William Siebert, and John Wyatt.

Guy Bresler joined the faculty as an assistant professor in July 2015. He is a member of the Laboratory for Information and Decision Systems as well as the Institute for Data, Systems, and Society. His research interests are at the interface of statistics, computation, and information theory. A current focus is on understanding the relationship between the combinatorial structure and computational tractability of high-dimensional inference in graphical models and other statistical models. Guy received a BS in electrical and computer engineering and an MS in mathematics from the University of Illinois at Urbana-Champaign. He received his PhD in 2012 from the Department of Electrical Engineering and Computer Science at the University of California, Berkeley, and was subsequently a postdoctoral associate at MIT. He is the recipient of a National Science Foundation (NSF) Graduate Research Fellowship, a Vodafone Graduate Fellowship, the Barry M. Goldwater Scholarship, and the Roberto Padovani Award from Qualcomm.

Luqiao Liu joined MIT as an assistant professor in September of 2015. He received a BS in physics from Peking University in 2006 and a PhD in applied physics from Cornell University in 2012. Before joining MIT, Luqiao worked as a staff member at IBM's TJ Watson Research Center. His research interests are in the field of spin electronics. In particular, he focuses on studying nanoscale materials and devices for spin logic, non-volatile memory, and microwave applications. At Cornell, he received a graduate student fellowship and the Aravind V. Subramanium T.L. Memorial Award. He is also a recipient of the Patent Application Achievement Award from IBM.

Justin Solomon joined MIT as an assistant professor in July 2016. He received a BS in mathematics and computer science and an MS in computer science from Stanford University, where he also received a PhD in computer science in 2015. Justin's research focuses on geometric problems appearing in shape analysis, optimization, and data processing, with applications in computer graphics, medical imaging, machine learning, and other areas. He also is an experienced instructor, having taught classes on numerical analysis, computational differential geometry, and computer science at Stanford; his textbook *Numerical Algorithms* (CRC Press) was released in summer 2015. Justin's research has been supported by the Hertz Foundation Fellowship, the NSF Graduate Fellowship, and the National Defense Science and Engineering Graduate Fellowship.

Caroline Uhler started as an assistant professor at MIT in October 2015. She holds a BSc in biology, an MSc in mathematics, and an MEd in high school mathematics education from the University of Zurich. She obtained her PhD in statistics from the University of California, Berkeley. After short postdoctoral positions at the University of Minnesota and ETH Zurich, Caroline joined the Institute of Science and Technology Austria as an assistant professor. Her research focuses on mathematical statistics, in particular graphical models and the use of algebraic and geometric methods in statistics, and on applications to biology. In addition to being an elected member of the International Statistical Institute, she has received a Sofja Kovalevskaja Award from the Humboldt Foundation and a START Award from the Austrian Science Fund.

The department hosted Associate Professor Dana Weinstein as a visiting faculty member this year.

Faculty Appointments

Career Development Chair Appointments

Mohammad Alizadeh Attar was named the TIBCO Founders Career Development Assistant Professor.

Guy Bresler was appointed as the Bonnie and Marty (1964) Tenenbaum Career Development Assistant Professor.

Michael Carbin was appointed as the Jamieson Career Development Assistant Professor in EECS.

Luqiao Liu was named the Robert J. Shillman (1974) Career Development Assistant Professor in EECS.

Aleksander Madry was selected as the NBX Career Development Assistant Professor.

Caroline Uhler was awarded the Doherty Professorship in Ocean Utilization.

Matei Zaharia was named the Douglas Ross (1954) Career Development Assistant Professor of Software Technology.

Faculty Chair Appointments

Anantha Chandrakasan was named the Vannevar Bush Professor of Electrical Engineering and Computer Science.

William Freeman was selected as the Thomas and Gerd Perkins Professor of Electrical Engineering and Computer Science.

Asuman Ozdaglar was appointed as the Joseph F. and Nancy P. Keithley Professor in Electrical Engineering.

Ronald Rivest was named Institute Professor.

Faculty Awards and Honors

Elfar Adalsteinsson was inducted into the American Institute for Medical and Biological Engineering College of Fellows.

Anant Agarwal received an honorary doctorate from the University of Cork.

Dimitri Antoniadis received the Jun-Ichi Nishizawa Medal and the Harold W. McGraw Hill, Jr. Prize in Education.

Bonnie Berger was inducted into the American Institute for Medical and Biological Engineering College of Fellows and received an honorary doctorate from the Ecole Polytechnique Federale de Lausanne.

Karl Berggren was elected as an Institute of Electrical and Electronics Engineers (IEEE) Fellow and received the Paul F. Forman Team Engineering Excellence Award as part of the Logic Analysis Tool Team. He was also elected as a fellow of the American Association for the Advancement of Science.

Dimitri Bertsekas received the Society for Industrial and Applied Mathematics (SIAM) George B. Dantzig Prize.

Sangeeta Bhatia won the 2015 Heinz Award for Technology, the Economy and Employment and was elected as a fellow of the National Academy of Inventors.

Tamara Broderick received the Savage Award and the Lifetime Members Junior Researchers Award from the International Society for Bayesian Analysis.

Anantha Chandrakasan received an honorary doctorate from KU Leuven.

Munther Dahleh was selected as an International Federation for Automatic Control Fellow.

Konstantinos Daskalakis received a Research and Development Award from the Vatican Giuseppe Sciacca Foundation.

Jesús Del Alamo was awarded a doctor honoris causa by the Universidad Politécnica de Madrid.

Erik Demaine received the European Association for Theoretical Computer Science/International Symposium on Parameterized and Exact Computation Nerode Prize and the University of Waterloo Faculty of Mathematics Young Alumni Achievement Medal.

Srini Devadas received the 2015 A. Richard Newton Technical Impact Award in Electronic Design Automation and was selected as a MacVicar Fellow.

Mildred Dresselhaus was awarded an honorary doctorate by Tohoku University.

Yoel Fink received the MIT Collier Medal.

David Forney was awarded the IEEE Medal of Honor.

Shafi Goldwasser received an honorary doctorate from the University of Haifa.

Polina Golland received an EECS Faculty Research and Innovation Fellowship.

Jongyoon Han received an EECS Faculty Research and Innovation Fellowship.

Judy Hoyt won the IEEE Electron Devices Society George E. Smith Award.

Piotr Indyk was elected as an Association for Computing Machinery (ACM) Fellow.

Stefanie Jegelka received the NSF Faculty Early Career Development Award and the Deutscher Mustererkennungspreis from the German Pattern Recognition Society.

Manolis Kellis received an EECS Faculty Research and Innovation Fellowship.

Charles Leiserson was named a SIAM Fellow and an IEEE Fellow and was elected to the National Academy of Engineering.

Timothy Lu received the 2015 American Chemical Society Synthetic Biology Young Investigator Award and the 2015 *Biochemical Engineering Journal* Young Investigator Award.

Nancy Lynch was elected to the National Academy of Sciences.

Muriel Medard received the IEEE Women in Communications Engineering Outstanding Achievement Award and the IEEE Vehicular Technology Society James Evans Garde Award.

Sanjoy Mitter was inducted as a foreign fellow of the Indian National Academy of Engineering.

Pablo Parillo was elected as an IEEE Fellow.

Li-Shiuan Peh was named the 2016 Singapore Research Professor by the Singapore-MIT Alliance for Research and Technology (SMART).

David Perreault received the 2015 IEEE Power Electronics Society R. David Middlebrook Achievement Award.

Rajeev Ram was elected as an IEEE Fellow.

Devavrat Shah received the INFORMS (Institute for Operations Research and the Management Sciences) Revenue Management and Pricing Prize.

Charles Sodini received the HKUST (Hong Kong University of Science and Technology) Honorary Fellowship Award.

Vivienne Sze won the 2016 3M Non-Tenured Faculty Award.

Russell Tedrake's lab was selected by the National Aeronautics and Space Administration (NASA) to receive the new humanoid robot Valkyrie.

John Tsitsiklis won the 2016 ACM SIGMETRICS Achievement Award.

Lizhong Zheng was elected as an IEEE Fellow.

Victor Zue was elected as a fellow of the American Association for the Advancement of Science.

Teaching Awards

The following faculty received awards at the annual EECS spring awards ceremony held in May:Regina Barzilay and Samuel Madden received the 2016 Burgess ('52) and Elizabeth Jamieson Prize for excellence in teaching.

Robert C. Berwick was presented the Best Advisor Award by MIT's ACM/IEEE student group.

Luca Daniel and Vinod Vaikuntanathan received the Ruth and Joel Spira Award for distinguished teaching.

Thomas Heldt received the Louis D. Smullin ('39) Award for excellence in departmental teaching.

Katrina LaCurts was presented the Best Instructor Award by Eta Kappa Nu. Also, she won the EECS Outstanding Educator Award.

Yury Polyanskiy received the Jerome Saltzer Award for outstanding recitation teaching in undergraduate core subjects.

Student Awards

The following awards were presented to EECS students at the May spring awards ceremony:

Carlton E. Tucker Teaching Award: Jessica Noss

Harold L. Hazen Teaching Award: Ilia A. Lebedev

Frederick C. Hennie III Teaching Awards: Atulya Yellepeddi, Tarek A. Lahlou, Jonathan D. Terry, and Harihar G. Subramanyam

Undergraduate Teaching Award: Austin J. Liew and Ethan C. Payne

SuperUROP Teaching Award: Zoya Bylinskii

Charles and Jennifer Johnson CS MEng Thesis Prize:

First place: Jeevana Inala for "Synthesis of Domain Specific CNF Encoders for Bit-Vector Solvers" (Armando Solar-Lezama, supervisor)

Second place: Casey M. O'Brien for "Solving ANTS with Loneliness Detection and Constant Memory" (Nancy Lynch, supervisor)

David Adler Memorial EE MEng Thesis Prize: Max H. Dunitz for "Predicting Hyperlactatemia in the ICU" (Thomas Heldt and George C. Verghese, supervisors)

2016 SuperUROP Outstanding Technical Report Awards:

Tally Portnoi for "Lipid Suppression for Magnetic Resonance Spectroscopic Imaging of Infants: Improving Lipid-Basis Penalty Reconstruction With Multiple-TE Acquisition" (Elfar Adalsteinsson, supervisor)

Nischal Bhandari for "Plane-Based Depth Image Completion" (John Fisher, supervisor)

Alyssa P. Cartwright for "Optical Control of Engineered Mammalian Cells" (Rajeev Ram, supervisor)

Julia A. Belk for "Control of DC Electrical Networks to Enable Peer-to-Peer Energy Sharing" (David Perreault, supervisor)

Damon Doucet for "Creating a Compiler Instrumentation Framework" (Charles Leiserson, supervisor)

Morais (1986) and Rosenblum (1986) UROP Award: Rachael Devlin and Eric Ponce for "Practical Magic" (Steven Leeb, supervisor)

Jeremy Gerstle UROP Award: Eric C. Chen and Fernando A. Yordan for "3-D Arm Reconstruction for Lymphedema Detection" (Regina Barzilay, supervisor)

Licklider UROP Award: Ian Reynolds for "Human Echolocation in a Wearable Mobility" (Aude Oliva, supervisor)

Anna Pogosyants UROP Prize: Hayk Saribekyan for "Big Data of Connectomics" (Nir Shavit, supervisor)

Northern Telecom/BNR Project Award for Outstanding 6.111 Laboratory Project: Samuel M. Jacobs and Valerie Sarge for their project "Surfing on a Sine Wave" and Kevin S. Chan, David J. Gomez, and Battushig Myanganbayar for their project "Autonomous RC Car"

George C. Newton UG Lab Prize: Yanni E. Coroneos and Valentina I. Chamorro for their project "A DSP Audio PreAmplifier"

David A. Chanen Writing Award for the best paper in the subject 6.033: Dustin D. Doss

Morris Joseph Levin Award for Best Master Works Thesis Presentation: Curtis Northcutt for "Detecting and Preventing 'Multiple-Account' Cheating in Massive Open Online Courses" (Isaac Chuang, supervisor) and Preetinder Garcha for "Fully Integrated Thermal Energy Harvesting System to Start up at 20 mV" (Anantha Chandrakasan, supervisor)

Paul L. Penfield Student Service Award: Joel Jean and Pratheek Nagaraj

J. Francis Reintjes Excellence in VI-A Industrial Practice Award: Rebecca Kekelishvili

StartMIT Competition Award:

First place: Alexandru Bratianu-Badea, Ruben Toubiana, Jelena Stojakovic, and Hayden Cornwell, founders of De-Ice

Second place: Steph Speirs, founder of Solstice Initiative

Staff Awards

Myron Freeman received the 2016 Richard J. Caloggero Award.

The Department Head Special Recognition Award was presented to Lisa A. Bella, Kate Boison, and Agnes Chow.

Department Leadership

EECS department leadership during AY2016 included Anantha Chandrakasan, department head; Silvio Micali and David J. Perreault, associate department heads; Rob Miller and Hae-Seung (Harry) Lee, co–education officers; Christopher J. Terman, undergraduate officer; Leslie A. Kolodziejski, graduate officer; and Karl K. Berggren, lab officer.

Anantha P. Chandrakasan
Department Head
Vannevar Bush Professor of Electrical Engineering and Computer Science