

## Department of Electrical Engineering and Computer Science

The [Department of Electrical Engineering and Computer Science \(EECS\)](#) is MIT's largest department, with 128 faculty conducting research in four affiliated 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 2021 academic year, 1,392 undergraduates, 259 master of engineering (MEng) students, and 777 graduate doctoral students were enrolled in the department according to the MIT Registrar Office's "Y Report" as of June 30, 2021.

### EECS and the MIT Stephen A. Schwarzman College of Computing

Distinguished Professor of Engineering Asuman Ozdaglar, the newly appointed deputy dean of academics for the MIT Schwarzman College of Computing, will remain the head of EECS, a position she has held since 2018. Joel Voldman is faculty head for electrical engineering, Arvind is faculty head for computer science, and Antonio Torralba is faculty head for artificial intelligence and decision making (AI+D).



*Clockwise from upper left: Professor and department head Asu Ozdaglar and professors and faculty heads Joel Voldman (electrical engineering), Arvind (computer science), and Antonio Torralba (artificial intelligence and decision making).*

## Undergraduate Program

### Overall Enrollment

A total of 1,276 undergraduate students were enrolled in the department as of October 5, 2020. The department also enrolled 257 MEng students (this figure includes participants in the 6-A MEng Thesis Program).

Undergraduate enrollment was split across the department's five majors (percentages are rounded):

- Electrical Science and Engineering (Course 6-1): 53 students (4%)
- Electrical Engineering and Computer Science (Course 6-2): 338 students (26%)
- Computer Science and Engineering (Course 6-3): 737 students (58%)
- Computer Science and Molecular Biology (Course 6-7): 61 students (5%)
- Computer Science, Economics, and Data Science (Course 6-14): 87 students (7%)

### Class Enrollment

EECS subject enrollments have increased steadily for more than a decade, now accounting for over half of total subject enrollments in the School of Engineering and more than one sixth of enrollments at MIT. Enrollments may now be leveling off, showing no increase or slight decreases between fall 2019 and spring 2021. The department has four subjects that enroll more than 700 students per year and draw students from across the Institute: 6.036 Introduction to Machine Learning, 6.0001 Introduction to Programming in Python, 6.009 Fundamentals of Programming, and 6.006 Introduction to Algorithms.

### New Common Ground Subjects

The department has been an active participant in the MIT Schwarzman College of Computing's new Common Ground educational initiative. The Common Ground promotes the development of new courses that educate "computing bilinguals," students with competence in both computing and a discipline, and that meet the needs of multiple departments. EECS has been involved in the development and deployment of three Common Ground courses, as described below.

#### ***6.402/6.482 Modeling with Machine Learning***

This course teaches students who are not electrical engineering and computer science majors to translate a problem in their own engineering or science domain into a machine learning formulation and find appropriate tools for solving it. The course emphasizes understanding how and why methods work from the point of view of modeling and when they are applicable. Taught by EECS faculty members Regina Barzilay and Tommi Jaakkola, 6.402/6.482 is a six-unit core subject that is closely coordinated with six-unit discipline-specific co-requisite subjects offered by half a dozen other departments. The course was piloted in spring 2021, is now a permanent subject, and will be offered again in spring 2022.

### **18.061/6.S084 Linear Algebra and Optimization**

Offered as an alternative to 18.06 Linear Algebra, this new course is an introduction to linear algebra and optimization with a view toward modeling, computation, and applications. Developed and taught by Ankur Moitra (Mathematics) and Pablo Parrilo (EECS), the course integrates geometric, algebraic, and computational viewpoints, including traditional problem sets on paper and mini-projects using the Julia programming language. The course has been offered each semester since being piloted in spring 2020 and is now a permanent offering that counts toward the 18.06 requirement for math majors and electrical engineering and computer science majors.

### **ES.S601 Introduction to Python with Physics**

Offered to first-year students in the Experimental Studies Group (ESG), this pilot course teaches Python and computational thinking (6.0001) in the context of problems in mechanics (8.01). Developed by Paola Rebusco (ESG) and Ana Bell (EECS), the course stretches out 6.0001 Python material across a full semester and uses problem sets that apply computational concepts to problems in 8.01 physics. The course, taught in parallel with sections of ESG 8.01 that have been enhanced with computational assignments, will be piloted in fall 2021 with 20 ESG students.



*The safety precautions necessitated by the Covid pandemic led instructors to adopt creative solutions for in-person work. For example, limited numbers of masked students enrolled in 6.810 Engineering Interactive Technologies (pictured here are Ziyuan Zhu, April Xie, and Laura Huang) took shifts working with fabrication equipment under Professor Stefanie Mueller's supervision. (Photo: Juliana Sohn)*

## **New Electrical Engineering and Computer Science Subjects**

### ***6.S058 Representation and Inference in Artificial Intelligence***

With the growth of artificial intelligence, both in terms of technique and practical impact, the demands on educating students in the area have changed. We are moving from a single elementary introductory subject (6.034) to offering a pair of subjects: 6.036 Introduction to Machine Learning and this new subject, 6.S058, which emphasizes and unifies treatment of representations and algorithms for describing and reasoning about the world based on partial and noisy information and deciding what actions to take. It integrates logical and probabilistic perspectives and addresses connections to methods from machine learning and operations research. It will be piloted in fall 2021 and taught by Tomas Lozano-Perez (EECS), Leslie Pack Kaelbling (EECS), and Nicholas Roy (Aeronautics and Astronautics).

### ***6.S080 Data-Driven Decision Making and Society***

This new class forges connections between technical aspects of machine learning and artificial intelligence and their impacts on society. It integrates technical material with the study of social impact and will serve as an important component in the proposed AI+D major. It provides an introduction to societally minded thinking about data-driven decision making and surveys the key concepts and challenges emerging in this context, pinpointing underlying non-obvious interactions, undesirable feedback loops, and unintended consequences. The overarching goal is to enable students to develop their own principled perspectives on the interaction of data-driven decision making and society.

### ***6.484 Sensorimotor Learning***

There has been an explosion in techniques for using machine-learning methods to build systems that perceive and control their environment, including a variety of robotics domains. Pulkit Agrawal, a new faculty member, has developed a course focusing on these techniques. The 6.484 course provides an in-depth view of state-of-the-art learning methods for control and the know-how to apply these techniques. The first half of the course focuses on hands-on experience through exercises, while the second half focuses on current research directions and open questions. Topics span reinforcement learning, self-supervised learning, imitation learning, model-based learning, and advanced deep learning architectures. By the end of the course, students should be able to decide whether learning-based control can help solve a problem of interest, how to formulate the problem in the learning framework, and what algorithms to use. The course will also prepare students for research in this area.

### ***6.888 Secure Hardware Design***

Inspired by recent highly publicized security vulnerabilities at the computer architecture level, this new course provides an introduction to hardware system design with security as the primary goal. Created and taught by new EECS faculty member Mengjia Yan, the course focuses on topics such as micro-architecture side channels, speculative execution attacks and defenses, architecture support for memory safety, RowHammer attacks, attacks on GPU and accelerators, and physical side channel attacks and defenses. In addition to an open-ended design project, students complete lab assignments that

involve designing and implementing cache-based covert channel attacks. The course was piloted in fall 2020 and will be offered again in spring 2022.

### ***6.S059 Nanotechnology—Design from Atoms to Everything***

Professors Farnaz Niroui and Rajeev Ram will launch a limited-enrollment course in the 2021 fall term that introduces the fundamentals of applied quantum mechanics, including the materials science and fabrication skills needed to design, engineer, and build emerging nanotechnologies with diverse applications in energy, computing, display, and sensing. Importantly, the only prerequisite is 8.02 Physics II, and the class is designed to showcase motivating technology and engage students in the full progression from fundamentals to implemented devices and functional systems. Open-ended and goal-driven laboratory modules offer students hands-on design experience with this interplay between science and engineering, and in a final project they use their acquired skills to develop and implement their own technologies. Given the successful experience of the pilot run of this class, it is envisioned as a core element of the nanoelectronics track in the new electrical engineering curriculum.

## **New Subjects and Revisions**

### ***New Communication Intensive in the Major Subjects***

As part of the development of the AI+D major proposal, we are developing a set of subjects that can serve as application capstones. These subjects build on students' experience in earlier subjects in the major, teach new technical material relevant to a particular application domain, and then invite students to propose half-semester projects in the area. They are being built on existing subjects, but with a renewed focus on the communication aspects of project work, specifically making use of the support of the Writing, Rhetoric, and Professional Communication program to develop and assess project proposals, reports, and presentations. The subjects include 6.800 Robotic Manipulation, 6.806 Quantitative Methods in Natural Language Processing, and 6.819 Advances in Computer Vision. The first two of these subjects will undergo pilots in fall 2021.

### ***6.013 Electromagnetics Waves and Applications***

This long-standing course in the electrical engineering curriculum was one of several subjects to face a very challenging redesign of laboratory and project assignments during remote teaching. Professors Luca Daniel, Jelena Notaros, and Kevin O'Brien proposed a "kit"-based solution to this problem wherein, on a budget of under \$250 per student, they successfully designed and executed on novel remote labs that covered electromagnetic waves in media and interfaces, radio frequency, microwave, optical applications, and wireless projects in antennas and communications.



*Professor Stefanie Mueller helped turn the 6.810 course into a blended experience with take-home kits of components for her students, dedicated Slack channels for problem solving, and a Covid-safe lab setup for occasional on-campus fabrication needs. (Photo: Juliana Sohn)*

### **Proposed Major in Artificial Intelligence and Decision Making**

The discipline of AI+D develops techniques for the analysis and synthesis of systems that interact with an external world via perception, communication, and action and that learn, make decisions, and adapt in a changing environment. Both the electrical engineering and computer science communities within EECS have great expertise in these areas but have been largely pursuing them independently. This degree program seeks to focus and integrate the study of AI+D within the department as well as provide a locus for connecting to strongly related topics in statistics, operations research, and brain and cognitive sciences.

Driven by recent technical innovations, massive availability of data, and the deployment of “intelligent” systems ranging from Siri to autonomous vehicles and medical AI, this area has undergone huge growth in societal importance. It has opened up an enormous range of important intellectual questions, from foundational math through algorithms, applications, and social impact. It is MIT’s responsibility to educate students broadly and deeply in these intellectual areas and give them the practical skills they need to develop and deploy intelligent systems carefully and effectively and to evaluate critically the systems and claims produced by others.

The professional demand is enormous. Our introductory subject in machine learning has recently had an average enrollment of 500 students per semester, and we are establishing additional introductions with different emphases (including 6.402, which is part of the Schwarzman College of Computing Common Ground) to reach different parts of the MIT population appropriately. There are approximately 1,500 undergraduates with a primary or secondary major in one of the EECS primary or joint majors. We predict that at least 300 of those students would select the AI+D major if it were available.

The major is designed in three tiers. At the fundamental level, there are 5.5 required subjects that provide an important background in mathematics (18.061, 6.042, probability/statistics) and computation (6.0001, 6.009, 6.006).

At the center level, students are required to take five subjects (one from each of five areas). This set of requirements provides exposure to five major modes of thought and practice within AI+D and offers both breadth and technical expertise in the discipline. The modes are as follows:

- Data-centric, with a focus on statistical and machine learning methods for drawing conclusions from data
- Decision-centric, with a focus on decision-theoretic and algorithmic methods for deciding what actions to take to optimize an objective
- Computation-centric, with a focus on computationally correct and efficient methods for addressing large data sets and difficult inference problems
- Model-centric, with a focus on building models of complex problems using languages and tools for encoding structural constraints and factual knowledge
- Human-centric, with a focus on the interaction of computational systems with humans, including social impact, models of human cognition, and human interfaces

At the advanced level, we require four subjects:

- Oral technical communication (6.UAT or 6.UAR): this subject gives students valuable practice in expressing technical ideas in a variety of forms and contexts.
- Capstone application subject: these Communication Intensive in the Major subjects involve both a large independent project and communication-intensive activities and include opportunities for students to integrate what they learned in the center subjects to address a large practical problem.
- Advanced undergraduate subject or an additional capstone application subject: these subjects offer the opportunity for technical mastery beyond the centers in multiple areas.
- Flexible elective: students may elect any subject (including additional center or capstone subjects within AI+D) from any of the degree requirements within EECS or mathematics. This gives them the opportunity to pursue connections to related fields.

## Curriculum Redesigns

### *Redesign of the Electrical Engineering Curriculum*

Led by electrical engineering faculty head Joel Voldman, a major redesign of the electrical engineering curriculum is under way. The proposed restructuring includes first-year discovery subjects that are optional three-unit inspiration classes foreshadowing materials further up in the curriculum. New classes cover required linear algebra and optimization; probability, statistics, and inference; and programming and algorithms. A central new class common to all students in the major is systems for society, where teams of students deploy their electrical engineering toolsets to tackle authentic societal challenges, drawing on the diverse technical background covered in a three-class core on physical systems and circuits, dynamical system modeling, and digital and computational systems. At the upper level, students enroll in a pair of classes within domain-specific tracks (e.g., quantum computing, energy systems, nanosystems) that include new and modified current courses exploiting the background material gained in fundamental and core subjects.

### *Revisions to the 6-3 Computer Science Major*

The 6-3 major is coherent, popular, and mature, as its growth in enrollment over the past decade has suggested and surveys of alumni and faculty have confirmed. In order to coordinate with the new AI+D and revised electrical engineering curricula, the 6-3 curriculum is also being revised. The revised curriculum continues to have three topics at its heart, now called centers: programming (6.0001, 6.009, and 6.031), algorithmic thinking (6.042, 6.006, and 6.046 or 6.045), and systems (6.004 and 6.033). The systems center will include a new half-semester course, tentatively called 6.0004 Introduction to Low-level Programming in C and Assembly, to reinforce understanding of the interface between hardware and software. The upper level of the revised curriculum will have tracks, sets of courses that provide coherent, deep exposure to a subfield of electrical engineering and computer science. Students in 6-3 will be required to take two tracks of two courses each, and one of those tracks can be drawn from electrical engineering tracks or AI+D courses in recognition that many computer science students will need skills from these adjacent fields. The previous 6-3 curriculum's AI requirement (6.034 or 6.036) will be part of an AI+D track in the revised curriculum. Finally, with acknowledgment that greater mathematical sophistication in probability and statistics and linear algebra is increasingly essential to computer scientists, the revised 6-3 curriculum introduces a math elective that requires one of these subjects.

## Updates on Joint Majors and the Computer Science Minor

### *6-14: Designing the Virtual Marketplaces of the Future*

In fall 2017 EECS and the Department of Economics launched a new joint major, Computer Science, Economics, and Data Science (6-14). The major is designed to meet the increasing need for graduates with skills in both computer science and economics. Specifically, employers are seeking graduates who can apply machine learning, data analysis, and other computer science skills to the complex economic problems that have emerged from e-commerce, online social networks, and other aspects of the digital economy.



To prepare students to address such challenges, 6-14 combines coursework in algorithms, statistics and probability, data science, and microeconomics. Enrollment has increased since the major's launch, with 69 students enrolled during 2018–2019 and four graduating that academic year; 100 students were enrolled for fall 2019 and 87 for fall 2020.

### ***11-6: Combining Urban Planning and Computer Science***

EECS and the Department of Urban Studies and Planning launched another new major, Urban Science and Planning with Computer Science (11-6), in fall 2018. This undergraduate major, the first of its kind in the United States, combines urban planning and policy making (including ethics and justice) with statistics, data science, geospatial analysis, visualization, computer science, robotics, and machine learning. It enrolled three students for AY2019, 13 for AY2020, and 12 for AY2021; at this writing, three degrees have been granted (two in AY2020 and one in AY2021).

### ***6-9: Computation and Cognition***

In collaboration with the Department of Brain and Cognitive Sciences, EECS began offering the new Computation and Cognition (6-9) joint undergraduate degree program in fall 2019. This program is designed to educate a new cadre of graduates who are uniquely qualified to address challenges and opportunities at the intersection of electrical engineering, computer science, and brain and cognitive sciences, particularly in terms of advancing our understanding of how biological neural circuits function to produce flexible intelligent behaviors and how such behaviors can be replicated in machines and used to improve interfaces with the brain.

These questions are among the greatest scientific and engineering challenges of our time, and transformative advances will require a better understanding of the neural mechanisms of the human mind and brain as well as a better understanding of the computational structures and methodologies that inform the construction of machines that learn. To that end, the new program will foster the use of technology in the study of brain and neurophysiological processes and combine insights from behavior and cognition in brain and cognitive sciences with artificial intelligence and machine learning in electrical engineering and computer science. The major enrolled 40 students in fall 2019 and 104 in fall 2020.

### ***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 in recent years that students majoring in fields outside of electrical engineering and computer science feel the need to learn computer science. Introduced by EECS in fall 2016, the computer science minor provides a structured, simple, and flexible program for students who want to major in other fields but become proficient in computer science. An update to the minor in spring 2020 allowed students more flexibility while still retaining the breadth, depth, and simplicity of the original version.

During the 2021 academic year, 34 students were certified as having completed the computer science minor. Another 58 declared the minor but have not yet completed the requirements. These students are majors in 12 different departments; roughly 55% are seniors and 45% are juniors.

### **Contributions to MITx**

During the past year, EECS offered a variety of classes through the MITx online portal. Subjects related to machine learning grew in popularity, with 6.86x Machine Learning with Python: From Linear Models to Deep Learning and 6.431x Probability: The Science of Uncertainty and Data increasing to more than 70,000 learners each. A new course, 6.871Jx Machine Learning for Healthcare, was introduced this year and had over 1,300 registered learners. Our most popular subject continues to be 6.00.1x Introduction to Computer Science and Programming Using Python, with more than 160,000 registered learners. A list of subjects follows, with the enrollment and completion numbers for each:

- 6.00.1x Introduction to Computer Science and Programming Using Python (160,267 registered, 5,766 explored, 2,945 completed)
- 6.00.2x Introduction to Computational Thinking and Data Science (31,681 registered, 54 explored, 1,427 completed)
- 6.431x Probability: The Science of Uncertainty and Data (74,037 registered, 3,145 explored, 1,860 completed)
- 6.86x Machine Learning with Python: From Linear Models to Deep Learning (71,233 registered, 4,681 explored, 3,231 completed)
- 6.871Jx Machine Learning for Healthcare (1,313 registered, 35 explored, 74 completed)
- 6.002.1x Circuits and Electronics 1: Basic Circuit Analysis (self-study; 82,751 registered, 3,284 explored, 366 completed)
- 6.002.2x Circuits and Electronics 2: Amplification, Speed, and Delay (self-study; 14,916 registered, 641 explored, 125 completed)
- 6.002.3x Circuits and Electronics 3: Applications (self-study; 13,690 registered, 437 explored, 86 completed)

### **Undergraduate Student Advisory Group**

The department reconvened its Undergraduate Student Advisory Group in EECS (USAGE) in 2018. This group consists of roughly 20 students from across the department. In AY2021, the group began meeting weekly instead of monthly. Group members were instrumental in advising department leadership on how to support students during the pandemic, how to begin thinking about transitioning students back to on-campus life, and a variety of issues related to diversity, equity, and inclusion.

## **Undergraduate Office Updates**

The Undergraduate Office has continued to thrive despite working remotely. All of the office's records and processes have been moved online, allowing students and advisors to securely access records and submit important documents. This update began in fall 2019 and is ongoing.

As a result of these improvements, the office has been able to focus on supporting students via virtual advising appointments and more frequent outreach (e.g., weekly newsletters, meetings with USAGE). The office has also made a concerted effort to improve processes for international students (both the standard curricular practical training /optional practical training processes and remote international appointments), who have been especially affected by remote learning.

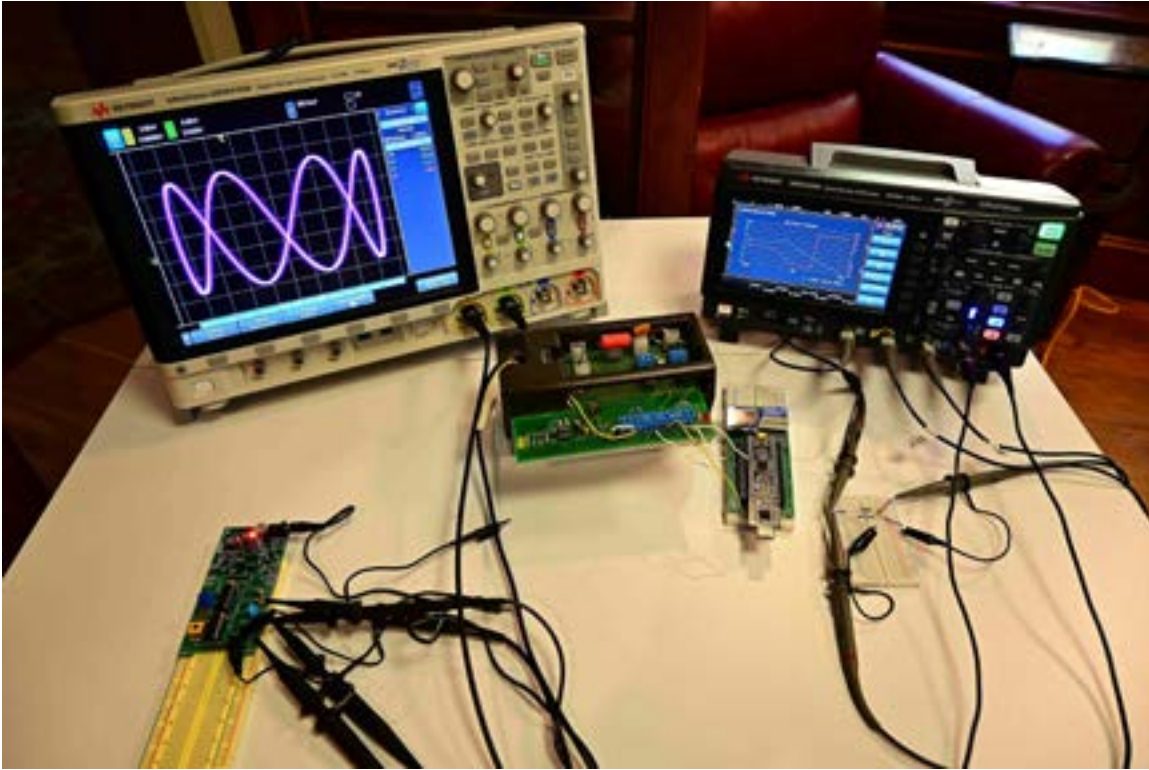
## **Department Teaching Laboratories**

The EECS Department Teaching Laboratories supply faculty, students, and staff with the necessary workspace and resources to apply theory to practical implementation. They also contain one of the major campus makerspaces, providing students from across the Institute with access to facilities for electronics fabrication and testing, mechanical assembly, and three-dimensional (3D) printing, among many other hardware capabilities.

While the 2021 academic year was unusual, the teaching laboratories remained up and running, supporting both in-person and remote learning. Well over 500 lab kits were assembled and sent out to students across the globe who were unable to come to campus. Those fortunate enough to reside on campus were able to use the space for their classwork, research, and personal projects. Among our approximately 1,500 visits, we can happily report that not a single individual tested positive for Covid, which allowed the labs to run smoothly for the duration of the year. The staff of the teaching laboratories continued to support classes and train students on various machines.

More than 30 classes across the EECS spectrum use the teaching laboratories, with most students in those classes using the space several times each week. The 25,378-square-foot space remains open and staffed more than 14 hours per day, six days per week, to serve as a regular classroom location and study area.

During the academic year, EECS often highlights the teaching laboratories through alumni donor and prospective student tours, community outreach efforts, and industry events. The lab area continued to be active during the between-term Independent Activities Period (IAP) with technical competitions such as Mobile Autonomous Systems. These activities provide students across the campus an outlet to develop systems that integrate hardware and software. The Office of Engineering Outreach Programs offered several workshops and seminars during IAP and over the summer to engage local middle and high school students. These programs were unfortunately operated remotely in AY2021 given the campus restrictions, but we look forward to their return next year.



*Keysight Technologies has contributed 40 Keysight InfiniiVision DSOX4154A scopes and 80 Keysight DSOX1204G scopes valued at approximately \$1.2 million, completing an upgrade across all EECS teaching labs. (Photo courtesy of Keysight Technologies)*

The teaching labs also support students engaged in individual practical work, either informally or through formal special-projects courses. In these cases, lab staff work to coordinate safety and other concerns, find space, and establish guidelines for lab use.

Finally, the labs are critical to supporting the demo infrastructure in the department. We support the construction and storage of a large number of in-class demonstrations for classes such as 6.002 Circuits and Electronics, 6.003 Signals and Systems, 6.013 Electromagnetics and Applications, and 6.014 Electromagnetic Fields, Forces, and Motion.

### **Engineering Design Studio**

The Engineering Design Studio (EDS) within the Department Teaching Laboratories remains a campus hub for students to design and fabricate ideas that require professional and high-power equipment. As a machine shop and makerspace tailored toward electrical engineering and computer science education, EDS develops its in-house capabilities with additional 3D printers and milling machines for full printed circuit-board design and manufacturing.

EDS also provides a unique capability in that it can be configured as a classroom for lecture-style classes but can simultaneously host equipment for testing and fabrication. In this way, students can move back and forth seamlessly between practical work and listening to instruction. This environment will serve as an optimal model for practical teaching spaces going forward. To that end, EDS reserves a number of high-quality testing elements that can be brought out and used in the space upon request.

EDS continues to host a section of the popular class How to Make (Almost) Anything (offered under course number 6.943J). This 18-unit course delves into technologies ranging from laser cutting to embedded programming. It meets weekly in the fall with three other class sections across campus and at Harvard University, giving School of Engineering students exposure to peers with a variety of academic backgrounds. First-year students are engaged through the 6.A01 Mens et Manus: The Joy of MIT seminar. This past year, EDS was able to secure additional funding from an external donor to acquire a new router to help improve the quality of student projects and aid in the creation of class demonstrations. An additional state-of-the-art 3D printer was installed to replace an existing machine and upgrade capabilities.

EDS steadily receives new visitors and continues to expand its reach to additional student projects and researchers. EECS faculty member Karl Berggren serves as the department's undergraduate laboratory officer.

### **Graduate Program**

The EECS graduate program provides high-quality academics with a broad range of advanced course 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, and advances in technology. The exciting research opportunities for our graduate students continue to attract outstanding and highly accomplished applicants striving to change the world in collaboration with their student peers and our faculty and research staff.

The graduate program is milestone based and involves a limited number of requirements. Individuals entering the program will be required to complete 66 units of graduate coursework along with a thesis research proposal and thesis to earn a master of science (SM) degree. Along with an SM degree, the doctoral-degree requirements include completion of the technical qualifying evaluation (which consists of four EECS graduate subjects) and the research qualifying examination, completion of a minor program (two coherently linked subjects), completion of a teaching assistantship, and completion of a doctoral thesis with a public thesis defense. A new degree requirement, the Professional Perspective, has recently been added to assist graduate students in learning about the many career options available to them upon graduating with a PhD. The requirement is part of both the SM degree (one unit) and the PhD degree (two units).

### **Admissions, Fellowships, Enrollments, and Graduates**

During the 2021 admissions season, we received 3,699 applications from all over the world; that figure represents a 1% decrease in applications from 2020. Ultimately, 221 students (roughly 6% of applicants) were admitted into our graduate program. In the fall 2021 semester, 137 new students will join the program, with nine additional students joining in spring 2022.

The 2021 class of graduate students includes 34 women and nine underrepresented minority students. About 60% of the new students will be funded by prestigious fellowships, including MIT Presidential Fellowships, departmental fellowships

sponsored by EECS alumni, and externally awarded fellowships such as National Science Foundation (NSF) Graduate Research Fellowships, industrially sponsored fellowships, and fellowships received from other countries.

These internally and externally funded fellowships not only are important for financial support but also provide incoming graduate students flexibility to select the desired research group and project to meet their interests and career goals. All students who are admitted into our graduate program are provided full financial support in the form of a fellowship, a research or teaching assistantship, or financial support from EECS. Financial support includes tuition, a monthly living allowance or stipend, and medical insurance for the first year of the student's graduate education (their remaining years are typically funded by the research advisor).

As of June 30, 2021, there were 799 active EECS graduate students, with 183 women students (23% overall); 54% of these students have international citizenship. The graduate student body is 43% electrical engineering (23% women) and 57% computer science (23% women).

Our graduate students receive a wide assortment of fellowship awards. About 250 current students (31%) are supported by fellowships, training grants, and internships. In addition to fellowships awarded at the time of admission (EECS departmental fellowships, Institute fellowships, and MIT Presidential Fellowships), EECS graduate students receive fellowships from the US government, US industry and training grants, and fellowships from foundations and foreign countries. Our graduate students have also won a number of scholarship awards, including the prestigious Hertz Fellowship, Alfred P. Sloan Foundation Scholarships, Siebel Scholarships, and two Dimitris N. Chorafas Foundation Prizes. In addition, EECS graduate students have been awarded highly competitive industrial fellowships from Analog Devices, Facebook, Google, Sensetime, Siemens, HP, Mathworks, and Samsung.

In AY2021, EECS graduated students in September, February, and June. A total of 425 advanced degrees were awarded: 227 MEng degrees, 101 SM degrees, and 97 PhD degrees.

### **Graduate Program Diversity and Outreach**

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 in supporting the diversity of applicants, the EECS Graduate Office staff and faculty regularly participate in Institute-wide recruiting efforts and specifically support MIT's Minority Summer Research Program. Networking and mentoring seminars for women are offered each fall (with reunions in the spring), and other events are held 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.

### **Visit Days for Newly Admitted Graduate Students**

The EECS Graduate Office organizes visit days each spring for all students admitted to our graduate program. The weekend event provides a chance for admitted applicants

to envision their lives as graduate students working on research and academics and to view firsthand the many opportunities available at MIT and in the Boston metropolitan area. Most important, the weekend allows admitted applicants to meet with potential research supervisors, visit labs, chat with research groups and potential classmates, and see graduate dormitories and living spaces. In developing the visit days schedule, organizers build in a variety of opportunities for one-on-one interactions. Unfortunately, due to the coronavirus pandemic, the 2021 visit days event was entirely virtual. However, the Graduate Office strived to offer as many of the typical in-person events as possible, although virtual platforms were used such as Zoom and GatherTown.

Visit days ran from March 4–6, 2021. The virtual event began Thursday morning with an informal session (organized by current EECS graduate students) designed to give attendees an appreciation of how to obtain the most information from the event. Next came three parallel discussion sessions describing research in the three EECS units: electrical engineering, computer science, and artificial intelligence and decision making. A multitude of faculty shared some of their research work and research vision. Next, using GatherTown, the newly admitted applicants had their first opportunity to chat with faculty, research staff, and current graduate students over a virtual lunch. One-on-one meetings with faculty and research staff followed, giving admitted applicants a chance to talk about their research interests and to meet potential research advisors; all discussions used the virtual Zoom platform.

On Friday, attendees were given a proper “welcome to EECS at MIT” with presentations by the dean of the School of Engineering; the dean of the MIT Schwarzman College of Computing; the laboratory directors of CSAIL, RLE, MTL, and LIDS; and our four departmental leaders (the EECS department head, the electrical engineering faculty head, the computer science faculty head, and the AI+D faculty head). Following this overview of the department, the graduate officer shared the details of the PhD degree requirements and discussed the financial aspects of the degree and the support provided to graduate students. This year featured a new virtual event—a frank one-on-one conversation (hosted by the graduate officer) with six recent EECS alumni about their PhD journey. Finally, the afternoon was open for attendees to engage in one-on-one Zoom conversations with potential research advisors and current graduate students.

On Saturday, the event focused on life as a graduate student in Cambridge and New England. The day began with a virtual pride welcome breakfast for lesbian, gay, bisexual, transgender, queer or questioning, intersex, and asexual (LGBTQIA+) students and another breakfast for graduate students with families (again a virtual event). Other virtual events included a graduate student life panel, a discussion about where to live on and off campus, a diversity panel, and a graduate women happy hour. Finally, using the GatherTown platform, attendees were able to join for more conversation at the Lucky Admit Social. The goal of the virtual event was to provide all of the information required to make important decisions about graduate school selection and research direction.

### **Graduate Student Organizations**

The EECS graduate student community is vibrant, with students supporting each other and also being supported by the department in various ways. A number of organizations

are funded by the department to support underrepresented, gender-marginalized persons specifically as well as graduate students more broadly. Graduate Women in Course 6, or GW6, receives funding to support professional development, personal support, and community building for our gender-marginalized graduate. Additionally, a relatively new non-identifying intersectional organization called Tools for Honing Resilience and Inspiring Voices of Empowerment, or THRIVE, provides peer-to-peer support to enhance diversity, equity, inclusion, and mental health for our graduate student body. Importantly, THRIVE seeks to support all persons regardless of gender identity, sexual orientation, race, ability, ethnicity, religion, or parental status. Both organizations are important for gender-marginalized students as they navigate their graduate student experience. THRIVE graduate student leaders launched a new initiative, the Graduate Application Assistance Program, in spring 2020. Additional holistic support for the entire EECS graduate student body is provided by the Graduate Student Association (GSA) and the Resources for Easing Friction and Stress (EECS REFS) group.

### **6-A Master of Engineering Thesis Program**

The department's 6-A Master of Engineering Thesis Program, now in its 103rd year, is a partnership between MIT and some of the world's most innovative companies. It allows students to work on industry projects while simultaneously completing their MEng theses. Students typically join the program as juniors and seniors, completing three- and six-month assignments at their companies. Each participant is assigned both a faculty advisor and an industry mentor, and students' work for their companies is used toward their MEng thesis. In some cases, the program also covers the full tuition for the MEng degree and pays competitive salaries during students' work assignments. Students receive academic credit for assignments and are able to graduate with their class.

More than 2,500 alumni have completed the 6-A program over the years. The program currently has two tiers of industrial partners: core and affiliate. Core partners commit to supporting students during their internship at the company and their final term at MIT. Affiliate partners cover students' expenses only during their internship. Current core and affiliate partners include Analog Devices Inc., Applied Materials, Bose, Cadence, Cambridge Mobile Telematics, MIT Lincoln Laboratory, the National Aeronautics and Space Administration Jet Propulsion Laboratory, the Lawrence Livermore National Laboratory, Mercari, NetApp, NVIDIA, and Shell.

The highly competitive program organizes two orientation sessions during the year, one in September and one in April. Eighty-four EECS students applied during the fall recruitment and 34 during the spring. Twenty-seven students received offers from various 6-A companies, while nine others were not matched with a 6-A company and 12 withdrew from the matching process for various reasons. Of the 27 students who accepted 6-A company offers and were admitted into the program, 10 were undergraduates on work assignments during the summer term. Sixteen MEng students were admitted in 2020 and will work on their assignments during the summer and fall 2021 terms. In addition, three students from the previous year have continued on to their MEng work assignments. In total, the program currently has seven undergraduates and 24 MEng graduate students. Fifteen 6-A MEng students completed the program and graduated in June 2021.



The J. Francis Reintjes Excellence in 6-A Industrial Practice Award was presented to outstanding 6-A student Peter Crocker. Crocker completed two work assignments at Cadence in Boston. During his assignments, he demonstrated outstanding performance and truly impressed his mentors and advisors at his 6-A company.

EECS professor Tomás Palacios serves as director of the 6-A program.

## Educational and Outreach Initiatives

### Communication Lab: Engineers Helping Engineers

Launched as a peer-coaching resource, the [EECS Communication Lab \(Comm Lab\)](#) served approximately 850 students and postdocs between 2016 and 2021, providing them with more than 1,750 free, one-on-one communication coaching sessions. In addition, the Comm Lab continues to offer a variety of events and resources to support communication growth. The lab's goal is to make a difference for students and postdocs working on their technical and professional communication skills, preparing them for roles as leaders, collaborators, and teachers in whatever careers they choose.

All Comm Lab activities in 2021 were conducted virtually, including one-on-one and group coaching appointments, workshops, meetings, and social events. The lab continued to produce and update online content as an additional way to share communication tips and resources within and beyond the department, including new CommKit articles (guides for specific technical communication deliverables) on the research qualifying examination and grant applications and a blog post on the How to Communicate in Grad School panel discussion. The lab's website continues to be accessed frequently, with 34,875 page views in AY2021, a 100% increase over the previous year.

During 2020-2021, the Comm Lab partnered with faculty in several classes (6.172, 6.904, 6.838) to coach students on communication assignments. During the fall 2020 semester, EECS Comm Lab Manager, Dr. Deanna Montgomery served as co-instructor for the second iteration of 6.S899 Academic Job Search Seminar, a class for PhD students and postdocs on the faculty job market. The Comm Lab also funded a teaching fellow, Neil Gaikwad, to assist with the course. The course had 45 participants and 17 listeners (39% PhD students, 55% postdocs).

In collaboration with the School of Engineering Communication Lab and the Graduate Engineering Leadership Program, Montgomery taught the inaugural Fundamentals of Communicating with the Public workshop series during IAP 2021. The course had 20 graduate and postdoctoral participants from across MIT. Following the series, each participant spoke at a virtual event to share MIT research with a public audience, including the Science in the News seminar series, the Beacon Hill seminar series, and the inaugural Science Snippets events, hosted in collaboration with MIT Libraries and [featured in MIT News](#).



*Deanna Montgomery (left) is the manager of the EECS Communication Lab. Nina Davis-Millis (right) is the MIT Libraries director of community engagement. Together, they helped coordinate the remote Science Snippets series during IAP. (Photos courtesy of Deanna Montgomery and Nina Davis-Millis)*

In summer and fall 2020, the Comm Lab partnered with the newly launched EECS Graduate Application Assistance Program (GAAP) to provide communication and coaching training for mentors in the program. The lab also provided training for mentors in the Institute for Data, Systems, and Society GAAP.

During the 2021 academic year, the Comm Lab held the following events to support communication in the department:

- A resume blitz for the fall career fair, serving 29 students and postdocs with 15- or 30-minute rapid-fire coaching sessions
- An NSF Graduate Research Fellowships Program workshop
- How to Communicate in Grad School, a panel discussion about effective communication strategies for students beginning their PhD work
- An MEng thesis proposal workshop
- A workshop on evaluating abstract submissions to the MTL Annual Research Conference (MARC)
- A MARC poster and pitch workshop
- A faculty job talk workshop
- A grant workshop
- A research qualifying examination workshop
- Why You Should Be a Professor and How to Become One, a four-part seminar series for PhD students and postdocs who want to learn more about what it is like to be a professor and how they can prepare for a career on the tenure track

## **SuperUROP at MIT: New Opportunities for Student Researchers**

The Advanced Undergraduate Research Opportunities Program, better known as **SuperUROP**, is designed to provide a more in-depth experience for juniors and seniors who have already completed a traditional undergraduate research opportunity program (UROP) project. Through participation in graduate-level research and attendance at weekly guest lectures presented by distinguished speakers, the EECS-hosted program prepares students for work in academia, industry, and startups. The 12-credit 6.UAR Seminar in Undergraduate Advanced Research, offered in conjunction with SuperUROP, teaches students technical communication skills.

SuperUROP scholars present their work at two showcases, one in the fall and the second in the spring. In past years, these showcases took the form of poster sessions wherein students described their work to members of the donor community as well as fellow students and staff at MIT.

Covid restrictions, however, had a significant impact on the format this year. The research projects selected were predominantly remote friendly to facilitate students working off campus. Covid restrictions also impacted the showcase format. During the two events held in December 2020 and May 2021, students presented their work in the form of pre-recorded three-minute videos via Zoom, followed by live Q&As where the students could answer audience questions. Despite the difficult circumstances, the program had another successful year, and a total of 90 students graduated in AY2021.

## **Women's Technology Program for High School Students**

The Women's Technology Program was among the many in-person programs canceled during the summer of 2020 due to the global Covid-19 pandemic.

## **Postdoc 6**

Postdoc 6 is a departmental initiative that aims to enhance the experience of EECS-affiliated postdoctoral researchers and associates. Typically, the main offerings of this initiative are off-site postdoc leadership workshops, occasional half-day workshops, and monthly social hours. Due to Covid-19, only one workshop was held during AY2021; the workshop, Negotiating Job Offers (hosted by Paul Levy), took place remotely via Zoom.

## **Faculty Notes**

### **Promotions**

- Associate professor without tenure: Max M Shulakerj and Justin Solomon
- Associate professor with tenure: Thomas Heldt and Vivienne Sze
- Full professor: Aleksander Madry, Armando Solar Lezama, and Richard Ryan Williams

## Updates

- Faculty on sabbatical leave: Vincent W.S. Chan, Dennis M. Freeman, David Gifford, Polina Golland, Thomas Heldt, Robert Morris, Devavrat Shah, Collin Stultz, John Tsitsiklis, Vinod Vaikuntanathan, and Gregory Wornell
- Faculty on junior research leave: Adam Belay, Stefanie Jegelka, Max Shulaker (January 16 through March 14, 2021), and Suvrit Sra
- Faculty on family release: Nickolai Zeldovich
- Faculty on leave: Hari Balakrishnan, Tim Kraska, Samuel Madden, Silvio Micali, and Max Shulaker
- Retired faculty: Shafi Goldwasser and Silvio Micali
- The department notes with sadness the passing of Michael Athans

## New Faculty

Five new faculty members were hired in during 2020–2021.

- Henry Corrigan-Gibbs (PhD, Stanford University) joined EECS as an assistant professor in July 2020.
- Anand Venkat Natarajan (PhD, MIT) joined the faculty as an assistant professor in July 2020.
- Jelena Notaros (PhD, MIT) joined EECS as an assistant professor in July 2020.
- Ashia Wilson (PhD, University of California, Berkeley) joined EECS as an assistant professor in January 2021.
- Sixian You (PhD, University of Illinois at Urbana-Champaign) joined the faculty as an assistant professor in March 2021.

## Career Development Professorships

- Yufeng Chen was appointed as D. Reid Weedon, Jr. '41 Career Development Assistant Professor in EECS.
- Jonathan M. Ragan-Kelley was appointed as Esther and Harold E. Edgerton Career Development Assistant Professor in EECS.
- Mengjia Yan was named Homer A. Burnell Career Development Assistant Professor in EECS.

## Full Professorships

- Akintunde I. Akinwande was named Thomas and Gerd Perkins Professor of Electrical Engineering in EECS.
- Joel Voldman was appointed as Dugald C. Jackson Professor in Electrical Engineering.

## Awards and Honors



*Shafi Goldwasser, RSA Professor of Electrical Engineering and Computer Science at MIT, was named the laureate for North America in the 2021 Laureates of the For Women in Science International Awards.*

*(Photo credit and copyright: Fondation L'Oréal)*

## Faculty Awards and Honors

EECS faculty received a number of awards and honors over the past year, as follows.

Tamara Broderick was elected to the Committee of Presidents of Statistical Societies Leadership Academy.

Anantha Chandrakasan was named a fellow of the Association for Computing Machinery (ACM) for 2020.

Henry Corrigan-Gibbs was presented the ACM CCS Test-of-Time Award.

Erik Demaine won the 2020 Bose Award for Excellence in Teaching.

James Fujimoto was awarded the Sanford and Susan Greenberg Prize to End Blindness.

Max Goldman received a Teaching with Digital Technology Award.

Shafi Goldwasser was the North American laureate in the 2021 Laureates of the For Women in Science International Awards and received an honorary degree from Tel Aviv University.

Polina Golland was named a fellow of the American Institute for Medical and Biological Engineering.

Song Han was presented the 2020 AIs 10 to Watch: The Future of AI Award.

Philip Isola won the Institute of Electrical and Electronics Engineers (IEEE) Pattern Analysis and Machine Intelligence Technical Committee (PAMI-TC) Young Researcher Award.

Luqiao Liu was awarded a 2021 Sloan Research Fellowship.

Nancy Lynch received the International Conference on Concurrency Theory Test-of-Time Award.

Samuel Madden was named an ACM fellow for 2020.

Muriel Médard was named the 2021 Padonvani Lecturer by the IEEE Information Theory Society and inducted into the National Academy of Engineering in October 2020.

Rob Miller was presented the Lasting Impact Award at the 2020 ACM Symposium on User Interface Software and Technology.

Jelena Notaros was named to the *Forbes* 2021 30 Under 30 list.

Asuman Ozdaglar was named a fellow of IEEE.

Tomás Palacios won the 2020 Intel Outstanding Researcher Award.

Jonathan Ragan-Kelley received the 2021 ACM Special Interest Group on Computer Graphics and Interactive Techniques Significant New Researcher Award and the 2020 Intel Outstanding Researcher Award.

Negar Reiskarimian won a Second Place Best Student Paper Award at the 2020 IEEE International Microwave Symposium.

Daniela Rus was named a 2020 fellow of the American Association for the Advancement of Science and was presented the 2020 John McCarthy Award by the International Joint Conference on Artificial Intelligence.

Arvind Satyanarayan won the 2021 Google Scholar Research Award and a 2021 ACM Conference on Human Factors in Computing Systems Best Paper honorable mention.

Devavrat Shah was named one of the distinguished alumni of IIT Bombay.

Robert Shin was named a fellow of IEEE.

Max Shulaker won the 2020 IEEE Electron Devices Society Early Career Award and the 2021 IEEE Nano Early Career Award.

Julian Shun was presented a Faculty Research Award.

Justin Solomon received a 2021 Teaching with Digital Technology Award.

Joe Steinmeyer was also presented a 2021 Teaching with Digital Technology Award.

Michael Stonebraker was awarded the 2020 C&C Prize by the NEC Corporation.

Antonio Torralba was named a 2021 fellow of the Association for the Advancement of Artificial Intelligence and was presented the inaugural PAMI-TC Thomas Huang Memorial Prize.

Joel Voldman was named a fellow of IEEE.

Sixian You was named a 2021 Scialog Advancing Bioimaging Fellow.

## **Departmental Awards**

The department presented nearly 60 internal awards in May 2021.

### ***Seth J. Teller Award for Excellence, Inclusion, and Diversity***

Caris Mariah Moses and Arvind Satyanarayan received the Seth J. Teller Award for Excellence, Inclusion, and Diversity.

### ***Faculty Awards***

Louis D. Smullin ('39) Award for Excellence in Teaching: Michael Carbin

Jerome H. Saltzer Award for Excellence in Teaching: Adam Belay and Karen R. Sollins

Burgess (1952) & Elizabeth Jamieson Prizes for Excellence in Teaching: Isaac "Ike" Chuang and Russell L. Tedrake

Ruth and Joel Spira Awards for Excellence in Teaching: Polina Golland and Gregory W. Wornell

EECS Outstanding Educator Awards: Justin Solomon and Lizhong Zheng

Kolokotronis Education Award: Jacob Andreas

### ***Special Recognition***

Department Head Special Recognition Award: Adam Chlipala

Digital Innovation Award: Duane Boning

Richard J. Caloggero Award: Frans Kaashoek and Robert Tappan Morris

### ***MIT Faculty Awards***

Frank E. Perkins Awards for Excellence in Graduate Advising were presented to Guoping Feng, Robert Gibbons, Leslie Kolodziejcki, Ramesh Raskar, and Michael Carbin.

### ***Student Service and Teaching Awards***

Undergraduate Teaching Assistant Awards: Kendall Garner and Lara Shonkwiler

Frederick C. Hennie III Teaching Awards: Abigail C. Bertics, Dylan D. Doblal, An Jimenez, Lingxiao Li, David R. Palmer, and Junyi Zhu

Harold Hazen Teaching Awards: Miles J. Dai, Héctor Javier Vázquez, and Tony Wang

Carlton E. Tucker Teaching Awards: Hannah Field, Linda Z. Gong, and Dheekshita Kumar

**Student Awards****AY2021 Student Award Recipients**

<b>Award</b>	<b>Recipient(s)</b>	<b>Project</b>	<b>Supervisor(s)</b>
Jeremy Gerstle UROP Award	Nicholas R. Bonaker	A Longitudinal Study of Nomon: A Flexible Single-Switch Interface for Motor-Impaired Users	Tamara Broderick
Jeremy Gerstle UROP Award	Joshua A. Gruenstein	Residual Model Learning for Micro-Robot Control	Pulkit Agrawal
Morais (1986) and Rosenblum (1986) UROP Award	Steven Acevedo Colon	SensiCut: Material Sensing for Laser Cutters Using Speckle Imaging and Deep Learning	Stefanie Mueller
Anna Pogosyants UROP Award	Qi Qi	The Multiplicative Version of Azuma's Inequality, with an Application to Contention Analysis	Charles Leiserson
Licklider UROP Award	Yunyi Zhu	Lenticle Objects: 3D Printed Objects with Lenticular Lens Surfaces That Can Change Their Appearance Depending on the Viewing Angle	Stefanie Mueller
Robert M. Fano UROP Award	David Wu	Bayesian Inference of Random Dot Products Through Conic Programming	Justin Solomon
George C. Newton Undergraduate Laboratory Prize (6.111)	Laura Dodds and Geoffrey Wang	Mapping Audio to 3D Space	—
George C. Newton Undergraduate Laboratory Award (6.111 Group Project)	Mussie Demisse	Grid Shuffle Game	—
Northern Telecom/BNR Project Award: Best 6.111 Project	Amadou Bah	Grid Shuffle Game	—
David A. Chanen Writing Award (for Writing in 6.033)	Itamar Chinn, Enrique Casillas, and Daniel J. Stein	ABETS – A Beaver Exposure Tracing System	—
Charles & Jennifer Johnson Computer Science MEng Thesis Award	Christina C. Liao (first place)	Software Pipeline for End-to-End Fabrication of Functional Devices	Stefanie Mueller
Charles & Jennifer Johnson Computer Science MEng Thesis Award	Claire M. Nord (second place)	Retry-Free Software Transactional Memory for Rust	Howard Shrobe
Charles & Jennifer Johnson Artificial Intelligence and Decision-Making MEng Thesis Award	Anelise Newman (first place)	Human-Computer Perception: Modeling Visual Perceptual Attributes	Aude Oliva



Award	Recipient(s)	Project	Supervisor(s)
Charles & Jennifer Johnson Artificial Intelligence and Decision-Making MEng Thesis Award	So Yeon Min (second place)	Towards Knowledge-Based, Robust Question Answering	Peter Szolovits
J. Francis Reintjes Excellence in 6-A Industrial Practice Award	Peter B. Crocker	Cadence (company)	—
George M. Sprowls PhD Thesis Award in Artificial Intelligence and Decision-Making	Dennis Shen (first place)	Causal Inference: A Tensor's Perspective	Devavrat Shah
George M. Sprowls PhD Thesis Award in Artificial Intelligence and Decision-Making	Ge Liu (second place)	Beyond Predictive Modeling: New Computational Aspects for Deep Learning Based Biological Applications	David Gifford
George M. Sprowls PhD Thesis Award in Computer Science	Fredrik Kjolstad (first place)	Sparse Tensor Algebra Compilation	Saman Amarasinghe
George M. Sprowls PhD Thesis Award in Computer Science	Mark Jeffrey (second place)	A Hardware and Software Architecture for Pervasive Parallelism	Daniel Sanchez
William A. Martin Master's Thesis Award in Computer Science	Yue Wang (first place)	DGCNN: Learning Point Cloud Representations by Dynamic Graph CNN	Justin Solomon
William A. Martin Master's Thesis Award in Computer Science	Arsen Vasilyan (second place)	Approximating the Noise Sensitivity of a Monotone Boolean Function	Ronitt Rubinfeld
Ernst A. Guillemin SM Thesis Award in Artificial Intelligence and Decision Making	Yunzhu Li (first place)	Learning Compositional Dynamics Models for Model-based Control	Antonio Torralba and Russ Tedrake
Ernst A. Guillemin SM Thesis Award in Artificial Intelligence and Decision Making	Enric Boix-Adsera (second place)	The Average-Case Complexity of Counting Cliques in Erdős-Rényi Hypergraphs	Guy Bresler

## Department Leadership

EECS department leadership in AY2021 included Asuman Ozdaglar, department head; Joel Voldman, Arvind, and Antonio Torralba, faculty heads; Elfar Adalsteinsson, Dennis M. Freeman, Robert Miller, and Leslie Kaelbling, co-education officers; Katrina L. LaCurts, undergraduate officer; Leslie A. Kolodziejski, graduate officer; Karl K. Berggren, undergraduate laboratory officer; and Yong Rong (Irene) Huang, administrative officer.

**Asuman Ozdaglar**

**Department Head**

**Deputy Dean of Academics**