Welcome to the Electrical and Computer Engineering Department (ECE) in the UC San Diego Jacobs School of Engineering, a place where change is in the making. ECE has a history of making an impact in the field of engineering with its innovative and pathbreaking faculty and outstanding graduate and undergraduate students. We have the conviction that the work we do here in ECE will impact the world—and it begins one student at a time.

Our faculty continue to conduct extraordinary research that pushes the boundaries of electrical and computer engineering to new limits, as you’ll read in the following pages of our 2019-2020 annual report. Our search for outstanding new faculty continues at a rapid pace and our recent hires are expanding the impact of our department far and wide. We are proud to be the home of 10 National Academy of Engineering members.

You’ll also read about our student’s out-of-the-box thinking that has opened doors to the broader community with strategic partnerships and outreach efforts that bring engineering concepts to students of all ages within and beyond UC San Diego.

We are proud to share that following the recent successful launch of two new graduate programs in Applied Electromagnetics and Machine Learning & Data Science, we are introducing another new graduate program this fall in Medical Imaging in recognition of the increasingly vital role that medical imaging plays in patient healthcare, especially for an aging population.

As you explore some of our successes in this report and get to know ECE at UC San Diego, you will see the impact our faculty and students have made in the field, on our world-renowned campus and in our society.
$35M IN RESEARCH EXPENDITURES

62 FACULTY

1,390 UNDERGRADUATE STUDENTS

#12 IN COMPUTER ENGINEERING, THE 2019 U.S. NEWS AND WORLD REPORT NATIONAL RANKINGS

#13 IN ELECTRICAL ENGINEERING, THE 2019 U.S. NEWS AND WORLD REPORT NATIONAL RANKINGS

1,185 GRADUATE STUDENTS
860 MS STUDENTS
325 PhD STUDENTS

JACOBS SCHOOL OF ENGINEERING: #11 IN THE NATION IN THE NEW U.S. NEWS AND WORLD REPORT BEST GRADUATE SCHOOLS RANKINGS

UC SAN DIEGO WAS NAMED 7TH AMONG U.S. PUBLIC UNIVERSITIES BY THE CENTER FOR WORLD UNIVERSITY RANKINGS

WELCOME INCOMING STUDENTS
462 NEW MS STUDENTS
68 NEW PhD STUDENTS

16,000+ ALUMNI
HANH-PHUC LE
Assistant Professor

Hanh-Phuc Le develops advanced electronic systems for mobile applications, data centers, ultra-high performance IT systems, automotive devices, robots, wearables and IoT devices. His approach focuses on co-optimizing performance, efficiency, and miniaturization of integrated power electronics, including on-chip components and power management units.

XIAOLONG WANG
Assistant Professor

Xiaolong Wang’s research focuses on computer vision andmachine learning. He develops unsupervised learning and continuous learning algorithms for training deep neural networks on video data. His work aims to build AI systems with minimum human annotations for the understanding of objects, human activities, scenes and interactions among them.

EDWARD WANG
Assistant Professor

Edward Wang develops contextually intelligent, continuous mobile health monitors to enable widespread, low-cost medical care outside the clinic. His work combines sensing, machine learning and human-computer interaction. He collaborates closely with clinicians and health organizations to create solutions that can make real-world clinical impact.

PENGTAO XIE
Assistant Professor

Pengtao Xie develops machine learning methodologies to improve healthcare and medicine, such as automatically generating diagnosis reports from medical images and measuring patient similarity for personalized treatment. On the theoretical side, he studies diversity-promoting learning, latent space models, and large-scale distributed machine learning.
PAMELA COSMAN

Dr. John and Felia Proakis Chancellor Faculty Fellowship and the 2019 Diversity Award from the Electrical and Computer Engineering Department Heads Association

Pamela Cosman was awarded the inaugural Dr. John and Felia Proakis Chancellor Faculty Fellowship at UC San Diego for her dedication to research, education and promoting diversity in the field. Cosman was also honored with the Electrical and Computer Engineering Department Heads Association’s Diversity Award in recognition of her proactive efforts to increase cultural, ethnic and gender diversity in the ECE community. Cosman is a leader in wireless communications and video compression and processing. She specializes in developing algorithms that can compress image and video files for wireless transmission without reducing their quality.

SUJIT DEY

IEEE Healthcom 2018 “Best Paper”

Sujit Dey’s co-authored paper, “Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation,” is believed to be the first work investigating daily blood pressure prediction and its relationship to health behavior data collected by wearable technology.

MASSIMO FRANCESCHETTI

2019 Guggenheim Fellow

The John Simon Guggenheim Memorial Foundation recognized Massimo Franceschetti for demonstrating exceptional capacity for productive scholarship. His work focuses on the mathematical foundations of engineering systems, with applications to networks, control, computation, communication and sensing. Franceschetti was the only fellow awarded this year in the category of Natural Sciences, Engineering.
FACULTY HONORS

FRED HARRIS

2018 Technical Award at the Digital Signal Processing 2018 Conference

Fred Harris was honored for his pioneering contributions to digital signal processing, algorithmic design and implementation, and his visionary and distinguished service to the signal processing community at the Digital Signal Processing (DSP) 2018 conference. He holds 40 patents on digital receiver and DSP technology and lectures throughout the world on DSP applications.

ANDREW KAHNG

2019 Ho-Am Prize for Engineering

Andrew Kahng received Korea’s highest award for engineering for his significant contributions to the advancement of the semiconductor industry. Among his contributions, Kahng developed design automation software for realization of complex integrated-circuit systems in semiconductors. The Ho-Am Prize is considered Korea’s highest honor for science, engineering, medicine, the arts and community service. Kahng is the first faculty member to receive the Ho-Am Prize while at UC San Diego.

FARINAZ KOUSHANFAR

2019 IEEE Fellow and 2018 Top Picks in Hardware and Embedded Security

Farinaz Koushanfar was named a 2019 IEEE Fellow for her contributions to hardware and embedded systems security, as well as to privacy-preserving computing. Recognition as an IEEE Fellow is a distinction reserved for those with an extraordinary record of accomplishments in an IEEE field of interest. Additionally, Koushanfar’s single-author paper on provably secure hardware obfuscation published in IEEE Transactions on Information Forensics and Security in 2012 was among the seven papers selected in 2018 for Top Picks in Hardware and Embedded Systems Security.
Piya Pal received the Presidential Early Career Award for Scientists and Engineers, the highest honor bestowed by the U.S. government on scientists and engineers in the early stages of their independent research careers, for her fundamental contributions to signal processing.

Piya is also among just 25 early-career scientists to be recognized by the Office of Naval Research (ONR) Young Investigator Program. Her work was selected by ONR’s Undersea Signal Processing Program for its potential to improve the Navy’s ability to use active and passive acoustics to detect, identify and locate submarines in shallow and deep ocean environments.

Siavash Mirarab’s 2019 National Science Foundation CAREER Award will provide five years of funding to support his research in robust and scalable genome-wide phylogenetics. This prestigious award is given to those at the forefront of science and technology and who demonstrate scientific leadership in their community.

Dan Sievenpiper was honored by the IEEE Antennas and Propagation Society with its 2019 John Kraus Antenna Award for his groundbreaking creation and development of artificial impedance surfaces used in antenna design and scattering control. Sievenpiper is recognized as an originator of the field of artificial impedance surfaces, beginning when he invented the “high impedance surface”—the first thin structure to provide a magnetic conducting boundary.
The Smart Transportation Innovation Program (STIP), a UC San Diego-based global collaboration of academic, industry and community partners, celebrated its first year with a workshop highlighting the progress the program made toward its goal of smart, sustainable and safe transportation solutions.

STIP launched in March 2018 as a collaboration between UC San Diego, the City of San Diego, the City of Ulsan in Korea, Ulsan National Institute of Science and Technology (UNIST) and several industry partners. STIP aims to address the design, technology and policy challenges of developing the transportation infrastructure of future smart cities, using the San Diego and the Ulsan regions as testbeds.

In its first year, the STIP consortium worked on projects to enable data sharing between cars, pedestrians and city infrastructure, like smart traffic lights that will be key to enabling truly autonomous transportation options.

“The goal of STIP is to break the silos and create an open, collaborative data sharing environment,” said Sujit Dey, an ECE professor and director of the Institute for the Global Entrepreneur, the Center for Wireless Communications and the Smart Transportation Innovation Program.

In one of the most important initiatives during the last decade, Electronic Resurgence Initiative (ERI), DARPA recognizes Moore’s Law barrier that stopped a five-decade progress in electronic processing technology. The industry has resorted to highly parallel architectures that underpin computing and communications. The approach imposes fundamental limits on information sharing, recognized by DARPA’s Photonics in the Package for Extreme Scalability (PIPES) program that seeks to make dramatic advances in system scalability.

Responding to the challenge, an ECE team devised new interconnect technology that rests on new photonics, microwave and digital processing. The winning UC San Diego proposal describes hybrid, Petabit-per-Second photonics-electronic transceiver technology. It operates in femto-Joule-per-bit regime, allowing for the first time a single interconnect node to generate aggregate bandwidth of 100 Terabit-per-second. The program unifies photonics, microwave and digital research, reflecting the true multidisciplinary nature of this disruptive technology.

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The critically endangered northern white rhino might have more of a fighting chance for survival thanks to a partnership between ECE assistant professor Michael Yip, his team and San Diego Zoo Global. With just two northern white rhinos remaining in the world, both of whom are female, scientists are racing against the clock to rescue the species from extinction. Hope for their survival now rests on scientists’ ability to develop innovative methods for repopulating the species.

Enter a flexible, snake-like robot that could make it easier for zoologists to perform artificial insemination and embryo transfer on rhinos designed by Yip and his team. Along with San Diego Zoo Global researchers and UC San Diego roboticists, Yip created flexible robotic catheters, measuring a couple meters in length and two to three millimeters in diameter, that can be precisely maneuvered through complex spaces within a white rhino’s body.

Making Your Phone Faster, Smarter, More Efficient

Alexander Vardy and his collaborator Ido Tal, a professor with the Technion – Israel Institute of Technology, invented a new algorithm that ensures that polar codes work much more efficiently, and the link between phones and 5G stays strong. Their technology was recently licensed by Samsung. With the addition of Tal and Vardy’s algorithm, smartphone users should be able to reliably download and transfer data at the highest rates possible. Commercial deployments in 2019 are expected to eventually penetrate hundreds of millions of wireless devices around the world.
AWARDS OF EXCELLENCE
The UC San Diego Jacobs School of Engineering selected three ECE students to receive the school’s prestigious Awards of Excellence:

KELLY LEVICK
Award for Excellence in Electrical & Computing Engineering

VICTOR MIRANDA
Award for Excellence in Electrical & Computing Engineering

JACQUELINE VILLALOBOS
IDEA Engineering Student Center award for Excellence in Diversity and Inclusion

ACADEMIC ALL-スターズ
HENRY G. BOOKER MEMORIAL AWARD

In the spirit of Dr. Henry G. Booker’s educational philosophy, the department recognized the following students for their hard work, dedication and commitment to academics. Additionally, recipients maintained a GPA of 3.7 or above in all ECE courses:

Tommy Dang
Richard Du
Haiyu Huang
Shiva Kannan
Noopur Khachane
Dane Malangone
Namit Mishra
Guangyan Shen
Kevin Wang
Michael Wibowo
Tony Wu
Yihui Yang
Andrew Yoo
Eric Zhang
Mingqi Zhang
ECE students, instructors and alumni were recognized for their significant contributions to the department during an awards ceremony in June.

**Best Teaching Awards**
- Duygu Kuzum (Undergraduate)
- Dan Sievenpiper (Undergraduate)
- George Papen (Graduate)

**Alumni Awards**
- Hamna Khan ’18
- Luis Pineda ’84

**Best Lecturer Awards**
- Charles Deledalle
- Gholamreza Esmaili

**Best Teaching Assistants**
- Spencer Congero
- Forrest Valdez
- Michelle Rodríguez
- Ce (Alex) Zhang

**Best Thesis**
- Derui Kong: “Adaptive Cancellation of Static and Dynamic Mismatch Error in Continuous-Time DACs”
  - Advisor: Ian Galton
- Bita Darvish Rouhani
  - “Succinct and Assured Machine Learning: Training and Execution”
  - Advisor: Farinaz Koushanfar

**Best Tutors**
- Yihan Hu
- Noopur Khachane

**Student Service Awards**
- Ahnaf Ahmed, Jasmine Chiang, Simon Hu, David Tu, Elizabeth Farkas, Michael Ostertag, Julian Warchall, Phuong Truong, Colin Keef, Nihar Wahal, Angela Xu

**Undergraduate Research**
- Brandon Leung
- Jackie Villalobos

“**THESE AWARDS RECOGNIZE THE WORLD-CLASS EFFORT AND CONTRIBUTIONS OUR TALENTED STUDENTS, FACULTY, ALUMNI AND STAFF, MAKE TO THE ECE COMMUNITY AT UC SAN DIEGO. THEY BRING THE SKILLS, ENERGY AND DEDICATION THAT MAKE THIS ECE DEPARTMENT ONE OF A KIND.**”

—**PROFESSOR BILL LIN**

**ECE DEPARTMENT CHAIR**
With Assistant Professor Nikolay Atanasov, ECE undergraduate students Xinyang Xu and Chang Han assembled motors, batteries, computer, flight controller and various sensors into a fully functioning aerial drone. Together, they 3D-printed and laser-cut custom components, established a wireless network connecting the robots to a base station, created power distribution circuit boards for two different robot setups and sent the designs to a manufacturer. In the final stages of the project, the students will perform several flight tests.

### 2019 Summer Research Internship Program Numbers

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<td>Total</td>
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### Tracking Epidemics

Assistant Professor Behrouz Touri and ECE student Zhidong Cao are using stochastic dynamics and graph theory tools to study the behavior of epidemics over random networks. These powerful tools can be used to study the spread of viral trends and movements over social networks and disease transmission. Cao and Touri’s findings could someday advance the fight against epidemics, enhance effective advertisement over social networks and battle the spread of fake news.
UNDERSTANDING MEMORY

Associate Professor Duygu Kuzum and graduate students Yixiu Liu and Xin Liu studied ripples of electrical activity in the brains of mice to understand how we learn and form memories. Specifically, the team is leveraging simultaneous wide-field imaging and electrical recording to identify the cortex’s response to ripples in the hippocampus, the part of the brain responsible for memory, and developing novel neural data analysis algorithms to investigate how the hippocampus and cortex interact.

Figure: Schematic shows ripples (first row) and cellular spikes (second row) recorded from hippocampus during cortex-wide activation patterns (bottom two rows) monitored using wide-field calcium imaging.

[2019] ENGINEERING SOLUTIONS TO IMPROVE MENTAL HEALTH

According to the World Health Organization, mental disorders are the leading cause of disability worldwide and often go untreated. ECE’s Engineering Psychiatry Research Program (EPRP) is bringing together Psychiatry faculty and engineering students to develop engineering solutions to mental health problems.

One ongoing EPRP project directed by Psychiatry professor Jyoti Mishra, ECE professor Sujit Dey and others aims to understand the continuum of mental wellness to illness among people. The researchers monitor neuro-cognition and daily lifestyle (i.e. sleep, physical activity, and stress) using novel scalable technologies. With predictive machine learning models, the project also seeks to better understand mental health and make personalized recommendations to optimize wellbeing.

2019 ENGINEERING PSYCHIATRY RESEARCH PROGRAM NUMBERS

7 STUDENTS
1 FEMALE
6 MALE
3 BS STUDENTS
4 MS STUDENTS
NEW GRADUATE PROGRAMS

Three new graduate programs will extend our expertise in emerging fields and prepare our students for the future of the industry.

MEDICAL IMAGING

A new graduate program in Medical Imaging will launch in Fall 2019, giving students the skills needed to create high-resolution visualizations of cells, tissues and organs, and to facilitate diagnoses and treatments. The program will prepare students for diverse careers in academia, industry and government, in a field where the need is great. With an aging population and a growing need for affordable healthcare, the demand for employees and researchers with backgrounds in medical imaging and engineering will grow. Thanks to ongoing partnerships between departments, students pursuing a M.S. or Ph.D. in Medical Imaging will draw on the expertise of faculty not only from electrical and computer engineering, but also from radiology and bioengineering. The program also has connections to the Halıcıoğlu Data Science Institute and the Qualcomm Institute on campus. These unique influences make ECE’s Medical Imaging program the first of its kind in the University of California system.

MACHINE LEARNING & DATA SCIENCE

ECE has launched a Machine Learning & Data Science graduate focus area. The program will span the spectrum from fundamental theory to practical applications. It will quickly bring students up to speed with the field’s mathematical and computational foundations, continue with state-of-the-art machine-learning and algorithmic tools that undergird today’s big-data analytics, and offer specialized courses that bridge the field with important branches of science and engineering. The curriculum encompasses 12 courses so that students will be able to complete the program in four academic quarters.

APPLIED ELECTROMAGNETICS

The field of applied electromagnetics has roots going back to giants of electrical engineering such as Maxwell, Faraday, Hertz, Marconi and Tesla. It has maintained a position of high importance, and, in recent years, it has expanded beyond antennas and radio wave propagation to include emerging areas such as micro-electromechanical systems, metamaterials, biological applications of electromagnetic fields, and other novel devices and structures. There is a strong need for students with these skills in the industries of telecommunications, defense, microwave instruments, medical devices and others. These industries are growing rapidly, driven in particular by the continuing expansion of wireless communications and related technologies. This program will prepare students for employment, research and innovation in the expanding field of applied electromagnetics.
GRADUATE STUDENT RESEARCH

STRIKING THE RIGHT BALANCE

ECE graduate student Chen Du has embarked on a project in partnership with IBM that seeks to develop a portable balance evaluation system to help monitor older adults for potential balance control problems.

Current portable balance assessment tools do not measure a person’s 3D movements, which are necessary for adequate analysis of balance control. So Du, and his collaborators in the UC San Diego Department of Psychiatry and former ECE department chair Truong Nguyen, are working to validate the capability of computer vision to capture meaningful information for evaluation of balance control. The results so far have shown that their deep learning model is capable of producing state-of-the-art accuracy for prediction of balance control, and their novel dataset for vision-based balance evaluation will be publicly available for future research.

In the project’s next stage, Du and his collaborators will apply their model in a cohort of older adults that are participants in a five-year, longitudinal study of healthy aging that is part of an IBM-UC San Diego research collaboration. Assessing older adults with and without poor balance control will enable these researchers to further investigate the capability of computer vision for accurate and comprehensive balance assessment and determine what additional information derived from 3D movements is critical for evaluating balance ability of older adults.

CONGRATULATIONS

The winning ECE poster at the Jacobs School of Engineering Research Expo 2019 went to Michael Ostertag, a Ph.D. student and president of the ECE Graduate Student Council, for his poster “Robust Velocity Control for Minimum Steady State Uncertainty in Persistent Monitoring Applications.” His faculty advisors on the project were Nikolay Atanasov and Tajana Simunic-Rosing.

WORKING TO CHANGE THE FUTURE OF PROSTHETICS

Robots powered by human-like artificial muscles are still in the research and development stage, but Taylor Henderson, an ECE MS student, is certain that they will change the future of prosthetics.

Henderson is a student in the Advanced Robotics and Controls Lab at the Jacobs School of Engineering, studying under the direction of ECE Professor Michael Yip. She started conducting work on optimizing artificial muscle actuators in his lab as a sophomore.

Artificial muscle actuators are materials or devices that mimic natural muscles and can reversibly contract, expand, or rotate as a result of an external stimulus, such as voltage or pressure. They can be used individually or combined together, and have a high degree of flexibility and versatility.

Her current project aims to lower the barriers of entry for others—including researchers, students and hobbyists—to fabricate muscle actuators. She’s working to create an algorithm that uses supervised learning to model actuator configurations and return a specification that best helps the user fabricate their device.
2019 DESIGN COMPETITION: HELPING PARKINSON’S DISEASE PATIENTS AND THEIR CAREGIVERS

Designs developed by an interdisciplinary group of UC San Diego students, Parkinson’s Disease patients and their caregivers to improve the quality of life for those suffering from the disease were showcased at the third ECE Design Competition in June.

The event was the culmination of a six-month-long series of hack-a-thons and meetings with patients that sought to develop prototype devices to assist patients with everyday activities such as bathing, dressing and eating.

“Winning this means a lot. It really wasn’t easy for our team in a lot of ways, but we really pulled through and learned that the process is everything. I’m really excited about the future of Parkinson’s Disease research.”

—Dawn Ye, Human Computer Interaction major and member of Dopadaddy & The Flowmingos, the grand-prize winning team

WINNERS OF THE 2019 Design Competition

1ST PLACE:
Dopadaddy & The Flowmingos Design: Electric Stride A yoga mat with embedded LED lights, which serve as a visual cue users must step over, and pressure-based location detection and prediction sensors designed to train and lengthen gait.

2ND PLACE:
Greymatters Design: GreyMatters Personal Trainer A portable device paired with an application that allows users to practice different movements.

3RD PLACE:
Sunshine Design: DoC A phone application for patients/caregivers to log symptoms and other parts of their lives.

POPULARITY PRIZE:
Dragon Bird (tie) Design: Soul Partner A shoe insole that gathers data about a user’s gait, can detect unstable positions and provide real-time feedback to the patient about unstable positions.

POPULARITY PRIZE:
Pikachu (tie) Design: Obstacle Detection Belt An iOS application, paired with a belt, that can detect common nearby obstacles using the analyzing capabilities of algorithms embedded in a patient’s phone.
"ONCE I GOT TO KNOW THE STUDENTS, THEN I REALLY BECAME INVESTED IN THEIR WORK. TWO OF THE GROUPS CAME TO VISIT ME IN MY HOME AND SPENT A LONG TIME WITH ME, WHICH IS AN UNUSUAL THING. IT WAS REALLY FUN AND MADE ME FEEL GREAT TO BE A PART OF THE PROCESS AND WORK WITH SUCH TALENTED PEOPLE."

—JEAN HEBERT-BROWN, PARKINSON’S DISEASE PATIENT AND 2019 DESIGN COMPETITION PARTICIPANT
An ECE program designed to motivate and empower undergraduate students has found a creative way to challenge young people to think outside the box by first asking them to dive into one.

Project in a Box is a student-led organization at the UC San Diego Jacobs School of Engineering that originated in 2016 with a mission to make experiential learning more accessible to undergraduate students on campus.

The concept is simple: give students a box with instructions and all the components necessary to build a device. Then, make a variety of projects to accommodate beginners through advanced users. And, finally, ask students to design new projects of their own to add to the Project in a Box roster.

“We started with the goal of ensuring our students are equipped with the skills needed to find jobs and internships in a very competitive market—and they are,” said Truong Nguyen, former ECE Department chair. “Now, thanks to our determined and talented student organizers, the program is expanding and inspiring other students in the broader San Diego community.”

Through strategic partnerships and outreach efforts, students from local elementary schools to community colleges can now delve into a Project in a Box. In three years, the Project in a Box team has brought their model of hands-on education to roughly 2,000 students, teachers and parents and hope to expand to additional schools and libraries in the future.

“JUST EXPOSING HOW BEAUTIFUL ENGINEERING IS TO THE NEXT GENERATION OPENS THE DOOR TO ANYTHING FOR BOYS AND GIRLS.”

—TANYA GARCIA
ECE DEPARTMENT SENIOR AND PROJECT IN A BOX STUDENT ORGANIZER
GIRLS SUMMER CAMP: INSPIRING COLLEGE STUDENTS TO PASS IT ON

ECE’s STEM Summer Camp expanded this year to welcome both young women and men from local colleges, drawing 15 students from different engineering disciplines to work with faculty for a week to build a variety of robots and optical devices. As part of the summer camp’s new focus, participants learned the outreach skills they’ll need to share projects with younger students at local high schools.

Saharnaz Baghdachi, an Assistant Teaching Professor with ECE, said she’s excited about the STEM Summer Camp’s new direction and hopes this year’s attendees will use their outreach skills to broaden its reach. Many participants are members of underrepresented groups, recruited through efforts by UC San Diego CREATE, an initiative that designs outreach and education programming for local communities.

“WE’RE EXCITED TO SEE HOW THIS PARTNERSHIP WILL HELP MORE STUDENTS HAVE FUN WITH ENGINEERING.”

—SAHARNAZ BAGHDADCHI ASSISTANT TEACHING PROFESSOR, UC SAN DIEGO ECE DEPARTMENT
“I’VE HAD EXTRAORDINARY OPPORTUNITIES EARLY IN MY CAREER BECAUSE OF MY INVOLVEMENT IN STUDENT ORGANIZATIONS AND PROJECTS AND I CAN’T STRESS ENOUGH HOW OTHERS CAN HAVE THE SAME FORTUNE.”

—CHRISTOPHER ELLIS ’17
CELEBRATING ECE DAY

A day-long event in April celebrated the spirit of the ECE community and what it means to its students, faculty and alumni.

This year’s ECE Day featured workshops, company and research showcases, as well as an inspiring keynote speech with dinner. Workshops introduced students to real-world applications of materials learned in class and the research showcase was an opportunity for students to meet representatives from different labs within ECE. The company showcase featured many UC San Diego alumni who spoke to students about their careers and the valuable skills they learned at the university. Companies that attended included Northrop Grumman, Viasat, Surcle, PAQ and Education Vision Technology.

“Our ECE community came together to make this year’s events incredibly successful,” said Truong Nguyen, former ECE Department chair. “Each year the dozens of students, volunteers, staff, and others work very hard to create a fun and engaging environment for all who participate.”

In a keynote speech, Christopher Ellis ’17 talked about the opportunities he had as an undergraduate, including the chance to gain real-world experience. After working on a project called Cube Satellite, which sought to send a satellite into orbit around the moon, Ellis met the CEO of SparkCharge and later joined the company as its chief technology officer.

“I’ve had extraordinary opportunities early in my career because of my involvement in student organizations and projects and I can’t stress enough how others can have the same fortune,” Ellis said.
TRUE XIONG ’05

Coming from a refugee family, True Xiong ’05 is a first-generation college graduate who now works to ensure that younger generations thrive in science, technology, engineering and mathematics (STEM) fields.

In addition to being a software system architect at Sony PlayStation, Xiong has actively promoted STEM careers to underserved students on campus and in the community. Xiong established the STEMUplift Foundation to provide scholarship opportunities for underrepresented students, and serves as a volunteer and partner with many local events and organizations advancing STEM education.

As a professional now inspiring students through example and mentorship, Xiong exemplifies how the transformative impact of UC San Diego can carry on.

“True tries to address the resource issues that are so important in bringing STEM into an underrepresented community,” said former ECE Department Chair Truong Nguyen. “We’re looking forward to working with True over many years to be able to bring more resources into the STEM field, as well as to bring our students at UC San Diego to the next level.”

SAM KNIGHT ’73

Sam Knight has been a leader in the San Diego telecommunication industry for more than 30 years. He is currently a principal with Knight and Associates, which specializes in offering consulting services to add value to businesses through revenue growth, enhanced operational efficiency and improved user experience.

He formerly served as vice president of carrier and industry relations at LocationSmart, a leader in enterprise location services with Fortune 500 clients.

But another occupation he lists is one where he is “a passionate advocate of alumni/student engagements by spearheading the ‘Alumni 101’ series of workshops to give students guidance on life after studies.”

“The academic background I got... really was my ticket into a career,” he recalls in a video that honors him as a UC San Diego 2019 “True Triton” awardee. “I see the value that it gave me and I want to do everything I can to support giving that value to other students.”

Knight has been a philanthropic supporter of UC San Diego since 1982 and has championed faculty and student-centered alumni efforts since 2003. His successful “Alumni 101” series of workshops across campus have connected students with alumni on professional development topics.

A FOND FAREWELL TO KEVIN QUEST

Long-time faculty member Kevin Quest, who joined UC San Diego in 1988 and led the Space Plasma Group, has retired. He served as the vice chair of the ECE Department several times and provided leadership to many academic programs. From 1981-88, Quest was a member of the laser fusion group at Los Alamos National Laboratory. Among his honors and distinctions, Quest is a Fellow of the American Geophysical Union, and was awarded the union’s James B. Macelwane Medal in 1988. He earned his Ph.D. in space physics from UCLA.
ROBERT HECHT-NIELSEN
[ 1948 – 2019 ]

Robert Hecht-Nielsen was an influential neuroscientist, entrepreneur, and ECE professor at UC San Diego. He passed away on May 26, 2019 in Del Mar, California. He was 71 years old.


In 1986, he co-founded HNC Software, a neural networking startup in San Diego, based on his breakthrough work in predictive algorithms. In 2006, Hecht-Nielsen established a laboratory in the Qualcomm Institute, the UC San Diego division of the California Institute for Telecommunications and Information Technology (Calit2), to further his investigations into the use of neural network models in computational neuroscience.

He joined the ECE Department in 1986 and was a member of the UC San Diego Institute for Neural Computation and was also a founder of the UC San Diego graduate program in computational neurobiology.

PROFESSOR EMERITUS HERMAN “HARRY” WIEDER MEMORIAL AWARD

A new award and symposium established through the ECE department will honor the late Herman “Harry” Wieder, professor emeritus of applied physics at UC San Diego. An expert in solid-state electronics, quantum wells and superlattice materials and devices, Wieder was a leader in his field and created a lasting legacy by mentoring the next generation of scientists.

The Harry Wieder Electronic Materials Excellence Award is an endowed scholarship that offers financial support to current graduate students specializing in Electronic Devices and Materials, Materials Science and Nanoscale Devices and Systems. Students need at least a 3.5 GPA and a strong history of academic and research excellence to be nominated.

The Wieder Symposium took place in August in the Atkinson Hall auditorium at UC San Diego. It was an opportunity for Wieder’s colleagues and mentees to share memories of him, and to highlight his contributions to research.

“Our hope is that both the award and the symposium will not only help us remember Dr. Wieder and his contributions, but also that they will inspire young people to continue in his footsteps,” said Professor Bill Lin, chair of the ECE Department.

Wieder joined UC San Diego in 1981 as a professor of applied physics in the ECE Department after holding leadership positions with the U.S. Navy. To contribute to the Harry Wieder Electronic Materials Excellence Award, please visit https://wieder.eng.ucsd.edu/ or contact Mike Helé at mhele@eng.ucsd.edu.

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—PROFESSOR BILL LIN, CHAIR OF THE ECE DEPARTMENT
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—PROFESSOR BILL LIN
ECE DEPARTMENT CHAIR