Welcome to the Electrical and Computer Engineering (ECE) Department in UC San Diego’s Jacobs School of Engineering, where a strong sense of community, outstanding faculty, students and staff, and impactful research are at the heart of what we do. As you will see in our 2020-2021 annual report, it is these qualities that helped us meet the challenges of the past several months and grow stronger as an education and research community.

As the COVID-19 pandemic continues to unfold, our students, faculty and staff have shown their resilience, adapting to new teaching and learning techniques and maintaining ties to one another. You will read about how researchers harnessed the powers of science, engineering and technology to develop solutions to some of the rapidly evolving issues the pandemic presents, as well as how our current students and staff used their creativity to virtually welcome new students and bring engineering to our surrounding community.

The events of this year have also challenged everyone to examine the racial and social injustices that divide our country. We affirm our commitment to racial equity and equality. We stand alongside our Black colleagues, students and friends, as well as those working to make our society more equitable.

Our department will continue to create an inclusive learning and research environment where everyone has the opportunity to reach their full potential. As we move forward, there is much to be proud of and anticipate. This year, the UC San Diego Jacobs School of Engineering rose to the number nine spot in the influential U.S. News and World Report Rankings of Best Engineering Schools. Additionally, our department is set to welcome several new faculty members from a range of disciplines within the field. At the same time, our current faculty and students continue to shape the innovations of today and tomorrow through their extraordinary research efforts and commitment to academic excellence.

We want to end our letter to you — and begin this report — with a note of sincere thanks. Thank you to all of our students, faculty, staff, alumni and friends who make the ECE Department at UC San Diego such a special place and a national leader in educating the next generation of engineers. The achievements highlighted in this report would not have been possible without you.

Bill Lin, PhD
Chair

Dan Sievenpiper, PhD
Vice Chair

LETTER FROM THE CHAIRS

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Chair

Dan Sievenpiper, PhD
Vice Chair
KARCHER MORRIS
Assistant Teaching Professor
Karcher Morris’s teaching aims to embed project-based learning throughout the undergraduate electrical and computer engineering curriculum, complementing theoretical foundations. By connecting students with application-oriented coursework and industry-relevant challenges, Morris promotes an early engagement between students and their research/industry goals.

YUANYUAN SHI
Assistant Professor
Yuanyuan Shi’s research interests are in the area of energy systems and cyber-physical systems, spanning from machine learning to optimization and control. She works on data-driven control for complex networked systems and market mechanism design under multi-agent learning dynamics.

YATISH TURAKHIA
Assistant Professor
Yatish Turakhia develops algorithms and hardware accelerators to enable faster and cheaper progress in biology and medicine. He also develops computational methods that enable biological discoveries, such as new genotype-phenotype relationships.

MINGU KANG
Assistant Professor
Mingu Kang researches vertically-integrated VLSI information processing for machine learning and signal processing algorithms. His research focuses on energy- and latency-efficient integrated circuits, architectures and systems by leveraging novel computing paradigms including in-memory, in-sensor and neuromorphic computing with both CMOS and emerging devices.

NICK ANTIPA
Assistant Professor
Nick Antipa’s research aims to develop design frameworks that merge optical models with algorithms, allowing optimization of both components and enabling the development of cutting-edge imaging and display systems. By considering both the hardware and digital domains, new computational optical systems emerge that extend capability beyond what is available.

FLORIAN MEYER
Assistant Professor
Florian Meyer researches statistical signal processing for navigation, mapping, and multi-object tracking in applications, including maritime situational awareness, autonomous driving and indoor localization. He investigates efficient and scalable high-dimensional nonlinear estimation using graphical models where the number of states to be estimated may also be unknown.

YANG ZHENG
Assistant Professor
Yang Zheng develops methods and frameworks for the optimization and control of network systems and their applications to cyber-physical systems, especially autonomous vehicles and traffic systems. His goal is to develop computationally efficient and distributed solutions for large-scale network systems by exploring and exploiting real-world system structures.
SHADI DAYEH  
National Institutes of Health New Innovator Award

Shadi Dayeh was awarded a new Innovator Award from the National Institutes of Health (NIH) for his work developing new neural probe brain mapping technologies that can better guide neurosurgeons in excising tumors. Part of NIH’s High-Risk, High-Reward Research Program, the New Innovator Award is intended to support creative, high-impact projects from exceptional researchers at the early stages of their careers.

ALON ORLITSKY
2021 Claude E. Shannon Award

Alon Orlitsky is the 2021 recipient of the Claude E. Shannon award, the highest honor from the IEEE Information Theory Society. He is recognized for his consistent and profound contributions to the field of information theory, including significant advancements in communication complexity, source coding, distribution estimation, and machine learning.

GEORGE PAPEN
2020 IEEE Photonics Society Engineering Achievement Award

George Papen was awarded a 2020 IEEE Photonics Society Engineering Achievement Award for his significant accomplishments in optical switching in data center networks.

GABRIEL REBEIZ
IEEE 2020 Microwave Prize

Gabriel Rebeiz was awarded the prestigious Microwave Prize that recognizes the most significant contribution by a paper in the IEEE Transaction on Microwave Theory and Techniques for his work on 5G phased-arrays. His recent award marks the third time that Rebeiz and his group have won this award, having received it before in 2000 for his work on RF MEMS and in 2014 for his work on RFICs with built-in-self-test capabilities. Rebeiz is the first person to have won the Microwave Prize three times.

PENGTAO XIE
Top-5 Finalist for 2020 American Medical Informatics Association Dissertation Award

Pengtao Xie was selected as a finalist (top five among all nominations) for the 2020 American Medical Informatics Association (AMIA) Dissertation Award for his paper titled “Diversity-Promoting and Large-Scale Machine Learning for Healthcare.” The AMIA selects and recognizes five doctoral dissertations each year among a highly competitive field of candidates. Winning dissertations are chosen for their contributions to the science of informatics in any biomedical application domain.

YANG ZHENG
2019 European Embedded Control Institute PhD Award

Yang Zheng was honored with a European Embedded Control Institute (EECI) PhD Award for his thesis “Chordal Sparsity in Control and Optimization of Large-scale Systems.” The EECI PhD Award is given annually in recognition of the best PhD thesis defended at a European university in the field of Control for Complex and Heterogeneous Systems. Zheng was awarded his PhD from the University of Oxford in 2019 and will join UC San Diego’s ECE Department as an assistant professor in 2021.

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The world-class research community at UC San Diego’s ECE Department is actively involved in efforts to address the COVID-19 pandemic on a number of fronts. From developing wearable technologies that monitor the vital signs of COVID-19 patients to developing contact tracing apps, our faculty, researchers and students are leveraging their engineering skills, creativity and collaborative spirit to address the rapidly-evolving needs this global public health crisis presents. A cross section of the innovative COVID-19 research efforts the ECE Department has underway is below.

Privacy-preserving COVID-19
Bluetooth Contact Tracing App
Farinaz Koushanfar, in collaboration with Technical University Darmstadt in Germany, developed a novel, privacy-preserving Bluetooth-based smart phone app for COVID-19 contact tracing. The app is intended for integration with the UC San Diego myHealth website, which is based on the widely used Epic medical platform to perform contact tracing for patients and healthcare professionals.

Researchers Create a New Algorithm to Study Genetic Building Blocks of Immunity
A multidisciplinary team of researchers at UC San Diego developed a new gene prediction algorithm called MINING-D that could help researchers investigate the genetic clues behind the variation of symptoms shown in COVID-19 patients — information that is key to creating a versatile and effective COVID-19 vaccine. The findings may give scientists a more comprehensive view of how the genes that form the foundation of our immune system create a personalized repertoire of antibodies that protect against invading pathogens. This is a collaborative effort led by UC San Diego PhD candidate Vinnu Bhardwaj and Yana Safonova, now a postdoctoral researcher at UC San Diego and the University of Louisville, along with faculty members Pavel Pezner with UC San Diego’s Computer Science and Engineering Department, and Massimo Franceschetti of the ECE Department.

A Low-power, Low-cost Wearable to Monitor COVID-19 Patients
Patrick Mansier is engineering low-cost, low-power wearable sensors that measure temperature and respiration — key vital signs used to monitor COVID-19. The devices would transmit data wirelessly to a smartphone, and could be used to monitor patients for viral infections that affect temperature and respiration in real time. The research team plans to develop a device and a manufacturing process in just 12 months.

Platforms to Remotely Monitor Patients and Support the Mental Wellbeing of Healthcare Providers
Sujit Dey and a team of engineers developed eCOVID — a remote monitoring platform for patients who have tested positive for COVID-19, but aren’t in need of hospitalization. It is intended to help health care teams perform digital triage, prioritizing more critical patients, and providing appropriate and timely care for patients informed by patient condition. The team is also exploring the use of artificial intelligence to predict healing or further progression of COVID-19. The system is being tested by patients in a clinical trial at UC San Diego Health and Neighborhood Healthcare in San Diego County.

Javidi and her team envision the first do-it-yourself prototype of a drone platform for community facilities, to significantly improve the process of UV-based disinfection using drone technology. Javidi is leveraging her DetecDrone research platform developed at UC San Diego Wireless Communications Sensing and Networking Laboratory who are developing BU flexible, on a platform that employs ubiquitous Bluetooth Low Energy (BLE) technology and personalized algorithms to ensure intelligent and accurate contact tracing. BU flexible aims to provide each user with a personalized risk score by considering their various physical and social interactions.

UV-Drone: Mobile Disinfection Platform for Community Facilities with Minimum Human Exposure
Tara Javidi is a postdoctoral researcher at UC San Diego and the University of Louisville, along with faculty members Pavel Pezner with UC San Diego’s Computer Science and Engineering Department, and Ramesh Rao and Massimo Franceschetti of the ECE Department.

APPLICATIONS

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When the Center for Wireless Communications (CWC) at UC San Diego was established, the internet had only about 10,000 websites, and cell phones were used almost exclusively for talking. However, many forward-thinking researchers were already imagining a highly collaborative and connected world. Twenty-five years later, the CWC has successfully kept pace with each advancing generation of telecommunication technology, and the center has become well-known for its collaborative research in wireless devices, networking and signal processing and information theory.

Today, the CWC is taking wireless research beyond the physical layer of circuits and architectures and exploring the intersection of wireless technology, computing and human interactions, which is where the future lies according to CWC Director Sujit Dey.

“As wireless technologies keep improving, the real effectiveness of those Gs will be how data and human knowledge and understanding is going to interface with our networks and our sensors and computing devices,” said Dey. “There will be much more personal and enterprise application overlap. The network will be your personal aggregator of services.”

When Dey became director in 2015, he promised to try his best to facilitate and encourage the wireless research that CWC had become known for and also to look towards the future.

“I also wanted to launch new areas of research that portend to the question of ‘how will this wireless revolution change our world?’” said Dey. The answer to that question is still to come – perhaps in another 25 years.
Super Stable Supercapacitors

Under the guidance of Professor Tse Nga Ng, graduate student Jiaxi Liu tested two different methods for increasing the structural integrity of redox active supercapacitors for longer-lasting power storage. Liu mixed a conductive additive of carbon black with a flexible, low-cost polymer to create electrodes that improved the device’s cycling stability by 98.5% after 3,000 cycles. She also explored transforming the polymer into a 3D structure, which didn’t improve stability as much as carbon black, but did shorten the path that ions needed to cross. The research will aid in preserving the integrity of supercapacitors, which naturally degrade and degrade as the ions pass through them. Liu’s work improves stability as much as carbon black, but did shorten the path that ions needed to cross. The research will aid in preserving the integrity of supercapacitors, which naturally degrade and degrade as the ions pass through them.

2020 SUMMER RESEARCH INTERNSHIP PROGRAM

BY THE NUMBERS

133 STUDENTS
24 FEMALE
109 MALE

77 UNDERGRADS
11 FEMALE
66 MALE

56 GRAD STUDENTS
13 FEMALE
43 MALE

118 TOTAL PROJECTS

STUDENT RESEARCH INITIATIVES

2020 SUMMER Research Internship Program

The ECE Department Summer Research Internship Program (SRIP) offers undergraduate and master’s students a chance to gain paid, hands-on experience in a research lab. Over the course of ten weeks, participants engage with a research group and benefit from enrichment activities such as workshops on research communication, research writing, and other pertinent topics. Notable SRIP projects from 2020 include:

- Super Stable Supercapacitors
- Bridging the Gap between Artificial Intelligence and Data Security
- Accounting for Power and Spectral Purity in Scaled Technologies

2020 SUMMER RESEARCH INTERNSHIP PROGRAM

BY THE NUMBERS

133 STUDENTS
24 FEMALE
109 MALE

77 UNDERGRADS
11 FEMALE
66 MALE

56 GRAD STUDENTS
13 FEMALE
43 MALE

118 TOTAL PROJECTS

[OBJECTIVE]

- Decoding the Brain for Neural Prostheses
- A New, More Powerful Gallium Nitride Transistor
- Intrinsic Linearly Interpolated Transistor for Millimeter-Wave Low Noise Amplifiers

2020 ENGINEERING PSYCHIATRY RESEARCH PROGRAM

The Engineering Psychiatry Research Program (EPRP) at UC San Diego facilitates collaborations in the fields of psychiatry and engineering to develop potential solutions to challenges encountered in clinical care and psychiatry research settings. Since it began, the program has linked dozens of students and faculty mentors who have addressed a range of issues, including monitoring sleep in older adults and applying virtual reality technology to help brain injury patients.

In one ongoing project from the 2020 EPRP group, ECE Department undergraduate student Carol Bao joined Department of Psychiatry Assistant Professor Andre Der-Avakian to design a device to detect and record the drinking behaviors of rodents more efficiently. The device and resulting data will support Der-Avakian’s ongoing efforts to study the relationship between post-traumatic stress disorder and alcoholism.

2020 SUMMER RESEARCH INTERNSHIP PROGRAM

BY THE NUMBERS

9 STUDENTS
2 FEMALE
7 MALE

4 UNDERGRADS
1 FEMALE
3 MALE

5 MS STUDENTS
1 FEMALE
4 MALE

6 TOTAL PROJECTS

BRIDGING THE GAP BETWEEN ARTIFICIAL INTELLIGENCE AND DATA SECURITY

Sadegh Riazi

Sadegh Riazi won the Dr. William S.C. Chang Best Dissertation Award for his innovative research in improved data confidentiality and faster computational speed with encrypted data. Partnering with Microsoft Research and other collaborators, Riazi designed new methodologies and hardware to reduce computational overhead, increase computational speed, and enable third-party AI companies to compute on encrypted data without accessing sensitive information. His research introduces a novel framework that prioritizes user privacy and eliminates third-party companies’ ability to access and store users’ raw data. Leveraging these new frameworks, third-party companies will have access only to the encrypted version of customers’ data and will be unable to reconstruct any original data. Outcomes from Riazi’s research will reduce the risk of data breaches, increase user confidence in online services and cloud computing infrastructure, and facilitate safer data sharing for companies and institutions of learning. Riazi’s research provides different partners with a secure platform on which they can perform joint computations without sacrificing data privacy. These advances will be critical in the age of global and digital connectivity.

ACCOUNTING FOR POWER AND SPECTRAL PURITY IN SCALED TECHNOLOGIES

Omar El-Aassar

As integrated circuits technologies scale down in feature size, low voltage devices experience challenges in high output power and high spectral purity signals generation. Omar El-Aassar’s doctoral research addresses key issues in these challenges by delivering new techniques and solutions in analog, RF and mm-wave designs. His work targets multiple areas in integrated circuits design to foster advances in technology for different applications. El-Aassar is the recipient of a 2020 Dr. William S.C. Chang Best Dissertation Award. An example of El-Aassar’s thesis work addressed distributed power amplifiers architectures and circuits, which El-Aassar was able to realize with to generate record power and bandwidth performance from new, low voltage-tolerant technology nodes. Using El-Aassar’s research, designers would be able to drive optical modulators for broadband wireless communications from DC is over 100 GHz frequencies and implement “universal” power amplifiers to cover multiple microwave or mm-wave bands. This is simply one application of the research, which will be critical for both improved user experience and technological advances in next generation 5G devices and applications.

A NEW, MORE POWERFUL GALLIUM NITRIDE TRANSISTOR

Woojin Choi

ECE graduate student Woojin Choi has been honored with a Harry Wieder Electronic Materials Excellence Award for his efforts to develop a low-cost, powerful gallium nitride transistor for power electronics and wireless communications. Gallium nitride transistors have shown promise for use in high-power and high-frequency applications, thanks to their ability to handle surge in electric power usage and data transmission rates.

“We all know that semiconductor transistors are everywhere nowadays, but current electronic systems suffer fundamentally from the transistor-level,” said Choi. “We believe it can still evolve much further with innovative device architectures, particularly for high power converters and RF amplifiers.”

Within the lab of Professor Shadi Dayeh, Choi is exploring the use of two types of gallium nitride transistors. His research tests the potential of vertical gallium nitride transistors for very high power switches with low-cost, and offers a novel device design approach to address the intrinsic linearity of transistors for more faithful RF amplifiers with low signal distortion. Given that the demonstrated devices already show a very promising switch characteristic and a record linearity figure of merit, Choi’s research could be instrumental to high performance power management systems and RF front-end modules.

[OBJECTIVE]

- Intrinsic Linearly Interpolated Transistor for Millimeter-Wave Low Noise Amplifiers

[OBJECTIVE]

- Intrinsically Linear Transistor for Millimeter-Wave Low Noise Amplifiers

[OBJECTIVE]
2020 ECE AWARDS CEREMONY
While this year’s ECE Awards Ceremony was held remotely due to the COVID-19 pandemic, the new format didn’t hinder the celebration one bit. In fact, the all-digital event meant more family and friends of awardees could tune in to show their support via Zoom or Facebook Live. ECE Undergraduate Student of the Year, Keshav Rungta, even had family members from India watching. Additionally, the family of the late Professor Harry Wieder was also in attendance to celebrate the inaugural Harry Wieder Electronic Materials Excellence Award.

Congratulations to all award winners!

STUDENT AWARDS
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.

[2020–2021] HENRY G. BOOKER MEMORIAL AWARD RECIPIENTS
Matthew Aguilar  
Yazeed Alnumay  
Jad Nicholas Barrere  
Zhidong Cao  
Gino Carfano  
Xiaowen Chen  
Zhixian Chen  
Zifeng Chen  
Brian Chi

Bang Du  
Aditi Gaur  
Haizhan Li  
Jiayu Luo  
Thiago Goncalves  
Marback  
Eric Megrabov  
Jacob Millhiser  
Timothy Morton  
Sida Qin  
Keshav Rungta  
Fernill Ruskton  
Devon Starfield  
Justin Sun  
Kent Thai  
Jiaye Wang  
Kaiwen Wang  
Karl Wang  
Austin Wiechmann  
Chenfeng Wu  
Kevin Youssef  
Alex Yu  
Sunny Yu  
Weifan Zhang  
Siyuan Zhu

Alex Phan  
Minghui Zhao  
Matthew Chan  
Zhaowei Yu

Undergraduate Student Service Awards
Shivani Bhakta  
Geeling Chau  
David Ding  
Aditi Gaur  
Bassel Hatoum  
Tanish Jain  
Bryant Liu  
Christopher Salgado  
Brea Torquato  
Chenfeng Wu
The ECE Department launched a new summer program that prepares incoming and potential transfer students for future internships and jobs in technical and professional spaces. The ECE Internship Preparatory Program uses guided research opportunities to train students in hard and soft skills like machine learning, app development, resume building, professional communication and more.

Over five weeks, participants supplemented their experience through mock job interviews, industry talks, campus resources in career services and enrichment, and opportunities to network and learn from ECE alumni. The inaugural cohort wrapped up in early September with a virtual showcase of the interns’ summer research projects. Students were judged based on their creativity and technical skills in hardware and electronics, machine learning and app development.

Some of this year’s most outstanding projects included a no-touch, sensor-based automated toilet flusher to limit contact with harmful bacteria, designs for a smartphone app and associated hardware to facilitate houseplant care, and a prototype multi-feature news app. The winning students each received an award and placement within a research group of their choosing during the academic year.
HARDWARE HACKATHON CREATES A SPACE FOR TINKERING

In January, H.A.R.D. Hack — a 24-hour, UC San Diego hackathon focused on creating new and inventive hardware devices — took place for the first time at the Price Center at the heart of campus. The hackathon’s centralized location allowed for a more cohesive event that attracted 170 students from UC San Diego, UC Irvine and San Diego State University, along with mentors from the ECE alumni community.

Now in its sixth year, H.A.R.D. Hack’s goal is to replicate an industry setting where students of any major can engineer projects using hardware provided by the organizers. The event is co-hosted annually by IEEE and Eta Kappa Nu (HKN), an engineering honors society at UC San Diego, and sponsored in part by ECE.

With the support of mentors from the student, industry and ECE alumni communities, two teams in particular met the 2020 hackathon’s “Health and Wellness” theme head-on. One team designed a cap with sensors that vibrate to alert blind individuals to nearby obstacles. The other created a specialized camera capable of creating a 3D model of the wearer’s hand. The device could be especially useful in tracking tremors in patients with Parkinson’s disease.

PROJECT IN A BOX ON DISPLAY AT UC SAN DIEGO FOUNDERS DAY

The Project in a Box team brings hands-on engineering learning experiences to undergraduate students, as well as K-12 students in the San Diego region and beyond. Their hard work has reached thousands of people and was on display at UC San Diego’s 2019 Founders Day celebration. Project in a Box showcased some of their engineering projects — like how to build and program walking robots — to campus leadership, alumni, faculty and friends. Nice job Team Project in a Box!
Like most university campuses around the world, the COVID-19 pandemic ushered in new ways teaching, learning and doing business for our ECE community.

Department staff adjusted to working from home while balancing the needs of their families and changing dynamics of their home lives. For Operations Manager Jamie Gonzalez, witnessing everyone come together to meet the challenges of working in this new normal was inspiring. “In a time of uncertainty, constant change, and deep fear, ECE staff demonstrated a level of resilience I have never seen before. Their positive attitudes and hard work helped many of our researchers continue working on the research that has and will continue to shape our ECE community."

With the grit, resolve and resilience that is characteristic of the ECE Department at UC San Diego, everyone came together to meet the challenges of working in this new normal was inspiring. In early 2020, the ECE Department invited alumni from across southern California to reunite for an evening at their second home at UC San Diego. Hosted by the ECE Alumni Advisory Board, the event included opportunities to network and reconnect with old friends and colleagues. Hamna Khan, president of the advisory board, said she hoped the night would encourage feedback from the department’s graduates. “As President of the ECE Alumni Advisory Board, I wanted to meet each of the alumni to let them know that this advisory board exists so that we may understand what our community needs are and start building a stronger, collective future for all ECE Alumni,” said Khan. The night also offered alumni a chance to engage with current students on campus, both at the reunion and at a 24-hour hackathon held at the Price Center. At a nearby restaurant, alumni spoke with student leaders from organizations such as IEEE, Project in a Box, The Eta Kappa Nu (HKN) Honor Society and the ECE Undergraduate Student Council. Representatives from each group shared their work with alumni in demonstrations around the restaurant’s outdoor patio. At the Price Center, alumni were invited to mentor or judge students participating in H.A.R.D. Hack, a hardware-centric hackathon now in its sixth year. The ECE Alumni Advisory Board plans to reach many more alumni in the future by hosting virtual events until it’s possible to gather in person. This, said Khan, will also help the board reach a more diverse set of graduates, including those who could not attend this year’s event but are excited for more. Connect with us at http://www.ece.ucsd.edu/alumni/welcome.

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Makerspace staff produced parts and kits that were mailed to students, while also creating video content to virtually demo that were shared on the department’s social media channels; Facilities and Safety ensured the safety of labs, keeping all spaces and participants up to code according to CDC guidelines; Student outreach efforts, like the Student Organization Showcase at Triton Days, went digital and connected with students through the department’s social media channels; ECE Student Organizations also quickly modified their programs to be attended remotely. Qingli Chai, 2019–2020 Eta Kappa Nu (HKN) President, shared her experience: “The impact of COVID-19 really forced us to think of new ways to create the community we had been comfortable fostering in person. We were able to drive a sense of community by creating new platforms for students to interact and more events to celebrate the year that had passed.” Perhaps one of the projects that best captured the spirit of the ECE Community was the End of Year Video created to honor the Class of 2020. Students submitted photos to be included, while alumni, staff and alumni created congratulatory messages and videos to wish the new graduates well.

Throughout the many challenges, the ECE community came together to make pivotal changes; and while much is uncertain about the immediate future, we know that the ECE community will continue to stand strong.
ECE celebrates these three distinguished alumni for their leadership and meritorious contributions in their fields. Through their exemplary accomplishments, they epitomize the potential of an ECE education at UC San Diego.

Bill Lin
Chair, Electrical and Computer Engineering