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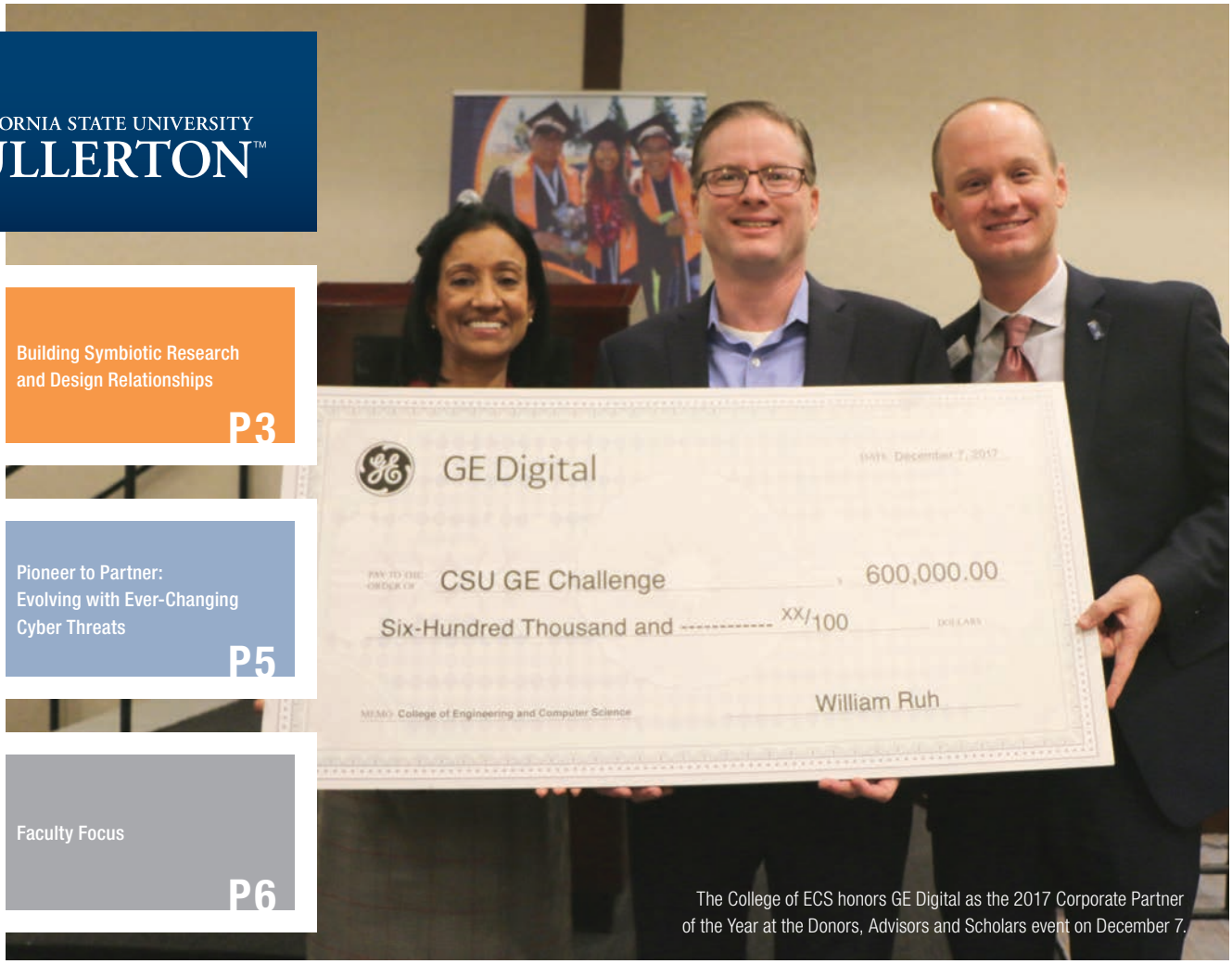


The College of ECS honors GE Digital as the 2017 Corporate Partner of the Year at the Donors, Advisors and Scholars event on December 7.

CONNECTION

NEWS FROM THE COLLEGE OF ENGINEERING & COMPUTER SCIENCE

Issue Thirteen // Winter 2017–18

# Setting Up Students for Success

**From a place to study and get tutoring help to academic and career advice, the new CSUF College of Engineering & Computer Science (ECS) Student Success Center is already making a huge impact for many ECS majors. Renovated and relaunched just last fall, it is one of the latest Success Centers that CSUF has rolled out as part of its Student Success Team Model.**

"The Center has quickly become a hub of activity on campus," says ECS Assistant Dean Carlos Santana. "There are always students getting extra help from our tutors, studying in groups, or just hanging out between classes. It's helped build an air of camaraderie among our students, and helped them develop stronger relationships with their advisors."

The Student Success Team Model is one that is fairly unique to CSUF, and is creating a more robust support network for students. Having academic advisors, career counselors, and tutors all in one place makes it easier to coordinate, share insight, and work with students to develop personalized plans. This can make a big difference in rigorous academic majors like engineering and computer science, and has been particularly helpful for the 57 percent of CSUF students who are the first in their families to go to college.

"Many first-generation students face challenges that others don't," says Santana. "Some find the resources they need early in their academic career, but many end up floundering simply because they don't know where to go for help. By putting all the resources students need in one place, we're helping to set them up for success."

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**Susan Barua**
Interim Dean

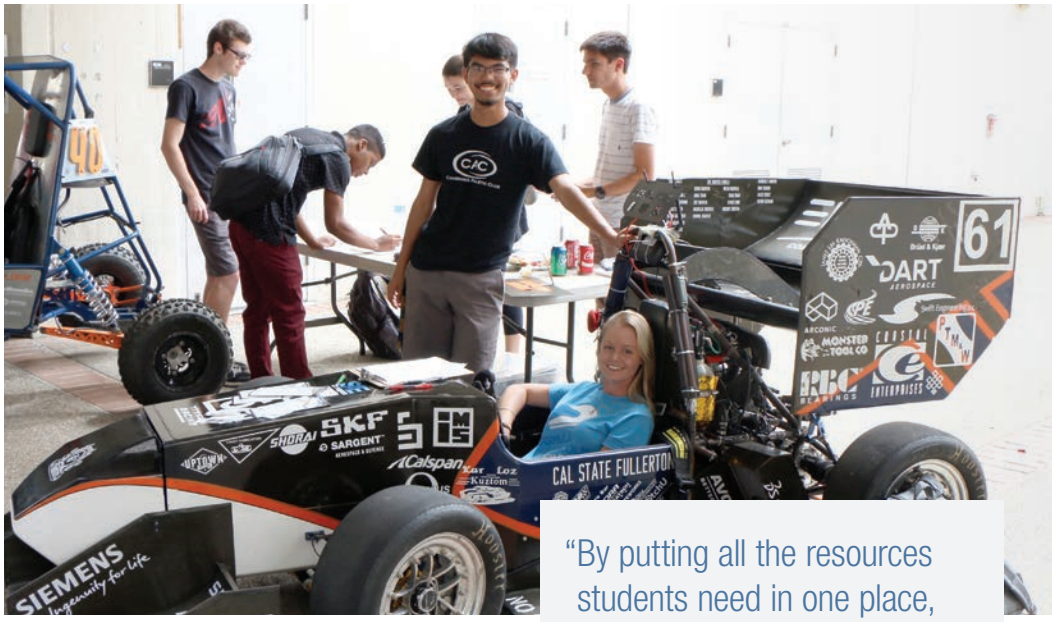
## A Message from the Dean

At the College of Engineering & Computer Science, ensuring our students graduate is just the start of our mission. We strive to send new engineers and computer scientists out into the world, ready to embark on successful industry and government careers, pursue advanced degrees, or become entrepreneurs, changing the world through technology.

But overcoming opportunity and achievement gaps that can threaten that essential first step – ensuring students successfully navigate our programs and earn their degrees – is a critical focus. We proudly stand with the University's ambitious Graduation Initiative 2025, which seeks a 75 percent, 6-year graduation rate for all freshmen by 2025, up from 62 percent, and an 85 percent 4-year completion rate for transfer students.

How are we investing in support for student success? It starts with our amazing faculty, who impart knowledge in increasingly innovative ways in classrooms, laboratories, and field experiences. Our administrative support staff, who serve as the primary interface between students and our department, and our lab techs, who ensure instructional and computing labs are well-maintained and updated, support our instructional capabilities. Alumni and industry supporters continuously offer their time, talents, and financial resources to enhance student programs and services. Industry partners and mentors help us prepare students to take on 21st century challenges and offer an array of unique internship, learning, and career opportunities. And, our Student Success Center helps meet students' evolving needs by providing a centralized area at the college to access information regarding individual academic, career, and personal development plans.

Of course, there's always room for more – more program growth and expansion, more innovative experiential and project-based learning opportunities, and more alumni and industry involvement and support. The quest to give future engineers and computer scientists their best start is truly a team effort. We're ever thankful to those partners who already stand beside us and are always open to new opportunities to help our students reach new heights.

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### Students Actively Seek Services

"Students are starting to feel more comfortable asking for tutoring and taking advantage of our career services," says academic advisor Sergio Guerra. "Being able to get their questions answered without having to wait a long time or run around looking for different advisors has made them more likely to come to us whenever something is on their mind. It's also allowed the professional staff to interact more easily, compare notes, and work together."

According to Guerra, the center has made more students aware of the availability of tutoring services leading to more of them to become proactive in seeking help. The tutors, who are high-performing students in their fields, offer drop-in times as well as scheduled sessions. "We've got posters and flyers all over campus, and send out email blasts to let students know about the resources we provide," says Guerra. "Plus our instructors and counselors will recommend tutoring if they see a student struggling."

### Measuring the Center's Impact

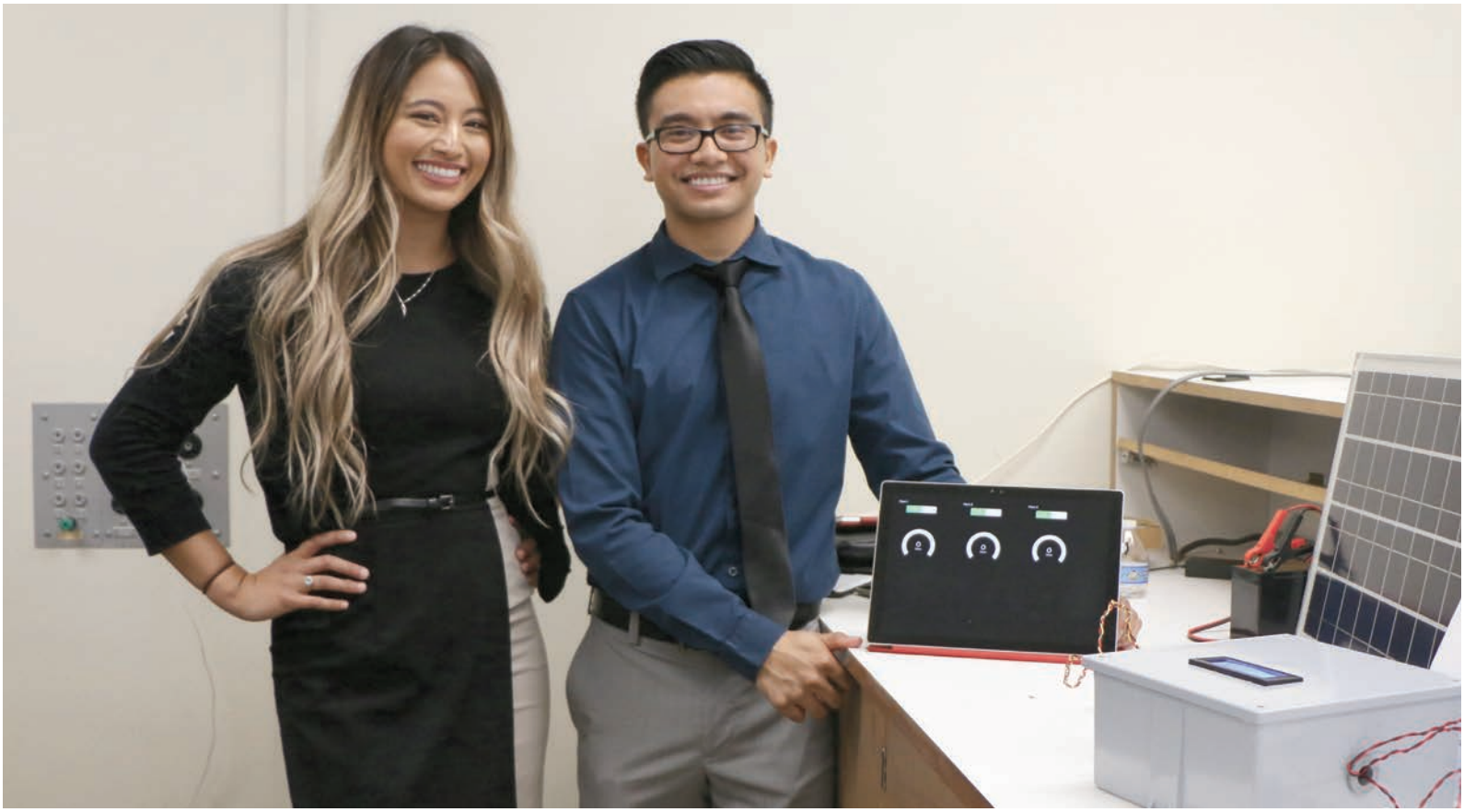
As part of an ongoing effort to understand student needs and better allocate resources, the Student Success Center has been tracking a variety of metrics that show how students are engaging. "The data that we're collecting won't really begin telling us a story for at least another year," says Santana, "but the response from our students so far has been overwhelmingly positive."

> "By putting all the resources students need in one place, we're helping to set them up for success."
>
> **CARLOS SANTANA**

"The Center has made the transition from accessing one resource to another much more organic," says Christina Hernandez, retention specialist. Let's say a student is studying, and they run into problem with an assignment they are working on. Chances are, a tutor is an arm's-length away. Sharing a space the students are using every day has also made the advisors more approachable, so I have definitely seen an increase in the number of students utilizing our services."

"It is nice to know I have other people I can talk to that have taken courses I need to take," says ECS student tutor Lynnette Carbajal. "Knowing that advising is available with people I am familiar with makes it seem like family."

"The Student Success Center fosters a welcoming atmosphere that not only encourages academic studies, but also a friendly environment for students to network with others in the ECS community," says third-year mechanical engineering major and tutor Galen Jiang. "The workshops and networking events offered through the Center have definitely helped me garner the skills needed to succeed in the professional world, and the academic and career advising has provided me a flexible pathway to explore the different industries I can work in after graduating."



# Building Symbiotic Research and Design Relationships

**In the medical device industry, creativity, leadership, and innovation drive growth. And, according to Greg Wright, director of heart valve therapy (HVT) research and development at Edwards Lifesciences, Cal State Fullerton's College of Engineering & Computer Science students and graduates have the experience, practical skills, and entrepreneurial spirit to succeed in the highly competitive field.**

"Cal State Fullerton has developed a program that is practical and applicable to medical device companies," says Wright. "I believe students need a balance of theory and practicality, and balancing those principles is what Cal State Fullerton does better than many other colleges and universities. Projects these students work on directly support product development and manufacturing processes that ultimately impact patients' lives. And, at the end of the day, it is all about helping patients."

Wright is one of the college's current Corporate Partners – local industry representatives who support students' senior design projects, offering mentorship and industry experience. These partners get fresh perspectives on challenges facing their companies, a recruitment pipeline of talented and motivated students, and increased visibility on campus.

"Students are a great resource because they creatively think about a problem in ways that some engineers or computer scientists who have been working in industry for a while may not consider," explains Nicole Bailey, associate director of corporate and foundation relations at the College of Engineering & Computer Science. "Our students benefit from these relationships because it opens their eyes to the different kinds of industry in our area. They develop professional relationships with companies as they work on projects, and these projects are exactly the type of hands-on, applied learning our students need as they head into the workforce."

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"Students are a great resource because they creatively think about a problem in ways that some engineers or computer scientists who have been working in industry for a while may not consider."

**NICOLE BAILEY**

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## Corporate Partners Praise Students' Practical Acumen

Dan Ouweleen, president of PacMin – which produces custom aviation models and displays – says he's been impressed with Cal State Fullerton students so far as the company embarks on its first project as a Corporate Partner.

"These student engineers are working on practical challenges that translate directly into real-world solutions based on current manufacturing technologies," he says. "I also like that they exhibit effective teamwork and present their ideas in a professional manner."

Ouweleen says these students will have an advantage with future employers, as they'll be able to hit the ground running because of the education they've received.

"They've been forced to meet real-world deadlines and have experienced both success and failure, which helps get them ready for the real work environment," he says. "And, the college trains engineers and technical students how to present their ideas and projects, versus just evaluating them on engineering expertise. So many bright engineers fail in getting projects or ideas accepted because they have poor interpersonal and presentation skills."

## Partnerships Pave the Way for Career Paths

"Employers look to Cal State Fullerton students for recruitment because they recognize the special dedication and motivation of our students," says Bailey. "Many are first-generation college students. They deeply understand the value of working hard to accomplish a goal.

And, because so many of our students live locally, they are enthusiastic about working in industry that maybe they did not realize was in their area. They're also looking for jobs that will put them on a path for growth and will allow them to use the multiple skills they have developed throughout their college careers."

Sometimes, partnerships on senior design projects or internships flow naturally into postgraduate employment. Aluminum Precision Products – a Corporate Partner specializing in aluminum, titanium, and precision forgings – recently hired a 2017 graduate.

"Gabriel Ortiz was one of two interns we hired over the summer," says John Haroldson, engineering manager for Aluminum Precision Products. "He reached out to APP last spring to get some aerospace-grade aluminum and titanium for the CSUF-SAE Formula Car. He got his metal, and I got an introduction to the team and the Corporate Partnership. We hired Gabriel full-time because of what we saw in him over the summer: leadership and problem-solving skills. He has already become a great asset to the company."

"Employers look to Cal State Fullerton students for recruitment because they recognize the special dedication and motivation of our students." – NICOLE BAILEY

Haroldson looks at the Corporate Partnership with Cal State Fullerton as a way to bring fresh ideas to some of the problems his company is trying to tackle.

"In our current project, the CSUF team will look at finding more efficient ways to heat and manage temperature on our tools," he explains. "We are hopeful that the team will find some creative solutions."

# Pioneer to Partner: Evolving with Ever-Changing Cyber Threats



**When Sean Peasley joined Deloitte's accounting department in 1988, he was a new graduate with dual bachelor's degrees from Cal State Fullerton – one in computer science and the other in business administration and accounting. That same year, a Cornell University student accidently unleashed the first significant piece of malware, known as the Morris worm, on the still immature internet, infecting about 10 percent of connected computers.**

Thus, the field of cybersecurity was born. And a few years later, Peasley's computer science background began to prove valuable for Deloitte's entry into the fledgling industry. Though cybersecurity wasn't yet part of the Cal State Fullerton curriculum, he says he frequently draws upon critical foundational skills he learned from his computer science professors, including logical thinking and outcomes-focused planning, the importance of testing various iterations, and client engagement strategies.

"I helped start the Cyber Risk practice in Orange County, and I now lead Internet of Things (IoT) Security and Consumer & Industrial Products Security as a partner in Cyber Risk Services," says Peasley. "In the last 25 years, cybersecurity has become one of the most important considerations for companies, as well as governments and private citizens. Reports of breaches are pervasive, and it's not enough anymore to just focus on the prevention aspect of security. Hackers are patient, creative, and agile."

Peasley, and Deloitte as a whole, believe companies need to be secure, vigilant, and resilient to protect themselves. This means understanding and monitoring the ways adversaries can get into their environment, having a system in place for early detection, and being agile enough to minimize impact through a quick response and recovery procedures.

## Shifting Security Strategies to High-Stakes Systems

Most businesses have focused their cybersecurity efforts on strengthening IT networks and hiring staff who deal with cybersecurity on a daily basis. While this is still an important focus for Peasley, he's spent the last few years exploring and expanding IoT security.

"Everything is connected now with devices, sensors, and other points where data is created and communicated," he says. "This includes embedded systems in operational technologies used to run factory floors or oil platforms in the Gulf or refineries. Many of these programmable logic controllers and other devices haven't been updated in terms of security. This has a real potential impact on life and safety, so the stakes are higher."

Playing catch-up, trying to make these systems cybersecure, has been a challenge, explains Peasley, which is why he and other cyber risk experts are trying to encourage a new way of thinking among developers.

> "In the last 25 years, cybersecurity has become one of the most important considerations for companies, as well as governments and private citizens."
>
> **SEAN PEASLEY**

"We need to think about the security of devices in the design phase, not after they're already on the market," he says. "A prime example is the connected or autonomous vehicle. To keep drivers and passengers safe, security must be built into the complex programming code."

## Preserving the Future of the Field

Peasley serves on the ECS College Leadership Council and chairs the Cybersecurity Committee. In addition, he has served as guest lecturer for several Professor for a Day events at the College of Engineering & Computer Science, where he has provided everything from highly technical discussions to career advice.

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"As students get closer to graduation, they really appreciate career advice. I recommend plotting a course for what they want to do and then going out and getting the experience." – **SEAN PEASLEY**

"As students get closer to graduation, they really appreciate career advice," he says. "I share with them what I, as an employer, look for when I'm hiring someone, and what will help them stand out in a globally competitive environment. I recommend plotting a course for what they want to do and then going out and getting the experience – through internships and relevant part-time work – before they pursue a full-time job."

Peasley also touts the importance of participation in class projects, computer science competitions, and interdisciplinary research and development experiences – all elements he believes Cal State Fullerton emphasizes in its educational programs. These activities broaden students' perspectives, teach them to work in a team, and impart a greater understanding of the integrated knowledge and skills required for every piece of hardware, software, and beyond.

He says the future of cybersecurity depends on a continuous stream of talented people from a variety of disciplines.

"We need to attract more women to the field, and become more diverse," says Peasley. "The need for cybersecurity is not going away anytime soon, and it's becoming an increasingly in-demand discipline as we try to make it part of anything and everything we do from the outset of design and development. This requires knowledge from hundreds of technical and nontechnical disciplines, and we always have room for talented folks."

# Faculty Focus

**Kiran George**, professor of computer engineering, co-led the RoboCircuitz! course last summer, which introduced children to complex engineering concepts in simple, fun, and engaging ways like building LEGO® robotic racecars.

## NEW TENURE-TRACK FACULTY

**Paul Salvador Inventado**, a new assistant professor in the Department of Computer Science, hopes to integrate his research in the emerging discipline of educational data mining into classroom instruction.

**Wenlin Han** – whose research focus includes cybersecurity, the Internet of Things, smart grid security and privacy, and applied cryptography – joined the Department of Computer Science as an assistant professor.

**John Sanders**, a first-semester assistant professor of mechanical engineering, models the mechanical behavior of metals at high temperatures so engineers can design safe clean energy components that won't fail during operation.

**Siheng Su**, a new assistant professor in the Department of Mechanical Engineering, specializes in kinematics of mechanisms, mechanics of materials, finite element methods, multifunctional nanomaterial development, biomolecule-nanomaterial interaction, and 3D printing of artificial tissues and organs.

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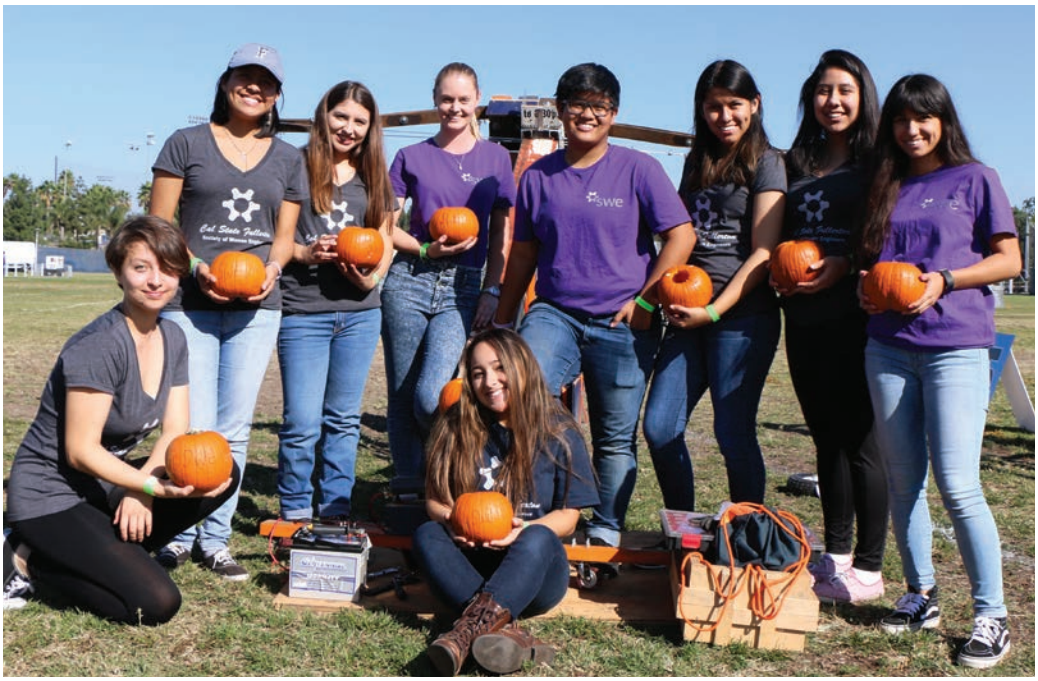


Cal State Fullerton's Upsilon Theta Tau team placed second at the 10th annual Pumpkin Launch. CSUF's Society of Women Engineers team tied for third and another CSUF team took 10th at the College of Engineering & Computer Science and Discovery Cube event.

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