

## Titans of Giving

Cal State Fullerton will spotlight one of our “Titans of Giving” every Thursday. Our donors, through their generosity, enable the university to provide scholarships, endow chairs and professorships, help develop new centers and programs, and much more. Their commitment helps ensure that TITANS REACH HIGHER.



### Mercury Systems Inc.

Mercury Systems Inc. has donated a \$300,000 gift to support the “Intelligent Radar System” research project, directed by Kiran George, professor of computer engineering. This project will allow the College of Engineering and Computer Science to build out capacity in artificial intelligence, including developing curriculum, advancing research and engaging students in projects. Tony Girard, Mercury’s chief technology officer, is one of the newest members of the Dean’s College Leadership Council.

[Support the College of Engineering and Computer Science.](#)



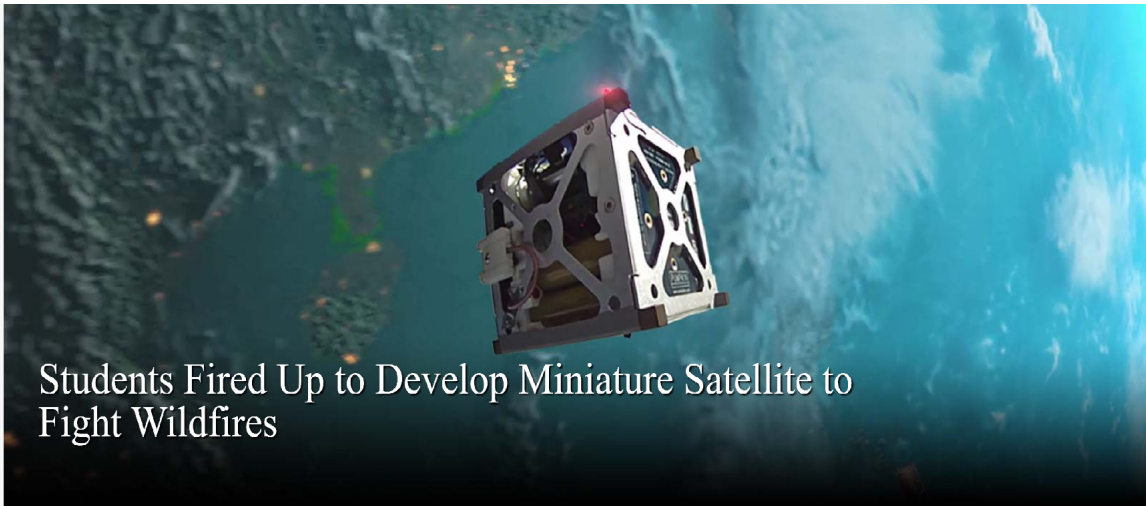
### Cisco

Cisco — through the Silicon Valley Community Foundation — has provided a \$300,000 grant to build the College of Engineering and Computer Science capacity in IoT, or internet of things, curriculum and project experiences. As industry grapples with the influences of new technologies, this grant will help better prepare students for the workforce by exposing them to leading companies in the IoT space and providing hands-on learning opportunities.

[Support the College of Engineering and Computer Science.](#)

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**CSUF NEWS SERVICE**

## Multidisciplinary Team Learns to Build 'CubeSats' to Launch Into Space

Oct. 5, 2020



As wildfires continue to cause destruction across California, a team of Cal State Fullerton engineering and computer science students is exploring a solution to fight the devastating infernos.

The undergraduates are designing, manufacturing and building a cube-shaped, miniaturized satellite, known as a CubeSat, to observe Earth from space to predict and detect fires. The data captured is used to detect areas of risk — to put out fires before a blaze even starts.

“This year’s fire season has been particularly harmful. With the onset of climate change, we need to utilize tools such as satellites to study Earth and try to predict and prevent natural disasters,” said senior Patrick Babb, a mechanical engineering major who is leading the team project.

The 10-member student team is developing a prototype, dubbed “TitanSat,” which incorporates infrared cameras and solar power to monitor Earth’s climate and detect hot and dry zones that pose a wildfire risk.



Patrick Babb, mechanical engineering major and president of TitanSat student organization.

### **Students Launch TitanSat Club**

Mechanical engineering student Patrick Babb is a founder and president of TitanSat, a multi-disciplinary student organization launched last year. The organization’s mission is to get engineering and computer science majors involved with CubeSat research for their senior design project.

The TitanSat is a long-term research project, with the goal of eventually launching the microsatellite into space one day, noted Sagil James, associate professor of mechanical engineering, who is the team's faculty adviser with Kiran George, professor of computer engineering.

"The mission of TitanSat is to introduce satellite technology to our engineering students while addressing critical problems: To save California from the devastation of wildfires by monitoring fire zones and create cost-effective technological solutions that can help progress weather satellite development," James said.

The other CSUF team members are Kye Arai, Victor Calderon, Scott Cary, Sally George, Abraham Rodriguez and Kirk Williams, all mechanical engineering majors; computer science major Evelyn Johnson; and electrical engineering major Tyra Jackson. A Troy High School student also is working on the project.

Johnson's role is to develop computer codes to allow the TitanSat to process images and send them back to Earth.

"I'm fascinated about how complex satellites are," said Johnson, who plans on a career as a software developer and programmer. "Satellites are not just limited to machines, but can also expand to 'natural satellites' like the moon that orbits a planet or star."



Evelyn Johnson is a computer science major working on the CubeSat project.

TitanSat also is recruiting students outside of engineering who can help with the business aspects of the project. For more about the club, visit [here](#).

To watch the club's video, visit [here](#).

Babb, a **McNair scholar** who plans to pursue a doctorate in aerospace engineering to work in academia, has been selected as a 2020-21 Sally Cassanova Scholar in the California State University Pre-Doctoral Program for students planning to earn a doctorate.

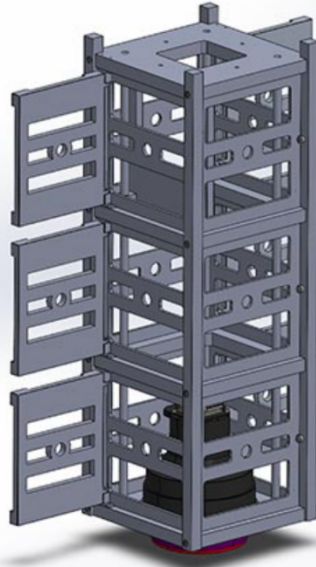
He also serves on the executive boards of CSUF's student chapter of the National Society of Black Engineers and Tau Beta Pi engineering honor society. This summer, he completed a virtual internship at Stanford University, where he studied deep learning, a subset of artificial intelligence and machine learning in which computers solve complex problems.

**Related story:**  
[Roller Coaster Research](#)

The CubeSat concept was initially conceived more than 20 years ago as a powerful educational tool at the university level to introduce students to space science and exploration, James explained. Today, it has grown into becoming an integral part of actual space missions.

CubeSats are ultra-compact miniature spacecraft that orbit Earth, which can be developed at a relatively low-cost with off-the-shelf parts. The satellite is only 10x10x10 centimeters (10 centimeters is roughly 4 inches) and weighs less than three pounds. The small satellites can withstand forces and temperatures of space, while generating enough power from solar cells to function the electrical and electronic components.





Students created this CubeSat rendering.

“These small satellites are important because they relay information of interest back to Earth or to other satellites and increase access to space for more people. As a result, a larger pool of ideas can be applied to solve problems on Earth, such as climate change so that we can live sustainably,” said Babb, who graduates next year. He plans to pursue a doctorate in aerospace engineering and aspires to work in academia. *(See related story)*

The goal of TitanSat, which students can work on for their senior capstone project, is to make the satellite lighter and easier to manufacture, Babb added. The students plan to finish a working engineering model by the end of the fall semester and complete the project by spring.

To become more knowledgeable about the miniature satellites, Babb was a 2019 summer intern at NASA’s Ames Research Center in Silicon Valley, where he worked on testing cube satellites and learned how the space agency partners with outside entities to launch such spacecraft. He also led the initial stages of an agreement with the university to launch a cube satellite into space in the future.

“By interning at NASA, I realized that having a good idea is all it takes to launch a CubeSat,” Babb said. “I’m confident that we’ll see a TitanSat in space one day.”

Contact: Debra Cano Ramos, [dcanoramos@fullerton.edu](mailto:dcanoramos@fullerton.edu)

#### TAG CLOUD

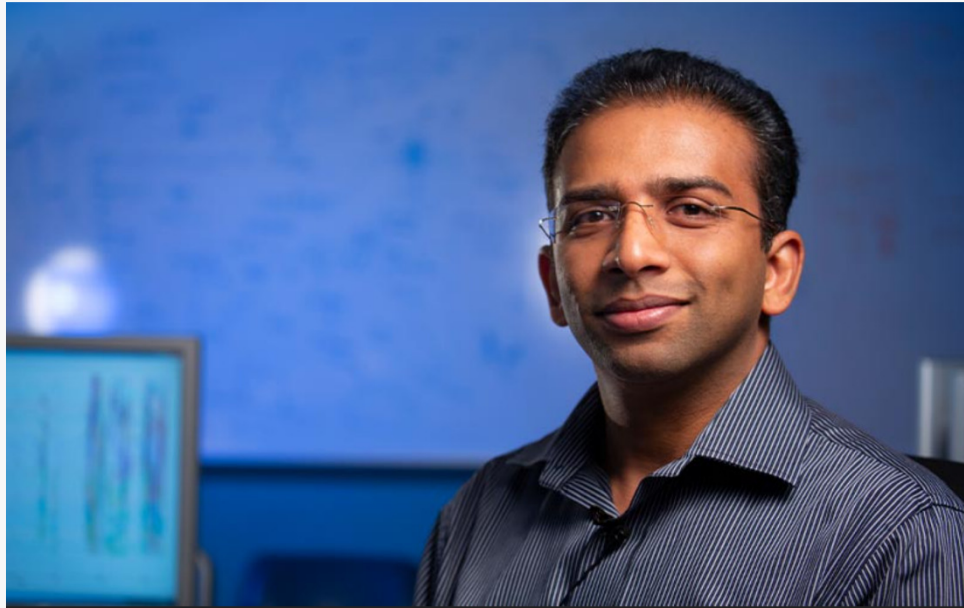
Celebrated Reputation

College of Engineering and Computer Science



# Innovative and Inspiring Computer Engineer Is 2020 Outstanding Professor

May 14, 2020



Kiran George, professor of computer engineering

Computer engineering professor Kiran George is a research pioneer and a model faculty member whose dynamic and inspiring teaching style has helped countless students reach their academic and career goals.

Since fall 2007, when George became a faculty member in the College of Engineering and Computer Science, he has continuously demonstrated the highest form of excellence in teaching, scholarly activities and service.

For his innovative and prolific research endeavors, track record of leadership and commitment to teaching, George is this year's recipient of Cal State Fullerton's Outstanding Professor Award. CSUF President Fram Virjee announced George's selection for the award at today's virtual Academic Senate meeting.

The award is given to a faculty member for outstanding teaching, distinction in scholarship and/or creative activities, and contributions to the university and California State University system.

"Dr. George is a selfless and kind individual who constantly thinks about student learning and success before anything else," said Susamma (Susan) Barua, the college's dean.

## Related stories:

[\*\*In Good Company: Working With Industry Partners\*\*](#)

[\*\*Shields Award Winner\*\*](#)

[\*\*Internet of Things Innovation\*\*](#)

[\*\*B.S. and M.S. Degrees in Computer Engineering\*\*](#)

George's research interests include developing low-cost assistive technology devices, the "internet of things" and high-performance computing. His contributions to the fields of brain-computer interface technology — systems that use signals from the brain to enable communication, such as in individuals with impaired function — biomedical engineering research and wideband digital receivers have received wide recognition within and outside of the university.

"His hands-on approach in innovative interdisciplinary engineering projects has always generated a long line of students eager to join his lab," Barua added. "He has methodically implemented high-impact practices and student success activities in his own laboratory and in his classroom."

**George**, who earned a doctorate from Wright State University in Dayton, Ohio, directs the college's Bio-Electric Signal-Based Systems Laboratory. The lab's primary focus is to design and develop affordable user-friendly assistive technology devices that require minimal training to operate. He collaborates with support organizations and institutions, including the ALS (amyotrophic lateral sclerosis) Association.

The recipient of the university's 2017 L. Donald Shields Excellence in Scholarship and Creativity Award, George has received more than \$2.7 million in grants and awards, including funding from the National Science Foundation and U.S. Army Research Labs for his research. In 2012, he was the recipient of a prestigious National Science Foundation Faculty Early Career Development (CAREER) award.

George also is the recipient of foundation grants to carry out technology-driven research activities funded by such companies as Mercury Defense Systems, and Cisco Systems Inc. — through the Silicon Valley Community Foundation — that supports the internet of things curriculum and student projects. George also led a \$600,000 National Science Foundation grant for the Academic Catalyst for Excellence program, which targeted academically promising, but economically disadvantaged students.

During his academic career, he has authored or co-authored more than 85 peer-reviewed technical articles and reports, with many of his students co-authors.

Since 2014, George has served as coordinator of the Computer Engineering Program, which has seen a surge of growth under his leadership and where students call him approachable, supportive and caring. He believes that teaching is a dynamic process that requires constant improvement, self-assessment and great dedication, and is always trying new approaches and effective ways to guide and challenge students to achieve their full potential, his colleagues pointed out.

His former student Krupal Mistry, now a software engineer who earned a master's degree in computer engineering in 2018, recalled his first technical course with George, the "Introduction to Digital VLSI Logic Design and Computer Organization."

"Dr. George's profound and thorough knowledge about the subject helped me increase my curiosity and get a deeper understanding of concepts," said Mistry, adding that under George's mentorship, he also sharpened his interpersonal, coding and analytical skills.

What sets George apart, his colleagues agreed, is his involvement of students in many leading-edge research projects. Students are able to relate the theoretical concepts they learn as part of their coursework and directly apply them to real-world scenarios. He collaborates with undergraduates and graduate students on capstone computer engineering design projects to prepare them for the workforce.

“His enthusiasm and passion towards developing new technology motivated me to perform better in the lab and successfully complete my thesis,” said Neha Jayaprakash, his former student.

Jayaprakash’s research experiences with George, which included developing an autonomous wheelchair, spurred her growth as an engineer and helped her land a career position after graduating in 2018 with a master’s degree in computer engineering.

“Without his support it would be impossible to stand out among the many applicants,” said Jayaprakash, a component design engineer at Intel Corp. “I would not have the cutting-edge career I have today. I hope he continues to provide opportunities to many more students like me.”

*Contact: Debra Cano Ramos, [dcanoramos@fullerton.edu](mailto:dcanoramos@fullerton.edu)*

#### **TAG CLOUD**

Celebrated Reputation

College of Engineering and Computer Science

<http://news.fullerton.edu/2020sp/outstanding-professor-kiran-george.aspx>





# PRINT A SOLAR LEAF IN 3 HOURS

CSU FULLERTON

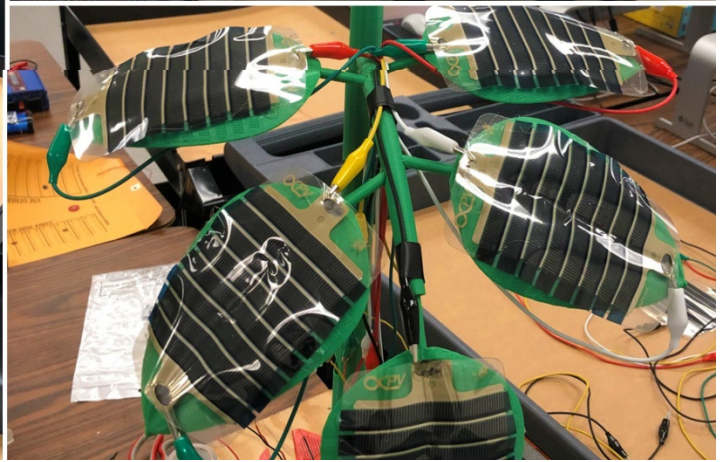
**What:** A 3D-printed smart solar "tree" that can be plugged into any home outlet to generate power to the home grid and reduce energy bills. The trees also provide a low-cost solar energy option for low-income and disadvantaged communities in California.

**Who:** Fifteen CSUF undergraduate and graduate students led by assistant professor of mechanical engineering Dr. Sagil James, professor of computer engineering Dr. Kiran George and assistant professor of computer engineering Dr. Rakeshkumar Mahto.

**Material:** Third-generation flexible thin-film organic solar cells affixed to a tree made of PLA

**Time to Print:** Two to three hours per leaf

**Lesson:** "With this project, students learn advanced manufacturing simulation software required to successfully perform the job of an entry-level engineer in today's high-tech industries," says Dr. James, adding that "as 3D printing technology becomes more popular, it could offer solutions to the product needs of the world's less fortunate population. It promises to revolutionize developing nations and positively affect millions of lives."



<http://news.fullerton.edu/2019sp/3D-Technology.aspx>  
<https://www2.calstate.edu/csu-system/news/Pages/Print-A-Solar-Leaf-In-3-Hours.aspx>

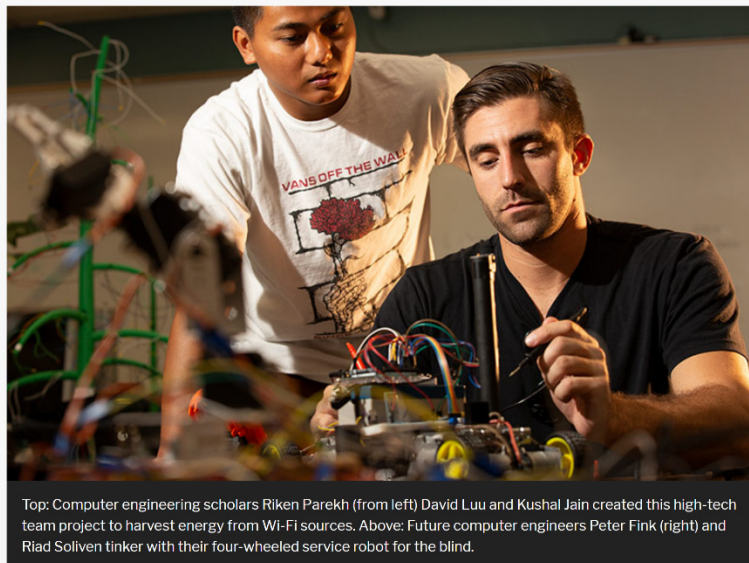




## In Good Company: Future Engineers, Computer Scientists Harness Potential of Industry Partners

TITAN MAGAZINE

September 2019



Top: Computer engineering scholars Riken Parekh (from left) David Luu and Kushal Jain created this high-tech team project to harvest energy from Wi-Fi sources. Above: Future computer engineers Peter Fink (right) and Riad Soliven tinker with their four-wheeled service robot for the blind.

This high-tech prototype doesn't bark or sit on command. "SED" — Seeing Eye Dog — is a four-wheeled robot created by a team of computer engineering students. This "service robot" is built with a cane-like handle and the latest technology.

"Our project was not made to replace a guide dog, but to create a robot that helps the visually impaired and blind travel on foot from one destination to another," says Peter Fink, who developed the project with classmates Riad Maulana Soliven and Daniel Verdugo. "An internet-based, voice-controlled app on the user's phone can remotely control the GPS-guided robot."

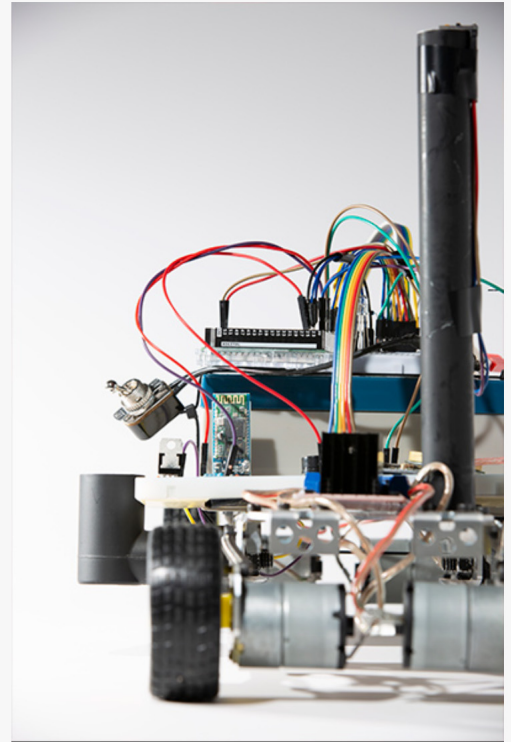
In another corner of the College of Engineering and Computer Science, computer engineering majors David Luu, Kushal Jain and Riken Parekh have designed a novel project using high-tech circuitry to



harvest energy from Wi-Fi sources to power wireless electronic devices. Mobile device users could, theoretically, charge a wireless device's battery — a smartphone or laptop — by collecting energy from nearby Wi-Fi networks. Using antenna and circuitry attached to a battery, the students are able to "harvest" energy from Wi-Fi signals and transform it into electrical energy.

"The focus of our project is to scavenge excess energy given off by Wi-Fi routers. We're addressing the current energy crisis from another direction," Luu says. "While the world is more focused on new ways to produce energy, our research tackles the problem through Wi-Fi energy scavenging."

These student research projects, under the direction of faculty adviser Kiran George, professor of computer engineering, were created through the college's ECS Corporate Partners program, which brings students, faculty and industry together to develop new technologies and prepare students for the technical and engineering workforce. The projects were made possible through the college's internet of things (IoT) program. One of the college's corporate partners, Cisco Systems Inc., supports the IoT program, with funding awarded through the Silicon Valley Community Foundation, in collaboration with Cisco Corporate Social Responsibility.



This Seeing Eye Dog (SED) for the blind was developed by a team of computer engineering students.

### ***Incubating Innovation***

This collaborative effort with local industry began in fall 2017, with 20 student projects sponsored by 11 corporate partners. Partnerships expanded this past academic year to 36 student projects supported by 17 corporations, such as Edwards Lifesciences, Unisys, Mercury Defense Systems and Walt Disney Parks and Resorts.

The long-term vision for the program is to have every senior capstone project sponsored by industry, says Susamma "Susan" Barua, dean of the College of Engineering and Computer Science.

"The Corporate Partners program provides a structured framework and allows the college to reach out to industries year-round and arrange for supported undergraduate and graduate projects, including

senior capstone projects,” explains Barua. “These projects represent real-world engineering and computing problems that teams of students can solve.”

A project’s concept, scope and length are discussed to provide a unique learning opportunity for the students while addressing the company’s challenge or need. The projects typically last through the academic year, with faculty members guiding students to ensure positive outcomes and maintain strong relationships with industry, George notes.

Corporate partners support the program not only because it provides a way to give students an immersive, applied learning experience but it also establishes a recruitment pipeline of diverse and talented individuals who offer fresh perspectives to challenges facing the industry, Barua points out. Partners also mentor and share industry experience, can serve in advisory roles and benefit from increased visibility within the campus community.

“There are several advantages for students who work on these corporate- supported projects,” George says. “They appreciate the opportunity to relate the theoretical concepts they learn as part of their coursework and apply it to real-world applications.”

While collaborating on a project, students learn teamwork, problem-solving, and communication and leadership skills — attributes employers are looking for in their hires, Barua adds.

Additionally, students working on industry-sponsored projects often have opportunities to secure internships and even full-time employment at the partner corporations because of their direct contacts with the company and industry mentor.

### ***Skills for the Future***

Education is part of Cisco’s mission to help solve society’s toughest problems, says Tae Yoo, Cisco’s senior vice president of corporate affairs/corporate social responsibility. “As technology transforms the way we live and work, Cisco believes educational institutions and organizations focused on emerging entrepreneurs can be a powerful force for change and local economic development,” Yoo points out. “Public universities, such as Cal State Fullerton, not only have the capacity to meet industry demand for a digitally skilled workforce in Orange County, but also play a leading role in shaping entirely new ideas and industries to fuel the local economy and create jobs in the future.”

Alumnus and scientist Greg Wright, senior director of research and development at Edwards Lifesciences, also believes that students who work on industry projects are more prepared for the workforce.

“These projects teach students how to design and qualify equipment, innovate to improve manufacturing, and create drawing and design features on new machines. All of these skills could be applied to many different careers in the engineering field,” says Wright, who earned a bachelor’s degree in biological science in 2000 and a master’s degree in biology in 2008 from Cal State Fullerton.

Edwards Lifesciences, an Irvine-based medical device company with 12,000 employees worldwide, specializes in structural heart disease and critical care monitoring. It has supported more than 20 students in five projects over the last two years.

“Edwards Lifesciences gets the opportunity to assess and mentor the next generation of engineering leaders,” Wright says. “They work with our teams to develop products that help patients worldwide, as well as launch products that drive company growth.”

Some of these student projects range from developing tissue and valve testing equipment to designing next-generation tissue technologies and manufacturing equipment that could have a big impact on reducing manufacturing costs.

“Students get the chance to gain experience designing studies, working with experienced engineering leaders, innovating and getting a feel for how the medical device industry operates,” Wright adds. “This gives them the opportunity to see if this industry is the right fit for their careers.”

Luu, a junior on track to graduate in spring 2021, agrees that being engaged in an industry-supported project will give him a competitive edge in landing his first job after graduation: “This Wi-Fi project tested our ability to look outside the box to solve unforeseen issues, and the experience will help us when we finally join the workforce.”

Soliven, who worked on the service robot, adds that one of the most valuable skills he learned is how to work in a team environment — a skill needed to be successful in his future technical career. “I’ve also learned time management, how to communicate my ideas, and find solutions to make certain components function properly,” he says.

For industry, being a corporate partner is not only about playing a leading role to shape a skilled workforce, but paving the way for students’ future careers.

“I received a great education at Cal State Fullerton and want to give back to the university. I believe giving back to the community is a big part of what defines us as leaders,” Wright says. “I also want to encourage all students to be proactive with their careers because the world and job industry is getting tougher and more competitive.”

<http://news.fullerton.edu/2019su/Working-With-Industry-Partners.aspx>





## Computer Engineers Design Voice-Controlled Smart Shower for Disabled

CSUF NEWS SERVICE

Project Featured at May 15 Senior Design Presentation and Demo

May 13, 2019



Top: This voice-controlled smart shower prototype, designed by a team of CSUF graduating computer engineering majors, can assist the elderly or anyone with disabilities whose motor functions are restricted. Above: Graduating computer engineering student James Michael Perez, right, with Ryan Gomez, center, the inspiration for the senior design project, and Gomez's parents, Linda and Jeff Rang.

Most people take for granted being able to take a shower without help. But for individuals with ALS (amyotrophic lateral sclerosis), a progressive neurodegenerative disease, or other immobilizing condition, bathing is not a simple task.

To make lives easier for people with disabilities, a team of Cal State Fullerton computer engineering students designed and built a voice-controlled smart shower — an internet-based prototype that allows individuals to use their voice to turn water on and off and control water temperature.

The showerhead is on a motorized track and uses voice controls by interfacing with Amazon's Alexa through the use of an Amazon Echo, explained graduating senior James Michael Perez, the project's team leader.

"Our project allows individuals with disabilities the necessary freedom of showering by themselves," Perez said. "It's practical and beneficial to anyone whose motor functions are restricted, including those with disabilities, as well as the elderly."

The inspiration for the students' senior design project came from Fullerton College film student Ryan Gomez, who has Duchenne muscular dystrophy, a genetic disease that affects mostly males. The 21-year-old was diagnosed at the age of 3, and by 13, was not able to walk. Duchenne slowly takes muscle strength away from the arms, legs, and eventually, the heart and lungs, Gomez said.

Gomez and his former caretaker approached the College of Engineering and Computer Science to help him develop a prototype. Since age 11, he's had the idea for a shower to help disabled individuals.

"I'm in a wheelchair and need to rely on a caretaker to adjust the shower for me, including the temperature and showerhead position. I thought a remote-control showerhead would help others like me to be more independent while taking a shower," Gomez said.

Kiran George, professor of computer engineering, suggested a team of students tackle the innovative idea for their senior design project. George has advised the students in developing a prototype, while Gomez has worked closely with the students on the design. The team also includes computer engineering majors Jessica Diaz, Cory Longshore and Hugo Simon, all graduating seniors.

The student team will present their project at 9 a.m. Wednesday, May 15, during the 2019 Computer Engineering Program-Senior Design Presentation and Demonstration in Room 301 of the Computer Science Building. Gomez and his family will be in attendance. Other graduating seniors also will present their inventive senior projects during the 9 a.m.-noon and 1 to 4 p.m. sessions.

Perez relayed that the students have learned valuable technical and practical lessons by working on the project, including trial-and-error to find the best design to facilitate the movement of the showerhead and motor.

"We've also gained experience working with others, especially since in the workplace, communication



Computer engineering students designed this showerhead on a motorized track to enable the shower to operate by using voice recognition.

is key," said Perez, who has accepted a tentative job offer with the U.S. Department of Defense. "Additionally, I hope to do more application-based projects for people with disabilities or limited mobility. This project taught me how to write in a technical dimension, which is an important skill as an engineer."

Gomez, who plans to transfer to a four-year university after he earns his associate's degree in 2021, is optimistic about the prototype.

"I would like to eventually see a showerhead invention become a tool for others like me who could benefit by bathing on their own with no assistance."

<http://news.fullerton.edu/2019sp/smart-shower-project.aspx>



# New 'Internet of Things' Curriculum Gets Boost From Industry Partner Cisco

Grant Helps to Ready Students for Workforce

Feb. 8, 2018



Imagine classes that provide students with the technical skills for the emerging field of connecting smart devices to the internet — known as the "internet of things" — from refrigerators to lights to cars.

To ready students for this workforce, Cal State Fullerton is at the forefront of developing an interdisciplinary, undergraduate "internet of things" elective track, supported by a nearly \$300,000 grant from Cisco Systems Inc.



Anand Panangadan, left, and Kiran George are leading the development of the "internet of things" elective track.

The funding, awarded through the Silicon Valley Community Foundation in collaboration with Cisco Corporate Social Responsibility, supports a new foundational curriculum within the university's computer science and computer engineering programs.

The internet of things is a set of computing technologies that promises to bring intelligence to devices that are used in everyday life, said Anand Panangadan, assistant professor of computer science, who is co-leading the effort with Kiran George, professor of computer engineering.

Susamma Barua, interim dean of the College of Engineering and Computer Science, hailed Cisco for investing in the university's students, faculty and programs that support innovative curriculum and new opportunities for the local and global economy.

"As a result, our faculty members will develop an interdisciplinary curriculum to help students and industry professionals build new skill sets to be competitive in the workplace for the rapidly evolving internet of things," Barua said.

The new curriculum is being developed in partnership with representatives from Orange County technical industries, Panangadan added.

"Our world is changing every day, and technology is a driving force. At Cisco, we believe educational institutions and organizations focused on emerging entrepreneurs can be instrumental in enabling local economic development," said Tae Yoo, Cisco's senior vice president of corporate affairs/corporate social responsibility.

"Public universities such as Cal State Fullerton have the capacity to produce a digitally skilled workforce in the Southern California region, shaping new ideas and industries to fuel the local economy."

The new elective track brings together students from multiple degree programs, allowing them to take elective courses to become knowledgeable in the internet of things, George said. The first course, "Rapid Prototyping for IoT," will debut this summer, with additional courses offered in subsequent fall and spring semesters as they are developed and approved by the college.

"Students will learn to collect measurements from sensors, analyze the data for patterns, build Internet applications using these sensors, and understand the differences of computing using tiny embedded processors versus regular desktop computers," George explained.

Additionally, students will be exposed to the entrepreneurship potential of the internet of things, with computer science and business students collaborating on real-world projects and creating business plans. A speaker series featuring industry experts and outreach programs for high school students also is planned.

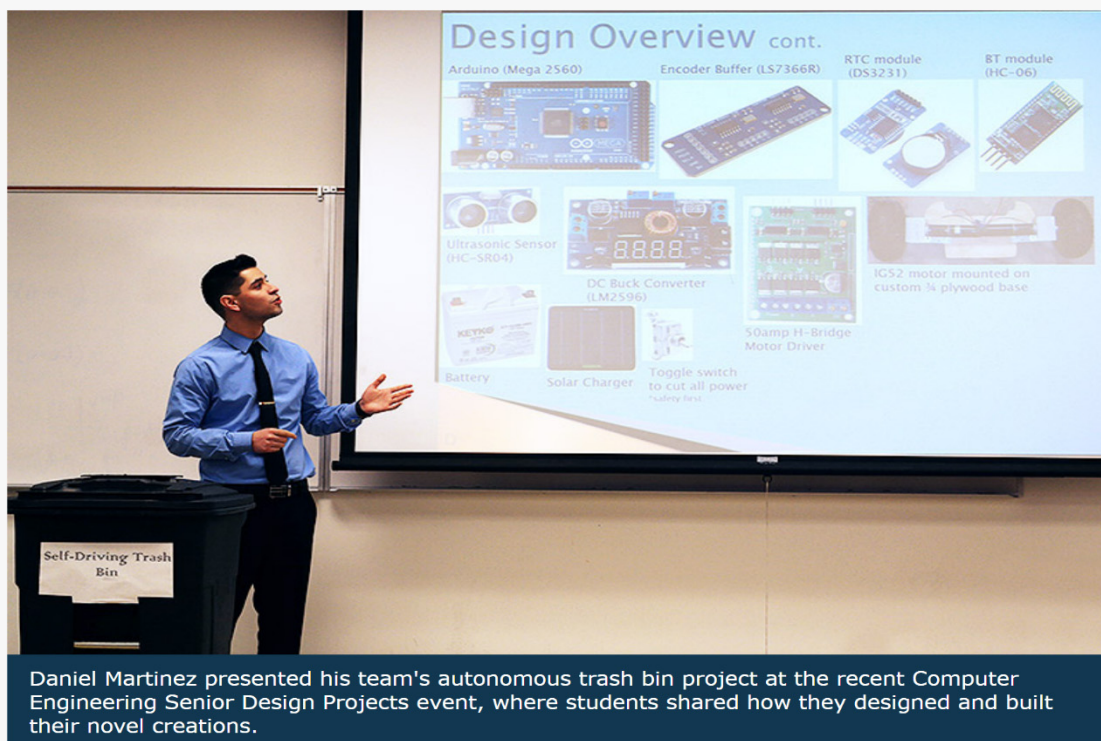
<http://news.fullerton.edu/2018wi/msclip-KOD-Hyun-sook-kim-costume-design.aspx>



# Self-Driving Trash Bin Makes Taking Out the Garbage Easier

## Computer Engineering Grads Create Innovative Projects

June 12, 2017



The inconvenience of taking out the weekly garbage bins motivated a team of computer engineering students to create a product to help others out with this necessary household chore.

The students, all Class of 2017 graduates, designed and created a hassle-free self-driving trash bin as their two-semester capstone senior project, under the mentorship of Kiran George, chair and professor of computer engineering.

"Our team chose this idea because we wanted to work on a project that could have a positive impact on a wide audience," said team member Kevin Nguyen. "Since every home has waste bins that are pulled out weekly, we wanted to put our knowledge of electronics to automate this task."



Through the multidisciplinary course, students gain experience that harnesses creativity and versatility toward a design effort with realistic socio-economic constraints and develop skills, such as creating a feasibility study, project planning, design formulation, time budgeting and task division among team members, explained George.

"Being involved in this type of computer engineering project helps students get prepared for the workforce by giving them a well-rounded experience," added George, **recipient** of this year's L. Donald Shields Excellence in Scholarship and Creativity Award. "Their projects require them to think independently, do research and brainstorm different concepts."

George allowed students the freedom to work at their own pace and provided positive guidance toward a working prototype, noted Nguyen, who plans to pursue graduate school and aspires to become an entrepreneur. The automated trash bin prototype can drive itself by using controls set via a user-friendly android phone application and can detect obstacles in its path, as well as when the trash has been removed from the bin.

However, the prototype has its limitations, Nguyen confided. "It's not fully weather proof, but some design changes can be made to accommodate these needs," he said. "Our design and approach is enough to prove that an autonomous trash bin is possible."

Nguyen's teammates and fellow graduates are Daniel Martinez and Erick Soto.

Other 2017 computer engineering senior design projects included:

- The "Smart Pitch" automated baseball pitching machine throws a sequence of pitches remotely by using an app.
- Autonomous coral reef tank maintains salt and water levels and temperature without user intervention.
- Self-cooling water bottle uses solar power to cool and maintain contents at a predetermined temperature via an app.
- Motion-sensing robotic glove uses the sense of touch for gaming applications.
- Automated pool treatment system adjusts pool chemicals on daily basis.

Tag Cloud



# Students' Ingenuity Drives Inventions

June 24, 2017



Univision visited a group of Cal State Fullerton students who are hoping to make a difference in the world with inventions designed to improve the lives of people with disabilities. Led by **Kiran George**, professor of computer engineering and this year's recipient of the L. Donald Shields Excellence in Scholarship and Creativity Award, the students are working on a device that allows you to surf the internet by moving your gaze about, a wheelchair with the ability to detect and avoid obstacles in its way, and many more. Watch the **Univision video in Spanish**.

Tag Cloud

An Intellectual and Cultural Center

College of Engineering and Computer Science

<http://news.fullerton.edu/2017sp/msclip-Students-Ingenuity-Drives-Invention.aspx>

# This summer camp at Cal State Fullerton teaches kids to build robots and circuits



Vivianne Lee, 7, center, works on her team's project as her teammate, Madelynn Kim, 8, looks on during the RoboCircuitz class at Cal State Fullerton. (Photo by Michael Kitada, Contributing Photographer)

By [WENDY FAWTHROP](#) | [wfawthrop@scng.com](mailto:wfawthrop@scng.com) | Orange County Register  
PUBLISHED: July 16, 2017 at 9:07 p.m. | UPDATED: July 19, 2017 at 3:54 p.m.

0 COMMENTS

Legos aren't a common component in the computer engineering classes that professor [Kiran George](#) teaches his Cal State Fullerton students during the school year. But the colorful plastic blocks are a great way to spark an interest in computer science among his summer program students – kids ages 7-10.

George proposed and developed the RoboCircuitz course after seeing how his daughter Ava, then 6, enjoyed working on a programmable Legos project last summer.

The course, offered for the first time July 10-14, introduced kids to engineering concepts such as robotics, visual programming and basic electrical circuits by building and programming Lego robotic models as well as models of working electrical circuits made with Snap Circuits.

"Engineering concepts should be introduced to kids through age-appropriate programs incrementally and early in their childhood to not only pique their interest, but sustain it as they grow," said George, who had never taught children.

To reduce the fee per student, which typically would exceed \$400, George offered to forgo his teaching fee.



**1 of 10**

Ava George, 7, holds out her hand to keep her Lego project from scooting off the table. Students were able to control their projects from a tablet that allowed basic programming. (Photo by Michael Kitada, Contributing Photographer)



**2 of 10**

Dylan Gotham, 9, left and Ario Shahoveisi, 9, right, look over the instructions for their Lego project. (Photo by Michael Kitada, Contributing Photographer)



**3 of 10**

Ocean O'Connor, 10, left, and Pennie Kuwitsky, 8, concentrate on their project during the RoboCircuitz class at Cal State Fullerton. (Photo by Michael Kitada, Contributing Photographer)





**4 of 10**

Associate professor John Faller helps Madelynn Kim, 8, as her teammate, Vivianne Lee, 7, works on the engineering portion of the project. (Photo by Michael Kitada, Contributing Photographer)



**5 of 10**

Dominic Varela, 7, left, and Honey Bayhan, 7, work on their project at the RoboCircuitz summer class at Cal State Fullerton, which is taught by professor Kiran George. The students learn basic programming and engineering skills in the five-day course. (Photo by Michael Kitada, Contributing Photographer)



**6 of 10**

A student puts the finishing touches on the Lego pulling project. (Photo by Michael Kitada, Contributing Photographer)





**7 of 10**

Aria Shahoveisi, 9, left, and Dylan Gotham, 9, assemble their project with CSUF professor Kiran George. (Photo by Michael Kitada, Contributing Photographer)



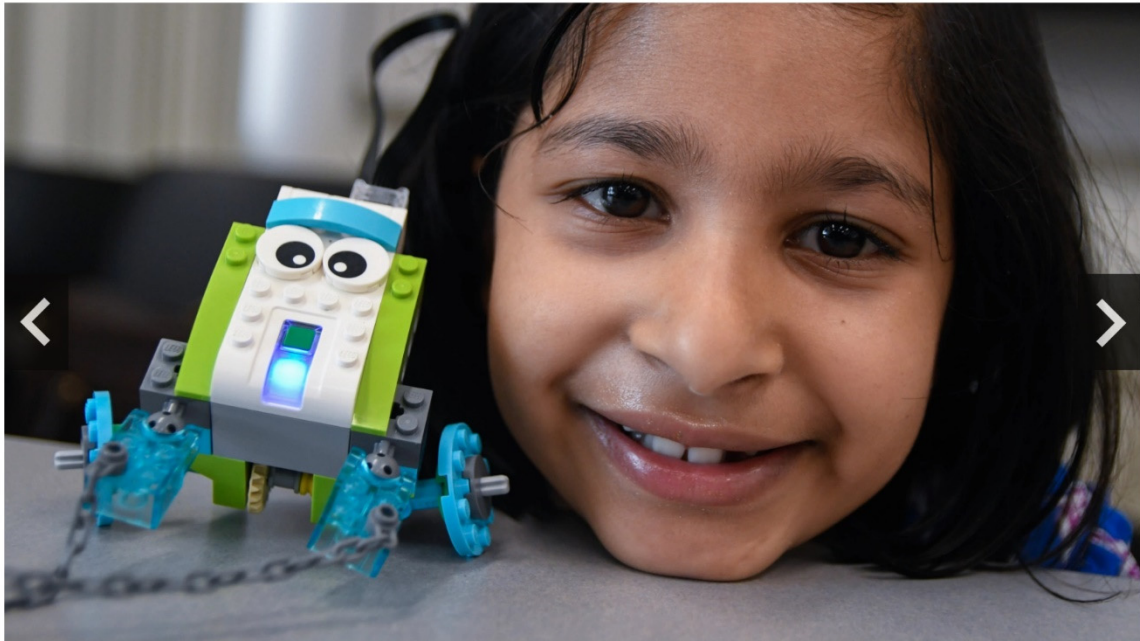
**8 of 10**

The RoboCircuits class was taught by Cal State Fullerton professor Kiran George and taught basic programming, circuits and engineering to kids 7-10. (Photo by Michael Kitada, Contributing Photographer)



**9 of 10**

Vivianne Lee, 7, left, and Madelynn Kim, 8, do some basic programming on their Lego project with the help of a tablet that allows the students to program moves and make movies. The class is part of several summer classes for kids on the campus this summer. (Photo by Michael Kitada, Contributing Photographer)



**10 of 10**

Ava George, 7, poses with the Lego project she worked on in the RoboCircuitz summer class at Cal State Fullerton taught by her father, professor Kiran George. (Photo by Michael Kitada, Contributing Photographer)

<http://www.ocregister.com/2017/07/16/this-summer-camp-at-cal-state-fullerton-teaches-kids-to-build-robots-and-circuits/>

CSUF NEWS SERVICE

# Little Engineers Learn About Robotics and Electronics

## Children's Summer Program Sparks Interest in STEM

July 18, 2017



Computer engineering professor Kiran George shows student Logan Gorhan how to make his LEGO robotic race car go faster. The children had the chance to race their LEGO creations at the end of the class.

Inside a Cal State Fullerton classroom this summer, children ages 7-10 were introduced to the world of circuits, robotics and visual programming on an iPad mini.

The young students worked in pairs and built hands-on projects like LEGO robotic race cars, Milo the science rover and a robotic arm to grab objects, then programmed their creations using an iPad to move forward, stop and make sounds. They also put together miniature fans, conduction detectors and circuits that generated music and sounds to learn all about electronics.

Through the new course, "RoboCircuitz!", children were introduced to complex engineering concepts in a simple, fun and engaging way. Computer engineering faculty members Kiran George and John Faller taught the weeklong [program](#), offered by University Extended Education.



Future engineer Dominic Varala tests his LEGO robotic race car.



George welcomed the change of pace to teach children engineering basics — inspired by his 7-year-old daughter, Ava. The award-winning researcher and **recipient** of the 2017 L. Donald Shields Excellence in Scholarship and Creativity Award proposed the weeklong program after he witnessed how much his daughter enjoyed the LEGO robotics kit he bought for her last summer.

While Ava, who is not yet sure if she wants to follow in her father's footsteps or become a scientist, happily served as the program's "teaching assistant," helping her peers put together their projects.

George hopes that by exposing young students to science, technology, engineering and mathematics (STEM) experiences will inspire them to pursue college and careers in the STEM disciplines.

"My goal was to come up with a course that would excite kids about engineering," he said. "Engineering concepts should be introduced to kids through age-appropriate programs incrementally and early in their childhood to not only pique their interest, but sustain it as they grow."

<http://news.fullerton.edu/2017su/robotics-circuits-program.aspx>

# CSUF professor honored for engaging students in research



CSUF President Mildred García, right, announced Kiran George's selection as winner of the L. Donald Shields Excellence in Scholarship and Creativity Award. (Photo courtesy of Cal State Fullerton)

By [WENDY FAWTHROP](#) | [wfawthrop@scng.com](mailto:wfawthrop@scng.com) | Orange County Register  
April 24, 2017 at 6:13 p.m.



Cal State Fullerton computer engineering professor **Kiran George** is this year's recipient of the L. Donald Shields Excellence in Scholarship and Creativity Award.

In a surprise visit April 13 to his class of senior computer engineering students, CSUF President Mildred García announced George's selection.

Since he joined the Cal State Fullerton faculty in 2007, George has brought in more than \$1.85 million in external funding for his research, including grants from the National Science Foundation and U.S. Army Research Labs, according to the university. George has led a project targeting first-generation college students and underrepresented students and is leading efforts to create a bachelor's program in engineering with a biomedical device engineering option.

Susan Barua, interim dean of the college, said she nominated George because he engages students in his research. "Dr. George constantly thinks about student success and improvement of student learning," she said.

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Student Josh Herrera told the university that George challenges students by letting them do hands-on research that helps them land their first job or go on to graduate school.

“You get to use what you learn in class — and go beyond that,” Herrera said.

The award is presented to a faculty member each year for excellence in research and scholarly activities and commitment to the university’s educational mission. It’s named after Cal State Fullerton’s second president.

<https://www.ocregister.com/2017/04/24/csun-professor-honored-for-engaging-students-in-research/>



# CSUF Professor Honored for Engaging Students in Research

April 24, 2017



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<http://news.fullerton.edu/2017sp/msclip-ocr-kiran-george-shields-award.aspx>

# **CSUF students and professor display robotic arm for ALS patients at engineering conference**

BY  
**BRITTANEY CARPENTER**

– POSTED ON OCTOBER 13, 2014 POSTED IN: [CAMPUS NEWS](#), [NEWS](#)



A group of Cal State Fullerton students and one alumnus presented their research on a mind-controlled robotic arm at the Institute of Electrical and Electronics Engineers (IEEE) conference last week in San Diego.

The students, along with Associate Professor of computer engineering Kiran George, Ph.D., developed the arm last year and began working with patients diagnosed with Amyotrophic lateral sclerosis (ALS).

More commonly known as Lou Gehrig's disease, ALS is a neurological disorder that affects nerve cells in the brain and spinal cord. The progressive degeneration of nerves leads to paralysis and eventually death as the nerves become incapable of sending motor signals to the spine and muscles, according to the ALS Association. Approximately 5,600 people are diagnosed with ALS each year.

The group is allowing their design to be recreated to benefit those who need it.

George and his team of assistants have worked with 12 ALS patients over the past four months on a newer generation of the arm. Now in its third iteration, each version has enabled the arm to complete more and more tasks.

"The current generation of the arm allows only for simple tasks to be performed by patients, such as picking up a bottle of water and taking a sip from it," George said. "This seemingly simple task is very significant to the patients, as it gives them independence and confidence that helps them make it through the devastating ALS disease."

The patients testing the robotic arm were chosen based on their stages of ALS. This allowed the group to determine how the arm functions with patients at multiple stages of the disease, which is important because ALS progresses differently in each patient.

The group's work with ALS patients allowed them to implement functions that would best address the issues faced by the patients, since there is a wide variety of patient needs for the technology.

Hayden Donze, a computer science alumnus who worked on the first two generations of the project, experienced working with two patients personally.

No case is exactly the same, Donze said. One patient Donze worked with had most of his motor skills, but the disease affected his speech, making it hard for him to communicate.

As the group continues to work with ALS patients, the arm will develop based on user needs and preferences. The ultimate goal, George said, is an affordable, functional arm that is easily usable by people with ALS.

<http://www.dailytitan.com/2014/10/csuf-students-and-professor-display-robotic-arm-for-als-patients-at-engineering-conference/>



## ‘High-impact’ learning at CSUF



3 of 17

Cal State Fullerton students (left to right) Afshin Eskandarnia, Vy Phung, Irvin Medina, Matthew Kozak, and Grant Quental work together to research and test various miniature cameras to be used in research with lab mice. The students, computer or electrical engineering majors, are tasked to develop and implement a camera that other researchers will implant into the head of a mouse to monitor the neuron activity in its brain.

By **JESSICA RUBIO** | Orange County Register  
February 20, 2014 at 6:21 p.m.

Crystal Cortez was born and raised in East Los Angeles and never thought she would be where she is at today.

Cortez is a junior geology major at Cal State Fullerton studying great white shark fossils, she has presented at two national geology conferences, and she plans to conduct research in Thailand this summer.

"I am just a little girl from East L.A.; I guess I never really expected myself to be in a position that I am now," Cortez said.

(STEM)<sup>2</sup> "helped me find my confidence," she said.

Cal State Fullerton's (STEM)<sup>2</sup> program – Strengthening Transfer Education & Matriculation in STEM – is designed to encourage science, technology, engineering, and math degrees, retain students in STEM fields, produce more community college STEM transfers to four-year institutions and, ultimately, increase the number of Hispanic/Latino and low-income students attaining STEM baccalaureates.

Cortez was introduced to the program while attending Citrus College in Glendora. Santiago Canyon College and Cypress College are also included.

Through (STEM)<sup>2</sup>, Cal State Fullerton computer engineering student Irvin Media is working with a group of students and faculty to develop and implement a tiny camera that will be implanted in a mouse's head to monitor its neuron activity.

This project, along with other experiential learning practices such as learning communities, writing-intensive courses, research, service-learning and internships are considered “high-impact practices” – a learning initiative emphasized by Cal State Fullerton President Mildred Garcia.

In his Jan. 29 “State of The CSU” address, Chancellor Timothy P. White said that expanding high-impact practices is one of the seven key focus areas for all 23 CSU campuses.

“We will invest to accelerate implementation of high-impact practices that drive student achievement,” White said. “Engaged students persist at higher rates.”

Working with students through these high-impact learning practices instead of talking at them through lectures is effective, said John Hoffman, associate professor of education at CSUF.

“Students get to work on real-world problems instead of just learning from textbooks,” said Kiran George, who is the faculty advisor for Medina’s research project.

Involvement gives students a technological edge and an opportunity to work in real research problems, and it serves as an important building block in the development of their careers, said George, associate professor of computer engineering.

One of CSUF’s strategic plan goals is to improve student persistence, increase graduation rates university-wide and narrow the achievement gap for underrepresented students. One objective in that goal is to ensure that 75 percent of CSUF students are engaged in at least two of these hands-on learning experiences by graduation.

When students are involved in two or more high-impact practices, there is a high degree of confidence that they will succeed, said Hoffman. “If we are not intentional about that, (folks will slip) through the cracks.”

Michael Neale, who was engaged in three high-impact programs as a Titan – Applied Security Analysis Program, Disney’s Finance Undergrad Associate Program and Cal State DC Scholars program – agrees.

“When you go to one high impact program, that opens 10 more doors,” said Neale. He graduated summa cum laude in 2013 with a bachelor’s degree in finance and was hired as the financial specialist and assistant for Sean Mulvaney, a member of the Export-Import Bank of the U.S. Board of Directors in Washington, D.C.

“In terms of high impact programs, (the Cal State DC Scholars) program is what got me hired in D.C.,” he said.

The Cal State DC program gives students the opportunity to work in politics and earn academic credits while interning in Washington D.C.

“My whole career path and now this job was all dictated by those high-impact programs because when I interviewed at the Export-Import Bank (they) didn’t ask me about my courses because every student takes those courses – high-impact programs are a way for you to differential yourself.”

Jackie Vasquez, also a DC Scholar, said interning this semester with the U.S. Senate has already made a major impact on her life.

The DC Scholars program “has opened doors that I never would have thought possible,” said Vasquez, CSUF criminal justice major. “Working for the Senate has been challenging on me and I love that; I know that at the end of this I will just be so much stronger and able to do whatever is thrown at me and just keep going on with my academic and my professional career.”

Vasquez also said her involvement with the DC Scholars program has helped her network with professionals and learn how to write a resume, conduct herself professionally in an interview and properly follow-up with future employers.

“Professional, I feel I have an advantage because the program has prepared me so much,” said Vasquez. She plans to take a second internship in D.C. this summer and graduate in spring 2015.

On Feb. 11, freshmen and graduating seniors at Cal State Fullerton were invited to participate in the web-based National Survey of Student Engagement. The results of the survey allow campuses nationwide to better understand the experiences of its students.

Past results of the survey have emphasized the increased need for high-impact practices CSUF and have shown that students there want more guidance regarding career plans and are more successful when engaged in research with faculty.

Based on the results, CSUF has expanded on-campus employer events, increased internship opportunities, added new workshops and offered more student-faculty research projects.

Results should be available next fall, university officials said.

**Contact the writer:** 714-796-6703 or [jrubio@ocregister.com](mailto:jrubio@ocregister.com)

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<https://www.ocregister.com/2014/02/20/high-impact-learning-at-csuf/>





Kiran George, assistant professor of computer engineering, works with undergraduate students in his latest research effort in wide-band, digital receivers. Photo Karen Tapia [Download Photo](#)

## Learning to Design High-Speed Circuits

### Computer Engineering Students Gain Access to Leading-Edge Technology

July 18, 2012 :: No. 9

Cal State Fullerton's computer engineering students will be learning and mastering state-of-the-art, high-speed integrated circuit design techniques — thanks to the generosity of Costa Mesa-based Emulex, which is donating advanced technology equipment to the university.

Valued at nearly \$850,000, the donated equipment includes four modular systems that can be utilized for design and verification of high-speed integrated circuits. Emulex is also providing software applications, lab support and technical training on the equipment, which will be placed in faculty member Kiran George's computer engineering lab.

George, assistant professor of computer engineering, will oversee the operation of the equipment, which will be used for instructional purposes, as well as undergraduate research and independent student study projects. The college lauded the company's gift, which is its largest corporate donation received to date.

"We anticipate this will be the first of many such gifts-in-kind of equipment from industry partners eager to support undergraduate research experiences and the continued growth of the Computer Engineering Program," said Raman Unnikrishnan, dean of the College of Engineering and Computer Science.

Alumnus Pete Fiacco (M.S. electrical engineering '91), Emulex vice president of ASIC Engineering, facilitated the in-kind gift. Fiacco serves on the college's Industry Advisory Board for the Computer Engineering Program, which provides undergraduates with a theoretical and practical background in both the hardware and the software aspects of computer-based systems.

"The Emulex gift gives us the opportunity to introduce our computer engineering students to the technology and processes they will encounter in their future careers in the industry," said George, a recipient of the National Science Foundation's 2012 [Faculty Early Career Development \(CAREER\) Program award](#).

Fiacco added that the in-kind gift is a way the company can support the college's Computer Engineering Program.

"I am impressed with the growth of the Computer Engineering Program and the accomplishments of the students and faculty," he said.

**Media Contacts:**

[Hart Roussel](#), College of Engineering and Computer Science, 657-278-5429

[Debra Cano Ramos](#), 657-278-4027

**About Cal State Fullerton's College of Engineering and Computer Science:** The College of Engineering and Computer Science has been ranked among the top engineering colleges in the nation by *U.S. News & World Report*. The six departments – Civil and Environmental Engineering, Computer Engineering, Computer Science, Electrical Engineering, Mechanical Engineering and Software Engineering – offer five bachelor's degrees and five master's degrees. More information regarding the Computer Engineering Program is available [online](#).

**About Emulex:** Emulex, the leader in converged networking solutions, provides enterprise-class connectivity for servers, networks and storage devices within the data center. More information about Emulex (NYSE:ELX) is available at <http://www.Emulex.com>.

[Top of Story](#)

<http://calstate.fullerton.edu/news/2012su/Emulex-Donation.asp>

# Inside CSUF

NEWS

FOR FACULTY &amp; STAFF

FOR THE MEDIA



Kiran George, third from left, confers with students who are working with him on projects advancing digital receiver technology. Photos by Karen Tapia [Download photo](#)

## University STEM Initiative

### High-Tech and High-Impact

#### Computer Engineering Students Gain Real-World Research Experience

By [Debra Cano Ramos](#)

Tucked inside Kiran George's lab is a large, towering "supercomputer" in the back of the room.

The powerful "supercomputing cluster," or group of high-performing machines capable of high-end processing, is fast at work on technological and scientific research.

The assistant professor of computer engineering and his students are using the so-called supercomputer for real-world research projects focusing on advancing digital receiver technology.

The technology focuses on enhancing the capability of both the algorithm and the hardware utilized in digital receivers with potential uses in varied applications, explained George. He was awarded \$122,243 from High Performance Technologies Inc. with funds that originated from the U.S. Army Research Laboratory to build a state-of-the-art supercomputer with digital radar receiver capabilities. George and his students spent months earlier this year building the complex system, which is part of the students' senior design project.

Compared to an ordinary computer, this student-built system is much faster and has broader and enhanced performance capabilities, George said. "A real-time receiver algorithm that detects and decodes incoming signals is implemented on this supercomputer," he said. "The algorithm and hardware can potentially be utilized for applications that entail accurate signal detection, such as for biomedical and aerospace applications."

To further his research efforts and opportunities for hands-on study by students, George also has received \$180,745 from the National Science Foundation to establish innovative research that will utilize specialized hardware to speed up the algorithm utilized in digital receivers.

“

These projects are giving CSUF students real-world experience in the areas of high-performance computing and digital receiver technology.

”

Kiran George

#### About the Researcher



##### Kiran George

*Assistant professor of computer engineering*

**Education:** Ph.D. and M.S. electrical engineering, Wright State University; B.S. electrical engineering, Bharathiar University, India

**Research interests/areas of expertise:** Biologically inspired electronics and designs, high-performance computing, Fourier transform architecture, area and time efficient arithmetic structures, development of efficient VLSI test, theory and development of advanced DSP algorithms

**Awards:** \$598,000 National Science Foundation grant awarded in 2010 to George and Susamma Barua, associate dean, College of Engineering and Computer Science. Grant underwrites \$1,000 and \$2,000 annual scholarships to improve educational opportunities for academically promising, but financially disadvantaged, engineering students.

**Chosen Innovator:** Kiran George was recently selected to participate in the National Academy of Engineering's Frontiers of Engineering Education Symposium for early career faculty members who are developing and implementing innovative educational approaches in a variety of engineering disciplines. George, the only California State University faculty member chosen to participate, was among 65 attendees chosen from across the country.



Other educational benefits of these awards include integration of research findings into core computer engineering courses and introduction of course work in high-performance computing, George added.

For the researcher, the importance of these projects is not only in the technological advances gained, but also in providing science, mathematics and engineering opportunities for students, especially for students from underrepresented groups.

"These projects are giving CSUF students real-world experience in the areas of high-performance computing and digital receiver technology," he said. "The benefits for students are many, including that they get to be involved in cutting-edge technology.

"By working on a real project — outside the classroom — they're going to reap the benefits of their work when they graduate and get jobs."

Students working on the NSF project also receive stipends for their efforts, which involve 20 hours per week in the lab.

Jason Cabra, a senior computer engineering major, said that working on research has given him the opportunity to expand his knowledge in computer programming languages and learn more about new technologies on the horizon.

"Working on this project is a stepping-stone in my education and future career," said Cabra, who plans to graduate in May.

Fellow senior Everardo Acosta also wanted to put his computer engineering knowledge to the test on a project, in hopes of advancing his education and future.

"By joining this NSF research, I wanted to learn how the theory taught in class works in real-life situations, as well as gain the opportunity of actually working with others on projects like we would in the workforce," said Acosta, who is president of the student chapter of the Institute of Electrical and Electronics Engineers, Computer Society. He also plans to graduate in the spring.

"Having this research under my belt can help me gain a job where I already have the experience."

Nov. 29, 2011

[Top of Story](#)

<http://calstate.fullerton.edu/inside/2011fall/High-Tech-Research-Experience.asp>

# Retaining Engineering Students

## Grant Funds Scholarships and Extra Support

 [Email This Story](#)

April 20, 2010  
By Russ Hudson

More than 50 engineering students will be provided scholarships throughout their college careers, thanks to a nearly \$598,000 National Science Foundation grant awarded to Kiran George, assistant professor of computer engineering, and Susamma Barua, associate dean in the College of Engineering and Computer Science.

The grant underwrites \$1,000 and \$2,000 annual scholarships for up to five years through the Academic Catalyst for Excellence Scholarship Program, a program that aims at improving educational opportunities for academically promising, but financially disadvantaged, engineering students. The scholarships are meant to keep the students in class until they graduate by allowing them to focus more on studies and less on earning a paycheck, said George, ACE director.



Kiran George

Distribution of informational flyers has begun, Barua said, and application forms will be available online by the end of April. The selection process should be finalized by the end of the semester.

The first group will come from the current freshman class, Barua said, who will enter the program this fall as sophomores. Next fall's incoming freshmen can apply for the ACE scholarships for spring 2011.

First-generation college students and those from underrepresented groups will be emphasized, George said. Selection will be based on academic potential, grade point average, entry-level mathematics exam score, a personal statement, letter of recommendation and an interview.

As part of the ACE program, freshmen receive a special orientation that explains how a university differs from high school and familiarizes them with the campus and its academic resources. Participants are integrated into such existing support programs as the [Center for Academic Support in Engineering and Computer Science](#), which provides study centers, tutoring, academic advising, expedited access to student organizations and professional development. Student mentors will work with ACE Scholars and faculty members will provide them with research experience.

For more information, contact George at [kgeorge@fullerton.edu](mailto:kgeorge@fullerton.edu).

<http://calstate.fullerton.edu/news/Inside/2010/grant-supports-engineering-students.html>

