



CALIFORNIA STATE UNIVERSITY
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Alumna Honored
as Visionary

P3



Engineering Expert
Helping His Homeland

P5



Graduate Student's
Transportation Research Leads
Her to Nation's Capital

P6



CONNECTION

**NEWS FROM THE COLLEGE
OF ENGINEERING AND
COMPUTER SCIENCE**

Issue Eight // Spring/Summer // 2015

At the Helm of California's Energy Production

When Enrique "Henry" Martinez (EE '75) was young, his father insisted that Martinez help him work on cars and electrical equipment – a chore Martinez didn't fully appreciate until he was older.

"It felt like a burden at a time I would have rather been playing with my friends, but it proved to be a foundational part of my interest in electronics," he says. "It was a practical, informal education."

By the time he was in high school, Martinez's fascination knew no bounds as he built radio kits, tinkered with CB and ham radios, and studied transistors.

"Looking at the assembly and the circuitry, it was the integration and how everything worked together that fascinated me," he says.

This fascination propelled Martinez's professional life, putting him on the path to a decades-long career integrating one of the most vital resources in society today: energy.

Martinez served as the vice president of Power Production for Southern California Edison (SCE), responsible for operating and maintaining the power production assets of the company until his retirement in July. That included overseeing hydro, combustion turbine, combined cycle gas turbine, commercial rooftop solar, and fuel cell facilities.

With energy production in California at a dramatic and exciting crossroads, he's optimistic about integrating renewable energy with existing technology.

CONTINUED ON PAGE 2 ›

FROM THE DEAN



As we at the college said goodbye to our largest graduating class to date, we looked back on how much we have progressed and we look forward to our plans for continued growth and excellence.

In 2015, participation in our ECS Student Projects Showcase & Awards event grew two-fold, with students presenting 46 innovative posters, projects, and prototypes.

This energy is also reflected in our faculty, who are working on two new academic programs projected to launch in 2016/17: a bachelor's degree program in engineering with a specialization in biomedical engineering – spearheaded by engineering faculty and representatives from chemistry and kinesiology – and a master's degree program in engineering management launched by a joint faculty committee from ECS and the Mihaylo College of Business and Economics.

Additionally, our faculty champions are developing two academic centers of excellence: a Center for Cyber Security and a Center for Collaborative Research and Prototype Development.

This fall, we'll welcome eight new tenure-track faculty members and more than 780 freshmen students, the largest incoming class to date – evidence of the college's growing reputation for providing exceptional educational opportunities in engineering and computer science.

And we are committed to continually enhancing our programs and instructional infrastructure to better meet the needs of our bright and talented students as well as attract and retain excellent faculty – enhancing the value of an ECS degree and making us an attractive choice for discerning prospective students.

Our alumni and industry partners are also essential to our continued growth, and we invite you to take part in our events, stay in touch, and learn more about the remarkable achievements occurring regularly on our campus. We welcome your continued support in helping us excel for years to come.

Raman Unnikrishnan, Ph.D.
Dean

At the Helm of California's Energy Production



Henry Martinez (EE '75), responsible for operation and maintenance of Southern California Edison's power production assets, is excited about the integration of renewable energy with existing technology.

CONTINUED FROM PAGE 1 >

“You can see the handwriting on the wall: Renewable energy is where things are going. Battery technology coupled with solar energy will take care of a lot of residential power needs. It's very expensive,” he acknowledges. “But the same argument was made 10 years ago about solar panels. Today, production costs have dropped significantly and what's expensive is integration to the grid.”

The emerging renewable energy trend reminds Martinez of something that goes back more than a century. He compares it to a battle between electricity pioneers Thomas Edison and Nikola Tesla. On the surface, their well-known “War of Currents” pitted Tesla's alternating current idea against Edison's direct current idea. But the differences went deeper.

“Tesla saw more transmission lines and large equipment,” he says. “At the time, he was right; but now we're heading back in the Edison direction, building smaller local regionalized systems.”

Martinez began his career as an entry-level engineer with SCE. He advanced through several positions, reaching the level of manager of Hydro Generation. In 1992, he took a job at the Tennessee Valley Authority (TVA) as vice president in the Power Group.

“The TVA is one of the historically pioneering organizations that fundamentally transformed the nation,” he says.

President Franklin D. Roosevelt created the federally-owned energy company during the Great Depression to spark economic recovery and bring electricity and other power resources to the rural South. Martinez went to the TVA to update its landmark model to a modern era. Later, he worked for the Los Angeles Department of Water and Power. He's come full circle by returning to SCE.

Much has changed over the years.

When he first started his career in the 1970s, Martinez recalls there was a practice of buying low-grade oil from different parts of the world. But with a deluge of smog and pollution issues in Southern California, there was a shift to cleaner oil products and natural gas. Then during the 1980s there was experimentation with renewable energy including wind, turbine energy, and solar.

“Wind and turbine are mainstream now, they're no longer on the sidelines,” he says.

Martinez has shared his insights about the past, present, and future of energy at several “Professor for a Day” events at Cal State Fullerton. He also serves on the Leadership Council for the College of Engineering and Computer Science. He's particularly impressed by development of GPS technology and the integration of computer science and engineering he sees going on at the college. It reminds him in some ways of when he was an electrical engineering student. He studied civil and mechanical engineering and learned how to integrate ideas from those fields into his own.

Continuing to be involved with Cal State Fullerton makes him realize something that's been a foundation for his impressive career.

“I always go back to the basic education I got at Cal State Fullerton,” he says. “It really got me to understand a broad range of issues. I could apply that concept of integration to my entire career.” 🌞

Gene Haas Foundation



This September, College of Engineering & Computer Science students interested in advanced manufacturing can apply for one of ten \$5,000 scholarships from the Gene Haas Foundation.

Scholarships will be awarded in October for use in the 2015–2016 academic year.

“This grant demonstrates the Foundation’s confidence that we are preparing engineers to design for manufacturing environments,” says Cal State Fullerton’s Director of Development Hart Roussel. “We want to ensure our engineers learn as much as they can about computer-aided design and manufacturing.”

Even as the media reports a downturn in American manufacturing, an important new niche is emerging.

“In Southern California there’s not much heavy manufacturing, but there’s incredible opportunity in specialized manufacturing for the aerospace, tech, and medical industries,” he says. “This type of manufacturing relies on engineering, so preparing engineers to work with floor staff and machinists is vital.”

Some analysts are predicting a “skills gap” – a shortage of properly trained machinists for these more specialized jobs. The scholarships are one effort to help fill that gap.

Haas Foundation president Gene Haas is the founder of billion-dollar Haas Automation Inc., the leading manufacturer of CNC (Computer Numerical Control) machine tools in the United States.

Since its establishment in 1999, the Gene Haas Foundation has donated more than \$8.5 million to charities, non-profits, and humanitarian organizations. This is the first grant for Cal State Fullerton, but it’s expected to become an annual scholarship. ☀

Vision & Visionaries



Mona Simpson (ME '87) received Cal State Fullerton’s highest alumni award when she was honored at CSUF’s Vision & Visionaries, an event that recognizes outstanding accomplishments made by CSUF graduates.

In her current position at Boeing, Simpson is responsible for the contract management of domestic construction projects valued at more than \$3.5 billion. These include facilities services and the maintenance, repair, and operations commodities used in the assembly of airplane programs.

During a panel presentation, Simpson offered advice about what it takes to succeed.

“Feel comfortable about being uncomfortable,” she says. “Being uncomfortable usually means you are being challenged. It means you have the opportunity to be a leader.”

Simpson was the only female in her graduating mechanical engineering class and she thanked her CSUF professors for their encouragement and motivation.

“I wouldn’t be sitting in this chair today if weren’t for Cal State Fullerton,” she says. “It truly all began here.”

In addition to her work at Boeing, Simpson serves on the Leadership Council for the College of Engineering & Computer Science and the CSU Foundation Board of Governors. ☀

Career Fair Success

More than **43 employers** and **750 students** participated in the 2015 Engineering and Computer Science Career Fair. It was a record-breaking event with double last year’s employer participation and **50 percent higher** student participation.



Professor for a Day



Joseph J. Renton (CS '88) delivered the keynote address at the College of Engineering & Computer Science's "Professor for a Day" event, part of the annual celebration of National Engineers week. Industry leaders, including Cal State Fullerton alumni, shared their expertise with students. Renton founded his own software and entertainment and communications solutions firm and in 2013 received the Ernst & Young Entrepreneur of the Year Award.

ECS Student Success Center



The College of Engineering and Computer Science has opened a Student Success Center to give students a broad range of advising and support services.

This ambitious project is a collaboration between Academic and Student Affairs and its goal is to increase graduation rates, improve student learning, reduce the time to earn a degree, and narrow the achievement gap among underrepresented students. The center will also provide career advising.

"Students are excited about having a single area to seek information about graduation requirements, career advising, and personal development," explained Elizabeth Gomez, graduation specialist for the College of Engineering and Computer Science. "Students are telling me that this effort has been helpful and time saving."

The center has established student success teams to work with students. The teams are still taking shape and are based in all eight colleges, as well as at the Irvine Campus and in Graduate Studies. Some teams are housed in "one-stop-shop" college-based Student Success Centers.

This team approach features graduation specialists supporting juniors and seniors nearing graduation, retention specialists working with freshmen and sophomores to ensure they are making progress toward degree completion, and college career specialists assisting all students in career planning.

A key element is mandatory academic advising for students who have earned 75 to 84 units, and for all students with undeclared majors.

Since 2012–13, the University has increased its six-year graduation rate from 51.1 percent to 56 percent.

"When our diverse students come to our campus, we will help them along the way," says Cal State Fullerton President Mildred García. "The graduation specialists, career specialists, and retention specialists work collaboratively so students know we care about them, and are here to help them achieve their academic goals and life dreams." ☀



Center for Cyber Security

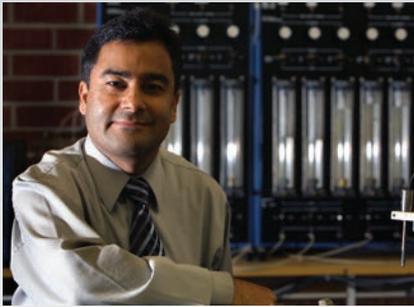
The Center for Cyber Security will launch this fall at the College of Engineering & Computer Science.

"The Center will provide an organizing point for security activities at the college, with educational outreach to students, alumni, and industry," says Hart Roussel, director of development at Cal State Fullerton.

Roussel explained that cyber security is a growing issue across different disciplines and businesses.

"There are concerns in many areas including hardware and software development, financial transactions, defense, utilities, electrical supply, and water supply," Roussel says.

Engineering Expert Helping His Homeland



When a powerful 7.8-magnitude earthquake hit **Binod Tiwari's** home country of Nepal on April 25, it killed more than 8,600 people and destroyed homes, temples, and other historic buildings. The professor of civil and environmental engineering stepped up as co-leader of the national Geotechnical Extreme Event Reconnaissance Team which headed to the country to collect technical information and support rebuilding.

The team, which is funded by the National Science Foundation, covered hundreds of miles of remote terrain, evaluating which types of buildings sustained earthquake damage; determining the earthquake's effects on bridges, dams, and highways; and examining landslides triggered by the quake. While in Nepal, Tiwari also provided professional talks and advice to the country's geotechnical engineers and government officials.



Cal State Fullerton's

ONLINE

engineering graduate degree programs

ARE RANKED #16 IN THE COUNTRY

and **THIRD HIGHEST** in California, according to *U.S. News & World Report*.

Faculty Achievements

Raman M. Unnikrishnan has served as dean of Cal State Fullerton's College of Engineering and Computer Science since 2001. He has helped the college to expand, develop new degree programs, and create a close partnership with local industry that is transforming it into a model for engineering and computer science programs in the state.



In April, Unnikrishnan was honored for these achievements with the Fullerton Chamber of Commerce's 2015 Educator of the Year Award. The chamber has recognized individuals influential in educating the youth of Fullerton since 1979.

Before coming to CSUF, Unnikrishnan served as head of the Department of Electrical Engineering at Rochester Institute of Technology (RIT) in New York. He earned his doctorate in electrical engineering from the University of Missouri and holds a B.S. from the University of Kerala, India, and an M.S. from South Dakota State University, both in electrical engineering.

Previously, Unnikrishnan received the Eisenhart Award for Excellence in Teaching at RIT; a professionalism award from the Xerox Corporation; an Institute of Electrical and Electronics Engineers (IEEE) Region 1 Award for leadership in advancing the continuing education needs of the community; the IEEE Third Millennium Award; and the Missouri Honor Award, one of the highest honors given by the University of Missouri to an alumnus.

Unnikrishnan has been active in engineering education, specifically in the areas of control systems and power electronics. He has been a consultant to several industries and governmental agencies, and has also been involved in technical and professional education industry initiatives. From 2008 through 2013, Unnikrishnan served as commissioner for ABET, a not-for-profit, non-governmental accrediting agency for engineering programs. Unnikrishnan is a lifetime member of the American Society of Engineers of Indian Origin and a fellow of the Institute of Electrical and Electronic Engineers. ⚙️

RETIRING

- **Young Kwon** (electrical engineering), 45 years of service (1969–2014)
- **Demetrios Michalopoulos** (computer science), 39 years of service (1976–2015)

FACULTY EARLY RETIREMENT PROGRAM

- **Pinaki Chakrabarti** (civil and environmental engineering)
- **Mariako Molodowitch** (computer science)
- **George Cohn** (electrical engineering)

TRANSITIONS

- **Michael Shafae** will serve as the department chair for computer science succeeding Shawn Wang.
- **Robert Koch** will continue as acting chair of electrical engineering succeeding David Cheng.
- **Sang June Oh** will serve as the department chair for mechanical engineering succeeding Roberta Rikli.



Geo-Wall Team Gets Second Win

A four-student CSUF team took first place for the second consecutive year at the Geo-Institute of the American Society of Civil Engineers annual GeoChallenge Geo-Wall competition in San Antonio, Texas this spring.

Teams in the Geo-Wall competition design, build, and test a stabilized earthen wall. CSUF's team included graduate student and team captain **John Thurlo**, **Eric Kim** (CEE '15), **Shelley Rodriguez** (CEE '16), and **John Stapleton** (CEE '17).



Mechanical Engineering Students Reach for the Stars

Lauren DuCharme's (ME '15) career goal is to one day work for NASA. Three rounds as an intern at NASA's Jet Propulsion Laboratory in Pasadena have given her a taste of that career. During her time at JPL, she has had opportunities to conduct cutting-edge space technology research on a potential Mars sample return mission, including developing and testing different gripper types that could be used by a rover to pick up a cache from the Mars surface.

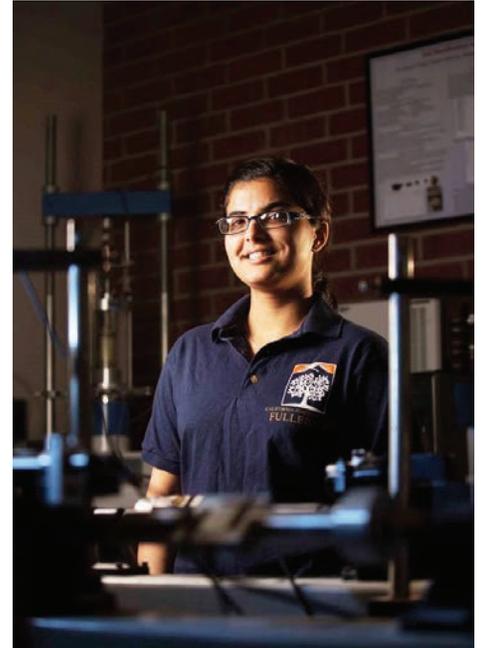
Carlos Gibson (ME '15), who completed his first JPL internship this spring, worked on testing micro-spying wheel robots at the lab. The goal is to enable the robot to climb vertically on nontraditional terrain using electrostatic pads.

Student Achievements

Graduate Student's Transportation Research Leads Her to Nation's Capital

Graduate student **Sneha Upadhyaya** (M.S. '15) was among nine students nationwide selected to present research at the Transportation Research Board's 94th annual meeting in Washington, D.C. earlier this year, attended by more than 12,000 international scholars.

Upadhyaya also received a \$5,500 fellowship from the Dwight David Eisenhower Hispanic-Serving Institutions and Universities Fellowship Program, which is sponsored by the U.S. Department of Transportation, Federal Highway Administration. Her transportation-related research with Binod Tiwari, professor of civil and environmental engineering, involves modifying the foundation soil, or subgrade soil, of roads and highways using cement.



ECS Students Exhibit Excellence

- CSUF's Titan Unmanned Aerial Vehicle (UAV) team – comprised of mechanical engineering students **Landon Gooding** ('15), **Timothy Pham** ('15), **Nathan Nguyen** ('15), **Mark Galban** ('15), **James Wang** ('15), **Hardy Walushka** ('15), **Eduardo Ibarra** ('15), **Jayvin Mistry** ('15) and **Yalina Gonzalez** ('15) – placed 2nd out of U.S. teams and 6th out of 38 teams overall at the April SAE Aero Design West competition in Van Nuys with its single-engine, box-wing aircraft "Big Frank." The team placed 11th out of 39 international teams at the 13th annual Association for Unmanned Vehicle Systems International (AUVSI) Student Unmanned Aerial System (SUAS) competition in Maryland in June.
- A team of computer science and computer engineering majors, including graduate student **Frida Kiriakos** ('15) with undergraduates **Jacob Pillai** ('16), **Patrick Simpelo** ('16), and **Chris Garcia** ('16), won first place in the computer forensics category at the Information Technology Competition at Cal Poly Pomona this April.
- Electrical engineering students **Cheng Yao (Tesla) Qian**, **Christopher Suh** ('16), and **Benjamin Gonzalez** ('16) took home top prizes in the Grand PrIEEE undergraduate robot design competition this April at the University of California, San Diego.
- Electrical engineering graduate students **Mayank Mehta** ('16) and **Chinkal Panchal** ('16) nabbed first place in the May 23 Natcar (robotic car) races at the University of California, Davis.
- The **CalGeo CSUF Chapter** received the Rising Star Award from the California Geotechnical Engineering Association for 2015, the second time it has earned the award since 2012.
- Mechanical engineering graduate student **Baqer Al-Habeeb** ('15) was selected to participate in the 29th annual California State University Research Competition this May at the San Bernardino campus.
- Computer science graduate student **Kevin Cheng** ('16), mechanical engineering undergraduate **Lauren DuCharme** ('15), and civil engineering graduate student **Jean Shin** ('16) received Outstanding Student Scholarly and Creative Activity Awards during this spring's Student Creative Activities and Research Day.

Student Showcase



Titan VIII, a Formula-style race car built by 13 students, earned two top honors at the college's Student Projects Showcase and Awards competition: the Overall Best in College and the Ed Huizinga Innovative Idea/Best Multidisciplinary Project.

"The Titan VIII is unique in the sense that everything was designed and made from scratch," says Carlos Gibson (ME '15), the team's captain. "We worked as a team of engineers, which enabled us to experience the environment we will encounter when we enter the workforce. For the Formula SAE competition, we are developing a business plan and will explain how we would execute it if we were to start a small company and sell our car. And our project builds technical knowledge and skills that can be applied to a variety of engineering disciplines, not just within the automotive industry."



A team of students took third place in the Best in College category for their Titan UAV (Big Frank) – a single-engine, box-wing aircraft with an 8-foot wingspan, which they'd previously entered in 2015 SAE Aero Design West and AUVSI Student Unmanned Aerial Systems Competitions.

Team Edwards – made up of students, from left: **Jeanette Corona** (ME '15), **Alex Cervantes** (ME '15), **Amir Hamood** (ME '15), **Simpson Christian** (ME '15), and **Mike White** (ME '15), working under the direction of **Dr. Nina Robson** and Chaplet Limsakoune from Edwards Lifesciences – earned special mention for its prototype of a semi-automated hemming process to cover a wire-form used in an artificial heart valve.



Engineering students, from right: **Raul Galvan** (ME '15), **Aaron Carlos** (ME '15), and **Timothy Hamilton** (ME '15) together with Kinesiology students, from left: **Robert Dudley** and **Casey Ward**, and under the direction of **Dr. Nina Robson**, were named runners up for the Best in College award for their improved foot and ankle design of an existing exoskeleton lower-leg prosthetic – the iWALK 2.0 Hands-Free Crutch.





Dr. Mildred García, president of Cal State Fullerton, praised College of Engineering and Computer Science degree candidates as the “best, brightest, and most promising graduates in your field” at our May 16 Commencement.

There were 781 students eligible to receive degrees during this year’s ceremony, and García called upon these new Titan alumni to build upon the professional and philanthropic achievements of past graduates, continue their own great work, and come back to support the next generation of Titans.



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Your gifts, your service, and your talent are fundamental to our goal of preparing graduates to solve 21st century problems. *Here's how you can get involved with the college:*

PLANNED GIVING AND DEFERRED GIFTS
can provide significant benefits to you and your family, now and in the future, while supporting generations of Titans to come. Consider including a bequest provision in your will or naming the College of Engineering & Computer Science at Cal State Fullerton as a beneficiary of your life insurance policy or retirement plan. Regardless of its size, your gift will make a difference in the lives of our students.

 **DONATE NOW**

DONATE LATER 

VOLUNTEER
Share your career development experiences in the classroom, mentor an aspiring professional, or serve in an advisory capacity to a department or program.

PARTNER
Link the college with your company – we’re continually seeking partnerships that provide internship and employment positions for our graduates, research and development opportunities for faculty, and industry links that help facilitate curricular currency.

For more information about getting involved with the college and gift planning, please contact:
Hart Roussel | Director of Development | 657.278.5429 | hroussel@fullerton.edu

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