

FALL 2014, Issue No. 32

UCLA ENGINEER

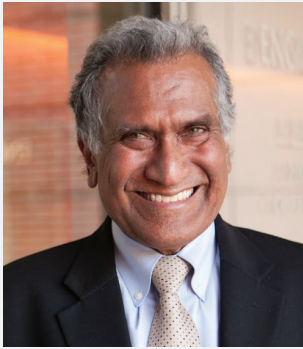


ROBOTICS AT OUR FINGERTIPS

UCLA ENGINEERING
Henry Samueli School of
Engineering and Applied Science

Birthplace of the Internet

FROM THE DEAN



In 2015 the UCLA Henry Samueli School of Engineering and Applied Science will celebrate its 70th anniversary. While the school can be proud of its many achievements – most importantly

producing more than 36,000 rigorously trained engineers – we are even more excited to look ahead.

As we enter the 2014-15 academic year, UCLA Engineering has the largest and most distinguished group of faculty in its history. Twenty-eight of our affiliated faculty are members of the National Academy of Engineering, the highest distinction for engineers in the United States. Sixty-two faculty members are National Science Foundation Faculty Early Career (CAREER) Award winners, and eight are recipients of the Presidential Early Career (PECASE) Award.

Our incoming freshmen have overcome long odds to join the school, with more than 30 students seeking admission for each applicant enrolled.

In a few short months, we will complete Phase I of our new building, Engineering VI. We also will break ground on the second and final phase. When the building is complete, in 2017, UCLA Engineering will have added more than 250,000 square feet of laboratories and classroom facilities in the course of a decade.

We could not do this without our alumni, friends and industrial partners. We will continue to seek your support as we work to ensure that in the next 70 years we will deliver even more for our students, the engineering profession, California, the United States and the world.

Sincerely,

A handwritten signature in black ink, appearing to read "Vijay K. Dhir".

Vijay K. Dhir
Dean

UCLA ENGINEERING DEAN
Vijay K. Dhir

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On the cover: Associate Professor Veronica Santos' lab improves the functionality of artificial hands.

UCLA ENGINEERING

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Engineering and Applied Science

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UCLA Henry Samueli School of Engineering and Applied Science
2013-14 IN REVIEW

DEGREES AWARDED

Ph.D.

177

M.S.

585

B.S.

704

Total

1,466

GIFTS TO UCLA ENGINEERING

\$25,265,985

GIFTS BY PURPOSE

Faculty

10%

Student Support

8%

Program Research

24%

Capital Projects

52%

Discretionary

6%



RESEARCH EXPENDITURES

\$101,678,443

FACULTY PUBLICATIONS

7 books
17 chapters
423 journal articles
384 conference proceedings

FACULTY EDITORIAL POSITIONS

27 editorships
57 associate editorships
7 guest editorships
7 editors in chief

U.S. PATENTS ISSUED

24



NUMBER OF FACULTY

157

E=mc²

ENROLLMENT 2013-2014

Undergraduate **3,160**
 Master's **914**
 Doctoral **940**
 Total **5,014**



UCLA ENGINEERING ALUMNI*

California

Los Angeles County **14,852**
 Orange County **4,306**
 San Mateo/Santa Clara **3,545**
 San Francisco/Alameda/Contra Costa **2,068**
 San Diego County **1,631**
 Others **2,550**
 California Total **28,952**

Around the World

North America **35,623**
 Asia **985**
 Europe **205**
 Middle East and Africa **21**
 South and Central America **61**
 Australia, New Zealand and Pacific Islands **18**
 Total **36,913**

United States

California **28,952**
 Washington **736**
 Texas **597**
 Metro Washington, D.C. **591**
 Arizona **467**
 Colorado **394**
 Others **3,830**
 U.S. Total **35,567**

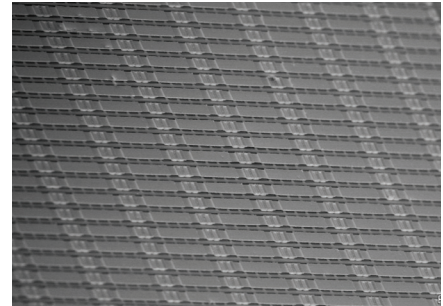
*Source: UCLA External Affairs

TERAHERTZ TECHNOLOGY

for Improved Imaging

MONA JARRAHI, Associate Professor of Electrical Engineering

Opening the door to more advanced imaging systems, researchers have developed a broadband modulator that operates in the underutilized terahertz band. The modulator, which manipulates the intensity of electromagnetic waves, has a metasurface composed of an array of micro-electro-mechanical units that can be opened and closed using voltage. Opening or closing the units encodes a terahertz wave into a series of zeroes and ones, which are then transformed into images. The device – which can operate at room temperature – could be used to examine tissue for signs for disease without risking the damage posed by X-rays, or in security screenings to penetrate fabric or plastics that conceal weapons. ■

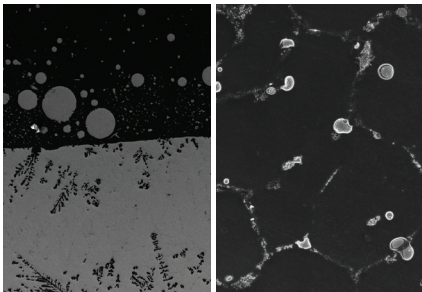


An electron microscope image showing the metasurface for a terahertz modulator.

NANOPARTICLES CONTROL GROWTH

of Manufactured Materials

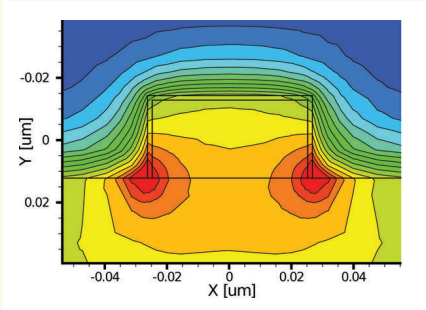
XIAOCHUN LI, Raytheon Chair in Manufacturing Engineering



An aluminum-bismuth alloy before (left, at 500 microns), and after (right, at 50 microns) nanoparticles were introduced.

Controlling the growth of metals and other materials during manufacturing is key to industrial production. Researchers have identified a method for putting these materials on an atomic diet that ensures greater uniformity in components of machinery and electronic devices. The method adds nanoparticles made of thermodynamically stable materials, such as ceramic titanium carbonitride, during the cooling — or growth — stage of the manufacturing process. Using an ultrasonic dispersion method, the nanoparticles form a thin coating, significantly blocking diffusion of the manufactured materials. The method could lead to self-lubricating bearings for engines and other innovations. ■

With Tiny Biosensors, SIZE ISN'T EVERYTHING



A cross-sectional view of a nanowire biosensor, showing that the efficiency for detecting disease is reduced in tight spaces.

.....
CHI ON CHUI, Associate Professor of Electrical Engineering and Bioengineering
.....

When it comes to nanomedicine, smaller is not always better. Researchers have determined that the diminutive size of nanowires in biosensors—used to detect proteins indicating the onset of cancer and other health risks—is not what makes the biosensors more sensitive than other diagnostic devices. What matters most is that the design of the biosensor maximizes the interplay between the charged ions in the biological sample being tested and the charged proteins captured on the sensor's surface. The finding counters years of conventional wisdom and suggests new directions for development of sophisticated, cost-efficient and portable testing devices. ■

A Sustainable Way to DETOXIFY FLUOROCARBONS

.....
SHAILY MAHENDRA, Assistant Professor of Civil and Environmental Engineering
.....

Using a common wood-rotting fungus, researchers have demonstrated a sustainable new method for detoxifying fluorocarbons left behind by a range of products. The team grew the fungus, *Phanerochaete chrysosporium*, on a diet of Timothy hay, yeast extract, glucose and cellulose. These nutrients helped the fungus produce enzymes that break down toxicants left by fluorotelomer alcohols, which are used in non-stick coatings, stain removers, firefighting foam and other products, though they have been shown to disrupt the endocrine system. The research could lead to increased use of naturally occurring fungi to clean wastewater, among other applications. ■



Researchers have identified a sustainable way to reduce the health risks caused by fluorocarbons found in common products.

ROBOTICS AT UCLA

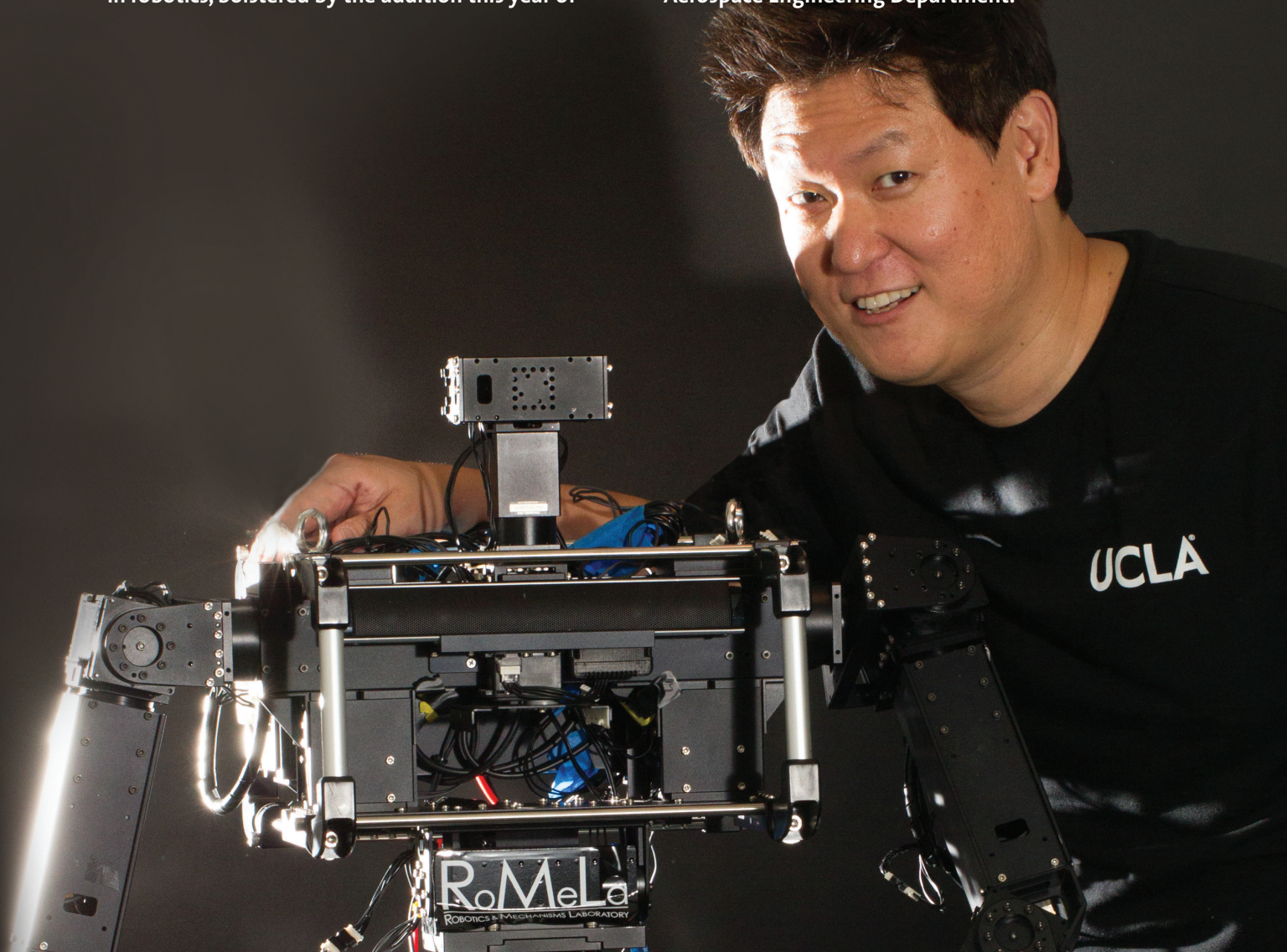
BY MATTHEW CHIN

Humanoids that can respond to natural or man-made disasters. Artificial hands with supreme articulation and sensitivity. Surgical robots that can help doctors save lives from thousands of miles away. These technologies are being developed today at UCLA Engineering.

UCLA Engineering has a comprehensive program in robotics, bolstered by the addition this year of

three new faculty members – Dennis Hong, Jacob Rosen, and Veronica Santos – who are profiled on the following pages.

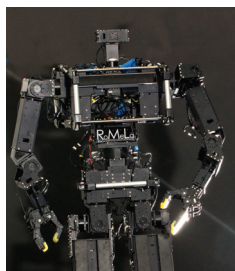
“We already have a number of people in the school and at UCLA who work in areas that are related to the interdisciplinary field of robotics,” said Professor T.C. Tsao, chair of the Mechanical and Aerospace Engineering Department.



This includes Tsao and others working in dynamic systems and controls, as well as researchers in microelectromechanical systems, manufacturing and design, computer vision and artificial intelligence. For example, computer science professors Stefano Soatto and Demetri Terzopoulos each have done groundbreaking work in computer vision – how computers “see” the world around them

– and professors Judea Pearl and Richard Korf are longtime innovators in artificial intelligence. In addition, UCLA Engineering faculty across several disciplines frequently collaborate with researchers at the UCLA David Geffen School of Medicine.

“Now we have great faculty who are at the center of the robotics program,” said Tsao. “They build robots!”



“Robots are needed for what are known as the ‘three Ds’ – dull, dirty, and dangerous. These are jobs that are unsuitable for humans. At RoMeLa, we are building robots to get into the dangerous places and do the dirty work.”

– Dennis Hong, *Professor of Mechanical and Aerospace Engineering*

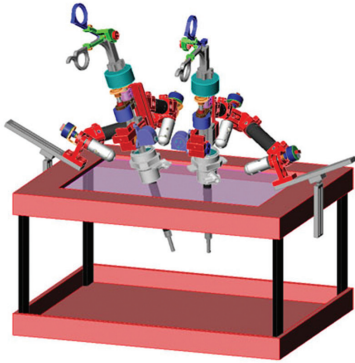
At 7 years old, **Dennis Hong** was blown away by watching “Star Wars.” What stood out for him were the droids. After watching the movie, he told his parents he wanted to build robots. Today he leads the Robotics and Mechanisms Laboratory (RoMeLa), which designs and develops humanoid bipedal robots, as well as novel locomotion strategies. He and his students are four-time winners of the RoboCup.

Next year his lab will take THOR-OP, a full-size humanoid robot, into the finals of DARPA’s Robotics Challenge, which seeks to find the best robots for disaster response scenarios. Among the tasks THOR-OP needs to complete: get into a car, drive it, and get out; open doors; and climb ladders.

romela.org



- ◀ *Dennis Hong with THOR-OP —short for Tactical Hazardous Operations Robot, Open Platform—which is a bipedal electro-mechanical humanoid.*
- ▶ *DARWIN-OP, an open platform miniature humanoid robot.*



A schematic of Raven IV, a surgical robotics platform.

“We’re trying to push technology beyond the teleoperation mode into automation of surgical procedures, allowing surgeons to focus on making critical decisions.”

– Jacob Rosen, Professor of Mechanical and Aerospace Engineering

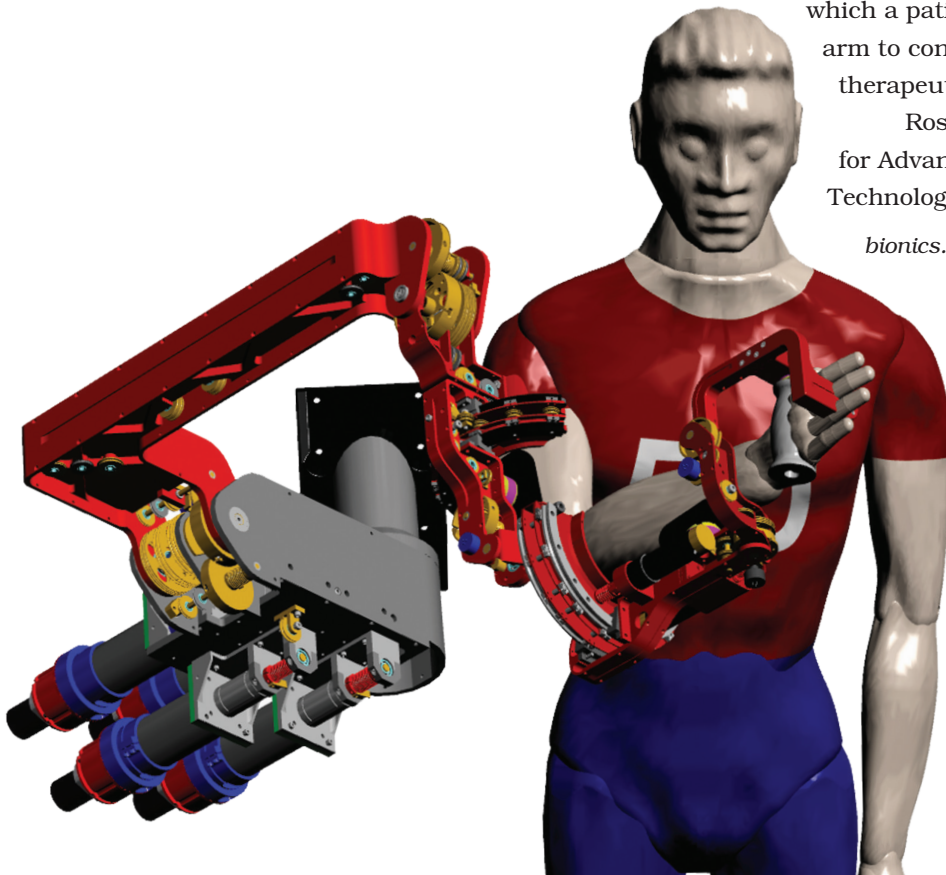
Jacob Rosen is focused on surgical robotics systems and rehabilitation robotic systems. He is best known for developing Raven, an award-winning open platform robotic system for minimally invasive surgery. The newest version, Raven IV, includes four operating arms and two stereo cameras that can substitute for two surgeons. His current research is focused on testing the feasibility of performing telesurgery aboard the International Space Station, with the operator stationed on Earth.

Rosen also is studying and developing an exoskeleton system with applications in stroke rehabilitation, brain plasticity and human machine interfaces. The current mode of study

is based on mirror-image symmetric motion, in which a patient uses his or her fully functional arm to control the disabled arm through a therapeutic virtual reality environment.

Rosen is a member of UCLA’s Center for Advanced Surgical and Interventional Technology.

bionics.seas.ucla.edu



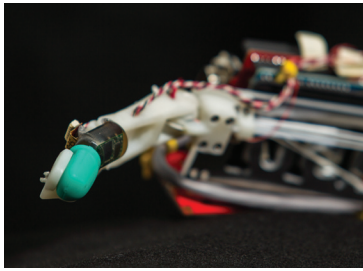
◀ *An upper-limb exoskeleton prototype to study joint movement in human arms.*

▶ *Rosen with a Raven IV model.*



The overarching theme of Veronica Santos' research is to get humans and robots to work together.





A fingertip-sized multimodal tactile sensor used to study haptics.

“Our Biomechatronics Lab is dedicated to improving quality of life by enhancing the functionality of artificial hands and their control in human-machine systems.”

– Veronica Santos, Associate Professor of Mechanical and Aerospace Engineering

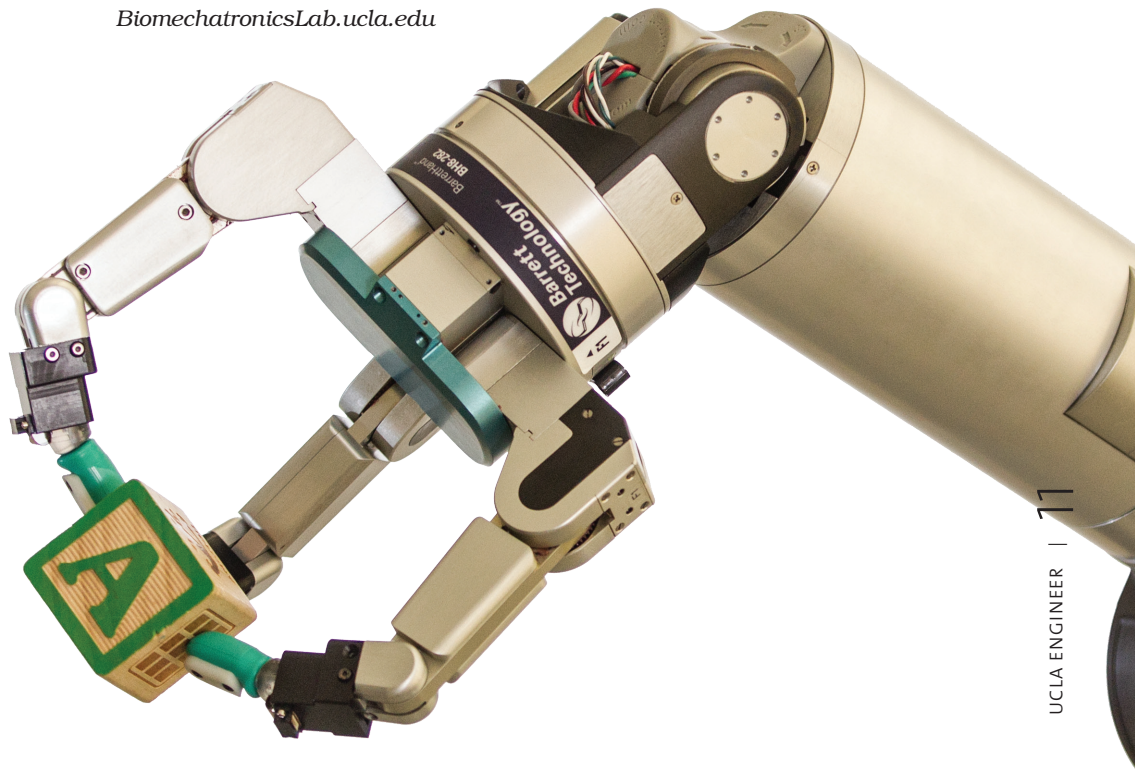
Veronica Santos hurt her elbow during basketball practice in high school. That injury, which slightly limits her elbow’s mobility today, was the inspiration for her scholarly path into robotics, where she aims to improve the quality of life of people with significant physical limitations.

The overarching theme of her research is getting humans and robots to work together – specifically, developing technologies for artificial hands that incorporate rich sensory feedback with intuitive control and functional movement.

One current project is the development of a robot hand testbed for human-inspired grasp, manipulation and exploration of objects. Another project is designing and testing deformable, polymeric tactile sensor skins for artificial hands. ■

BiomechatronicsLab.ucla.edu

- ▶ Santos with a robotic arm using specially designed fingertip sensors.
- ▶ Santos is developing robotic fingertip sensors to detect temperature and texture, among other qualities.





FINDING THE CYBERSECURITY SOLUTION

Professor Amit Sahai and his team
are exploring new realms in encryption

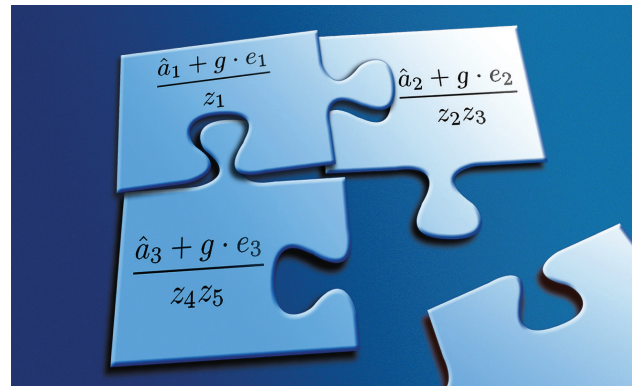
“Humanity has been encrypting messages using mathematics for hundreds of years. But the question of encrypting a functionality — hiding secrets within the blueprints for how something works — seemed out of reach.” —Amit Sahai, Professor of Computer Science

With cybersecurity concerns emerging as a pivotal issue for government and industry around the world, in 2014 UCLA Engineering won a five-year, \$5 million grant from the National Science Foundation’s Secure and Trustworthy Cyberspace program to lead a new multi-institution research center.

The Center for Encrypted Functionalities, directed by Computer Science Professor Amit Sahai, will build on Sahai’s breakthrough work in “program obfuscation,” a new encryption method that makes a software program invisible to an outside observer while preserving its functionality.

Program obfuscation uses a “multilinear jigsaw puzzle” approach to hide vulnerabilities in software from potential adversaries, preventing tampering and deterring reverse engineering. With program obfuscation, an unauthorized user trying to find out how a protected piece of software works would find only nonsensical jumbles of numbers.

“Humanity has been encrypting messages using mathematics for hundreds of years. But the question of encrypting a functionality — hiding secrets within the blueprints for how something



works — seemed out of reach,” Sahai said. “Our center’s mission is to explore every aspect of the new world that is opened up by encrypted functionalities.”

The new center also will encourage more women to pursue computer science studies and careers, and will develop massive open online courses, or MOOCs, as well as K-12 outreach programs.

Partners in the center include researchers at Stanford University, Columbia University, the University of Texas at Austin and Johns Hopkins University. ■

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UCLA at 100

No university has achieved more in its first century than UCLA. As the university nears its 100th anniversary in 2019, it has launched the \$4.2 billion Centennial Campaign for UCLA, the largest fundraising effort ever undertaken by a public university.

The UCLA Henry Samueli School of Engineering and Applied Science is playing a critical role in the campaign. The school's goal is to raise \$250 million to sustain and improve upon our reputation as a leader in engineering education, research and public service.

Gifts support student scholarships and fellowships, new

facilities, outreach programs and endowed chairs.

As of early September, 2014, UCLA Engineering had received 9,000 campaign gifts totaling \$62 million. Major donors include Henry Samueli '75 'MS 76, PhD '80, David Mong '84, Microsoft Corp. and many others. But they are only part of the story.

In the coming years, we look forward to working with everyone in the UCLA Engineering family to ensure that the school continues to train world-class engineers and drive technical innovation far into the future.

UCLA Engineering: The Future Is Here.

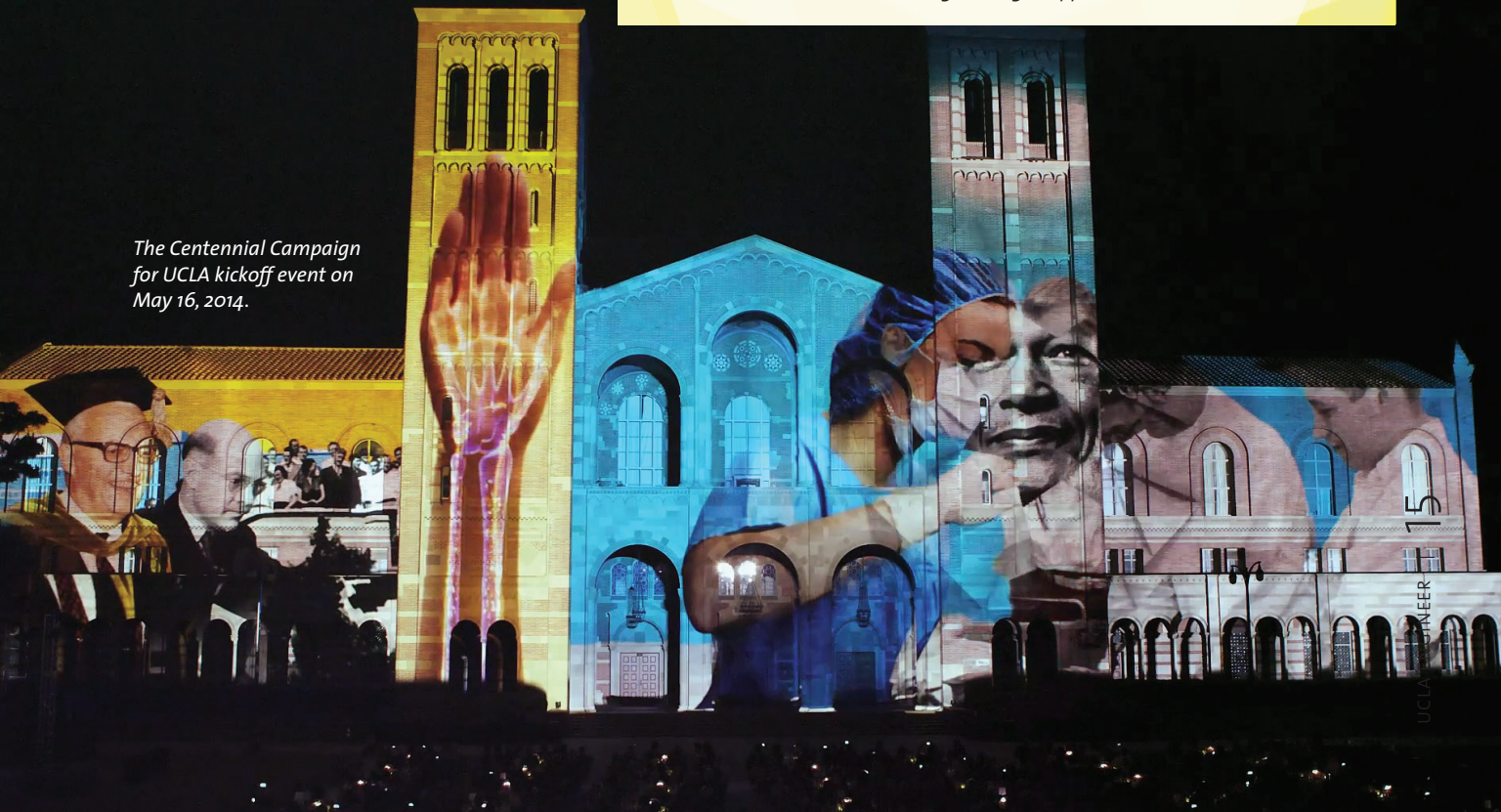
For more information on the Centennial Campaign:

Visit: <http://giveto.ucla.edu/the-centennial-campaign/>

Call: 310.206.0678

Email: uclaengineering@support.ucla.edu

*The Centennial Campaign
for UCLA kickoff event on
May 16, 2014.*





Volgenaus Create New Chair

Ernst Volgenau PhD '66 first began to admire UCLA Engineering in the 1960s. A half a century later, he and his wife Sara have generously shown their appreciation by making a \$2 million gift to support the Volgenau Chair in Engineering.

As a young Air Force officer, Volgenau was assigned to Los Angeles to work on the development of space boosters and satellites. At night he taught engineering graduate courses, and decided to pursue his Ph.D. at UCLA Engineering.

He went on to serve in the Air Force for 20 years, and then for three years was director of inspection and enforcement for the U.S. Nuclear Regulatory



Commission. In 1978 he launched the IT firm SRA International, which employs about 6,000 people serving civil, defense, and other agencies.

Volgenau, who remains chairman of SRA, credits his Ph.D. thesis advisor, Professor Cornelius Leondes, and others with guiding him in the right direction.

"It's very difficult for a university to impart creative thinking – as opposed to just knowledge of subjects – among its students," he said. "UCLA equipped me to think analytically and creatively. UCLA did a lot for me. Sara and I want to give back."

The Volgenau Chair brings the number of endowed chairs at UCLA Engineering to 27. ■

From the Stafsudds, the Gift of a Lifetime

Oscar Stafsudd '59, MS '61, PhD '67 has been a member of the UCLA Engineering faculty for 47 years, advised nearly 60 Ph.D. graduates and seen two younger family members earn their UCLA Engineering degrees.

This year, Stafsudd and his wife Jacqueline '69, the former information technology director at HRL Laboratories, determined that the UCLA-Stafsudd connection will continue indefinitely. The couple made an estate gift of \$1 million to UCLA Engineering.

"UCLA has given my family so much," Stafsudd said. "This is our way of expressing our gratitude."

Estate gifts and planned giving are effective ways to establish a permanent legacy on campus while maintaining financial flexibility. They cost nothing to donors now, and often result in tax benefits.

The Stafsudd gift will be maintained in perpetuity. Interest from the gift will be used at the discretion of the chair of the Electrical Engineering Department. The professor said he'd like to see

the funds applied to undergraduate research and scholarships.

"Finding the money to support those activities has always been a challenge," he said. "This isn't the glory stuff. But it really helps the department, the chair and the students." ■



ROCKET SCIENCE

UCLA AISES Team Takes Top Spot

A team of UCLA Engineering undergraduates was first in flight at the First Nations Launch 2014 rocket competition, sponsored by the American Indian Science and Engineering Society.

Teams were required to design, build and fly a rocket to an altitude of at least 2,000 feet and then deploy two parachutes, one at the apogee and another at 700 feet, to land the craft in flyable condition near the launch pad.

Daniel Calderon, a mechanical engineering student and co-director of the UCLA AISES Bruin Rocketeers, credited his 12 teammates for the nearly year-long effort to design and build the rocket. Members include: co-director Dylan Rodarte, as well as Edward Lopez and Aaron Tiscareno (aerospace engineering); Demi Gamboa (civil engineering); Joseph Towe (computer science); Justine Figuerres and Kari Garcia (electrical engineering); and Rodolfo Barranco, Stephanie Cantu, Adrian Franco, Kara Lowry and Melissa Soon (mechanical engineering).

Audrey Pool O'Neal, a Ph.D. candidate in mechanical engineering and associate director of the Center for Excellence in Engineering Diversity, served as faculty advisor. The team's manufacturing advisor was Jose Calderon, Daniel's father and the owner of the Riverside machine shop where the rocket was built. ■

► *AISES Bruin Rocketeers prepare for liftoff.*



COMMENCEMENT 2014

The UCLA Henry Samueli School of Engineering and Applied Science marked its 50th commencement ceremony with words from the leader of the world's largest aerospace firm and the celebrations of students who packed the floor of Pauley Pavilion on June 14.

Some 704 students earned their Bachelor's degrees in 2013-14, 585 earned Master's degrees, and 177 were awarded doctorates. Faiz Malik, who during his senior year earned a civil engineering degree while also working full-time as a construction inspector for the City of Los Angeles, served as the student speaker.

W. James McNerney, Jr., chief executive of The Boeing Co., offered the commencement address, blending humor with observations about the challenges facing the Class of 2014.

"All of you possess skills of technical discovery and scientific discipline that I hope will give you true fulfillment in the years ahead, and that will take you far beyond the joys of differential equations or the all-nighters in the lab," McNerney said. ■



W. James McNerney, Jr.



Faiz Malik '14





LAB TO REAL LIFE

Hoek's New Membrane Makes a Splash in the Marketplace

Civil and Environmental Engineering Professor Eric Hoek MS '96 saw his nano-composite, reverse-osmosis membrane technology go from inspired idea to venture capital-backed startup company NanoH2O Inc. in 2007. This year, he saw the company acquired for more than \$200 million by Seoul, South Korea-based LG Chem.

Hoek is now at work on another start-up, Water Planet Engineering. Water Planet is commercializing a new polymeric-ceramic filtration membrane — developed by Hoek and Richard Kaner, a UCLA professor of chemistry, biochemistry and materials science — that separates oil and other suspended solids from water that is co-produced during the oil and gas extraction process. Hoek said he learned a lot about water treatment in the oil and gas industry in the summer of 2010, when he served as a consultant during the oil spill cleanup in the Gulf of Mexico. In the future, he said, the Water Planet membrane

material can be further developed for drinking water purification, wastewater treatment and biotechnology.

The University of California and UCLA Engineering have established an array of resources for faculty and students who want to launch their ideas into the marketplace, from the new \$250 million UC Ventures fund to the UCLA Office of Intellectual Property & Industry-Sponsored Research to UCLA Engineering's Institute for Technology Advancement.

Hoek says the business endeavors have been an education for him, and that they benefit his students.

"What I learned from NanoH2O is the mechanics of the process of starting up a company, the legal issues and the market forces that you need to consider," he said. "I believe that entrepreneurial forays by faculty actually make us better teachers. We can mentor from real experience, and students respect and listen to that." ■



Improved Timekeeping for the ‘INTERNET OF THINGS’

From pendulums to atomic clocks, the accurate measurement of time has helped drive scientific discovery and engineering innovation for centuries.

This year, the National Science Foundation awarded a team led by Mani Srivastava, professor of electrical engineering and computer science, a \$4-million, five-year Frontier grant to tackle timekeeping in cyber-physical systems—the “Internet of Things” in which devices with embedded software are controlled by wireless networks.

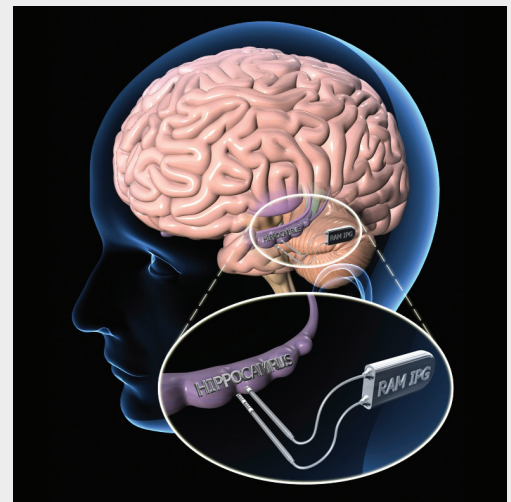
Named the Roseline project, Srivastava’s group is working to improve the accuracy, efficiency, robustness and security with which computers keep time and synchronize it with networked devices. Sudhakar Pamarti, associate professor of electrical engineering, is a member of the team, along with faculty from UC San Diego, UC Santa Barbara, Carnegie Mellon University and the University of Utah. ■

RESTORING MEMORY FUNCTION TO BRAIN INJURY VICTIMS

UCLA Engineering researchers are playing a key role in a project aimed at developing a “neuroprosthesis,” a wireless, implantable brain device to help restore lost memory function in individuals who have suffered brain injury.

Dejan Markovic, associate professor of electrical engineering, is developing technology to stimulate and record the activity of single neurons and of small neuronal populations. Ali Sayed, professor of electrical engineering, is also part of the effort.

The Defense Advanced Research Projects Agency will provide up to \$15 million for the research, including as much as \$4.5 million over four years to UCLA Engineering. Dr. Itzhak Fried, a professor of neurosurgery at the David Geffen School of Medicine, is UCLA’s lead investigator on the project. Partners include the Lawrence Livermore National Laboratory and Stanford University. ■



Terzopoulos Named a Royal Academy Fellow

Demetri Terzopoulos, distinguished professor and Chancellor's Professor of Computer Science, was named a fellow of the Royal Society. Fellowship in the London-based Royal Society, the world's oldest scientific academy in continuous existence, is one of the highest honors a scientist or engineer can receive.

The Royal Society citation states that Terzopoulos is internationally renowned "in both computer vision and computer graphics and his work has helped to unify these two fields. ... In the field of artificial life, his ground-breaking work combines biomechanics with theories of intelligence, including motor control, perception, behavior, cognition



and learning, to yield remarkably realistic computer simulations of humans and other animals."

Terzopoulos, who joined UCLA in 2005, is the seventh member of the UCLA faculty to be named a Royal Society Fellow. ■

Pearl elected to National Academy of Sciences



Artificial intelligence pioneer Judea Pearl, a UCLA professor of computer science since 1969, was elected to the National Academy of Sciences in 2014, one of the highest honors that can be bestowed on a scientist or engineer.

Pearl, who received the prestigious A.M. Turing Award in 2011, was recognized by the academy for his "distinguished and continuing achievements in original research."

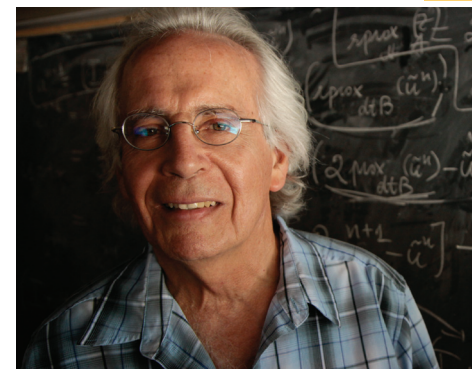
Pearl developed the theoretical foundations for reasoning under uncertain conditions; the graphical methods and symbolic calculus that enable machines and scientists to reason about actions and observations and to assess cause-effect relationships; and invented "Bayesian networks" to describe these relationships. Bayesian networks have since been incorporated in many areas of science, technology, health care and the social sciences. ■

Osher Awarded Highest Honor in Applied Math

Stanley Osher, distinguished professor of mathematics, computer science and electrical engineering, in 2014 was awarded the Carl Friedrich Gauss Prize at the International Congress of Mathematicians. The award is the highest honor in applied mathematics.

The Gauss Prize citation stated Osher has made "influential contributions to several fields in applied mathematics, and his far-ranging inventions have changed our conception of physical, perceptual, and mathematical concepts, giving us new tools to apprehend the world."

A UCLA professor since 1977, Osher's innovative methods of solving differential equations and analyzing algorithms have led to improved medical image analysis, advanced computer chip design and enhanced computer vision. Applications range from providing new ways to forecast weather to developing improved computer modeling for the design of supersonic jets. ■



Christelle Nahas/UCLA Newsroom

UCLA Engineering New Faculty

JACOB ROSEN

Professor of Mechanical and Aerospace Engineering

Ph.D. Tel Aviv University



Jacob Rosen's research interests focus on medical robotics, biorobotics, human-centered robotics, surgical robotics, wearable robotics, rehabilitation robotics, neural control and human-machine interface. Most notably, he has developed Raven, an open source surgical robotic system for telesurgery currently operated in 14 academic labs in the U.S. and worldwide, as well as EXO-UL7, a dual-arm upper limb exoskeleton for studying brain plasticity and neurological recovery from stroke. In 2012, Rosen was recognized by the *Silicon Valley Business Journal* as a "Health Care Hero." He joins UCLA from the Jack Baskin School of Engineering at UC Santa Cruz. ■

MIRYUNG KIM

Associate Professor of Computer Science

Ph.D. University of Washington

Miryung Kim's research focuses on software engineering, specifically on software evolution. Her research group develops program analysis algorithms and tools to make it easier to develop and evolve large-scale software systems. Kim is a recipient of the NSF CAREER Award, a Microsoft Software Engineering Innovation Foundation Award, an IBM Jazz Innovation Award, and a Google Faculty Research Award. She was previously on the faculty of the University of Texas at Austin. ■



JAIME MARIAN

Associate Professor of Materials Science
and Engineering

Ph.D. Polytechnic University of Madrid



Jaime Marian's research goal is to influence materials synthesis and design by understanding their internal behavior using computer modeling and simulation. His lab develops validated multiscale computational models of materials evolution under far-from-equilibrium conditions — shock-loading, very fast deformation rates, high-dose and dose-rate irradiation, ultrafast heating, etc. Specific areas of interest include microstructural evolution and mechanical property degradation in fusion materials, simulations of plastic deformation in alloys, simulations of thermodynamics and phase transformations in functional materials, strength in nanostructured crystals, and simulations of irradiation damage in a variety of situations. A winner of the Department of Energy's Early Career Award, Marian was formerly with the Lawrence Livermore National Laboratory. ■

VERONICA SANTOS

Associate Professor of Mechanical and
Aerospace Engineering

Ph.D. Cornell University



Veronica Santos focuses on the functionality of artificial hands and their control via human-machine interfaces. Her research interests include hand biomechanics, neural control of movement, grasp and manipulation, human-machine systems, prosthetics, robotics, haptics, tactile sensors, machine learning and stochastic modeling. Santos' honors include the NSF CAREER Award and recognition for her teaching, including being invited to the National Academy of Engineering Frontiers of Education Symposium. She was previously a faculty member at Arizona State University's Ira A. Fulton Schools of Engineering. ■

CHEE WEI WONG

Associate Professor of Electrical Engineering

D.Sc. Massachusetts Institute of Technology



Chee Wei Wong's interests are in controlling photons in mesoscopic systems involving nanoscale nonlinear optics, ultrafast optics, quantum optics and precision measurements for next-generation ultrafast lasers, communications, precision sensing and quantum photonics. His honors include the 2007 DARPA Young Faculty Award, 2008 NSF CAREER Award, 2009 3M Faculty Award, and election as a 2013 fellow of the Optical Society of America. He has published more than 200 journal and conference papers and been awarded more than 10 patents. He was previously on the faculty at Columbia University. ■

MATHIEU BAUCHY

Assistant Professor of Civil and Environmental Engineering

Ph.D. Université Pierre et Marie Curie, Paris



Mathieu Bauchy's research interests are in developing stronger, more durable and more energy-efficient glass and cementitious materials. Bauchy conducts atomic-scale simulations of complex silicate glass and cementitious materials to determine how their microscopic composition affects their macroscopic properties, reducing the gap between nanoscale physics and engineering. He seeks to reduce the carbon footprint of cement by optimizing its composition to make it more resistant to fracture and aging, improving the energy efficiency of the production process, and studying the reactivity of alternative cementitious materials including fly ash. Bauchy previously was a post-doctoral researcher at the Massachusetts Institute of Technology. ■

HENRY BURTON

Assistant Professor of Civil and Environmental Engineering

Ph.D. Stanford University

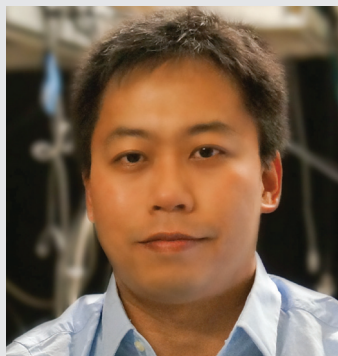
Henry Burton's research is broadly focused on improving the resilience of urban regions to natural disasters. Specific areas of interest include developing enhanced earthquake-resistant building systems, performance-based life-cycle design and assessment techniques, nonlinear structural modeling and seismic collapse simulation. This work relies upon large-scale testing, high-performance computing and reliability theory. Current projects include development of a rocking spine system as a cost-effective strategy for design and seismic retrofit of concrete buildings, and formulating a performance-based framework to model post-earthquake community-level recovery. Burton has significant industry experience and is a licensed structural engineer in California. ■



YONGJIE HU

Assistant Professor of Mechanical and Aerospace Engineering

Ph.D. Harvard University



Yongjie Hu's research is at the interface of thermal engineering, materials chemistry and transport physics. He develops devices and systems for a wide range of energy, electronic and environmental applications by integrating unique structures and transport phenomena at the micro- and nano-scale. His current research focuses on improving the efficiency, performance, and safety of energy conversion, storage and thermal management technologies. Prior to joining UCLA, he worked as a post-doctoral fellow in mechanical engineering at the Massachusetts Institute of Technology. He has received honors from organizations including ASME, MRS, IEEE, ACS, Battelle Memorial Institute, Harvard and MIT. ■

DANTE SIMONETTI

Assistant Professor of Chemical and Biomolecular Engineering

Ph.D. University of Wisconsin – Madison

Dante Simonetti's research interests are in areas of alternative energy and chemical feedstocks, chemical kinetics and catalysis, design of catalytic and reactive materials, surface chemistry, and materials characterization. His research focuses on the discovery of new catalytic systems for the conversion of natural gas, petroleum, and biomass-derived feedstocks into fuels and chemicals. Another aspect of his research involves elucidation of the fundamentals of adsorbate-adsorbent interactions and the development of new materials and predictive models for adsorptive separation processes. Prior to joining UCLA, he was a senior research and development scientist for UOP-Honeywell. ■



AMEET TALWALKAR

Assistant Professor of Computer Science

Ph.D. New York University



Ameet Talwalkar's research addresses scalability and ease-of-use issues in the field of statistical machine learning, with applications related to large-scale genomic sequencing. Talwalkar has developed distributed algorithms for applications including recommendation systems, estimator quality assessment and genomic variant calling. He led the initial development of MLlib, the distributed machine learning library included within the Apache Spark cluster computing framework. He also is a co-author of the graduate-level textbook "Foundations of Machine Learning" (2012, MIT Press). Prior to joining UCLA, Talwalkar was a postdoctoral fellow in the Computer Science Division at UC Berkeley. ■

Ernie Harris '49: A Life in Engineering

Ernie Harris was 3 when his family left England for the United States and settled in the oil-drilling town of Taft, Calif. He attended junior college and earned an AA degree in business, but then came World War II. He was drafted less than two weeks after D-Day, and served until Christmas Eve 1945.

Using the GI Bill to pursue his dream of being an engineer, in 1946 he enrolled at UCLA Engineering, earning his electrical engineering degree in 1949.

He worked for the U.S. Bureau of Reclamation, then the Air Force, and finally spent 20 years at Rockwell, where



he participated in the Minuteman and Peacekeeper projects.

“Somebody once asked me how come I could deal with many different areas of engineering,” Harris said. “The answer was the broad

engineering education I had received. Though I was an electrical engineer, I had a feel and an understanding for all these other fields.”

“Though I was an electrical engineer, I had a feel and an understanding for all these other fields.” – Ernie Harris

In 1990, Harris established his first UCLA charitable gift annuity, in which donors make a gift of cash or appreciated securities to The UCLA Foundation for the philanthropic purposes they designate. In exchange, they receive fixed income for life and tax benefits.

He now has established 26 annuities, helping his alma mater and creating an effective and secure supplemental income stream. “I am making about 12% on my money, and that’s kind of hard to beat,” Harris said. “I can’t say that I had figured this as a long-term goal when I started. But I got started, and it was like going downhill. I couldn’t stop.” ■

For more information on charitable gift annuities and other planned giving opportunities, visit the UCLA Office of Gift Planning at www.legacy.ucla.edu or call (800) 737-8252.

ALUMNI Notes

1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978

1950s

PHILLIP GOLD '58, MS' 59, PhD '65 is now retired after 35 years on the engineering faculty of California State University, Los Angeles. Since retiring he has founded 221Books – a dealer of antiquarian and rare books in Westlake Village, Ca. Gold is looking to connect with other alumni from the late 1950s and early 1960s and can be reached at: phillipgold_221books@yahoo.com.

1960s

PHILIP WESTLAKE PhD '68 saw his Ph.D. thesis "Toward a Theory..." included in two educational programs from Alexandria's Archives, a Los Angeles non-profit helping participants improve their creativity and critical thinking skills.

ASAD M. MADNI '69, MS '72, distinguished adjunct professor of electrical engineering at UCLA, was elected an honorary member Phi Kappa Phi, an all-discipline honor society. Madni was also appointed honorary professor at the Technical University of Crete and received Tau Beta Pi's 2014 Distinguished Alumnus Award.

1970s

ALEXANDER THOMASIAN MS '75, PhD '77 received a Fulbright Scholarship to lecture at the American University of Armenia, which is affiliated with University of California, for the Spring 2015 semester.

ROBERT SKELTON PhD '76, was inducted into the Thomas Green Clemson Academy at his bachelor's degree alma mater, Clemson University. Skelton also was named eminent scholar in residence and visiting professor of aerospace engineering at the Texas A&M Institute of Advanced Study Faculty Fellows.

DARIUSH DIVSALAR '75, MS '77, PhD '78 adjunct professor of electrical engineering, was selected for the IEEE Alexander Graham Bell Medal, which recognizes exceptional contributions to the advancement of communications sciences and engineering.

JEFFREY JAY BLATT '78 is leading the media and technology practice group at the law firm of Tilleke & Gibbins, based in Bangkok, Thailand. He also is a member of the board of directors of Sri Lanka Telecom, and has received several international honors for his work in the telecommunications industry.



HOMI KAPADIA MS '79, MBA (Anderson) '86 has been appointed a vice chairman at Deloitte LLP, and leads its national life sciences industry practice. Deloitte has nearly 4,000 accounting professionals serving major pharmaceutical, medical device, biotechnology and consumer health-care manufacturers in the United States.

Share news about your personal life, career, honors, awards, and more!

Send to: uclaengineering@support.ucla.edu

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HIROSHI ETO '79 took the oath of office in June to become a director of the Federal Way Public Schools Board of Education in Federal Way, Wash. After 34 years with the U.S. Army Corps of Engineers, Eto retired as a senior executive service member in 2012.

1980s

DENNIS S. CHANG '80, after years of consulting for the Internet Corporation for Assigned Names and Numbers (ICANN), has joined the organization as director of the GDD Services Program, working to contribute to the expansion and growth of the Internet.

HENRY T. NICHOLAS III '82, MS '85, PhD '98, co-founder of Broadcom Corp., received the 2014 IEEE Frederik Philips Award, which recognizes outstanding accomplishments in the management of research and development resulting in effective innovation in the electrical and electronics industry.

CLIFFORD WONG MS '87, PhD '93, left the aerospace industry and started a new career when he founded his independent television production company in 2005. Clifford is collaborating with world-renowned brands to help expand awareness and understanding of those brands in China's market through unique content and television programming.

ODILYN SANTAMARIA LUCK '88 and her husband, Bill Luck, welcomed their son Henry in December 2013. He joins big sister Amelia, who is 4. Odilyn and Bill both work at NASA Langley Research Center in Hampton, Va.

1990s

DOUGLAS LUFTMAN '93 has been promoted to vice president of innovation services and chief intellectual property counsel at NetApp Inc., a Fortune 500 technology data management and storage company. Luftman oversees the company's worldwide intellectual property program. He has received several honors, including being named Best Bay Area Corporate Counsel – IP Lawyer by the *Silicon Valley/San Jose Business Journal* and the *San Francisco Business Times*.



FELIX CHEN PhD '94, after a stint at Microsoft Corp., has become head of hardware reliability at Amazon.com, working at the firm's Seattle campus. He's also completing his first year as an associate editor at the *Journal of Electronic Packaging*. Chen's older daughter enrolled at UCLA for Fall 2014.

NATALIE PETOUHOFF PhD '94 is now vice president and principal analyst at research and marketing firm Constellation Research Inc. Her website is www.drnatalienews.com.

EDWIN J. SISWANTO '94, who has worked on petroleum projects in the Middle East and Southeast Asia for Irvine-based Fluor Corp. since 2007, is now the cost controller on a Fluor mega petrochemical construction project. The project is a joint venture between Saudi Aramco Petroleum and Dow Saudi Arabia Co.

DEBJYOTI BANERJEE MS '98, PhD '99, an associate professor at Texas A&M University, was named the Leland T. Jordan Career Development Professor in Mechanical Engineering in recognition of his many accomplishments and future potential. His research interests lie in multi-phase flows and heat transfer.

2000S

ATIF NOORI '01, PhD '06, who was at Applied Materials for the previous eight years, has started his own "Internet of Things" company, Emberlight Inc. The company recently launched its lighting control and adaptor product to an overwhelming response on Kickstarter. It has been featured in *TechCrunch*, *Popular Mechanics*, *The Wall Street Journal* and other outlets.



JEFF SAKAMOTO PhD '01 joined the Department of Mechanical Engineering at the University of Michigan, Ann Arbor, as an associate professor in Fall 2014. Sakamoto's research interests are in the synthesis, processing and

functionalization of ceramics and hydrogels with applications in energy storage and conversion and in biomedicine. He was previously an associate professor at Michigan State University.



ERWIN TAGANAS, MS '02, authored and published *African Big 6 Safari Videobook* (EAT Productions, 2014), which allows readers to view safari videos inside the book. This year he and his wife Andrelee celebrated the arrival of their daughter, Victoria Anne.

MIKHAEL FELKER '05 has been promoted to director of IT infrastructure and compliance at Woodland Hills, Ca.-based ReachLocal, which provides online marketing for businesses.



ALOK NANDAN PhD '05 was one of the first 100 employees of digital advertising firm YuMe (NYSE:YUME), which went public on the New York Stock Exchange in 2013. He was its director of product management at that time. More recently, Nandan joined a startup, Tempo AI Inc., developer of a free calendar app available via the iOS app store. The startup is funded through the Stanford Research Institute.



SHAHIN FARSHCHI PhD '06 was recently promoted to partner at Lux Capital, a venture capital firm with offices in New York City and Silicon Valley. Farshchi invests in companies leveraging new materials, devices, systems, and software to solve big societal problems.

2010S



ALEX CAPECELATRO '10 founder of social media app AtThePool, has launched Yeti, a mobile recommendation engine available in the iTunes app store. He was featured in the *Los Angeles Business Journal's* "Twenty in their 20s," profiles of entrepreneurs who have launched and run companies before reaching their thirties.

DUY LE '07 and **SARAH PAGE** '08 were married Aug. 1, 2014. Duy works as an iPhone engineering manager at Apple Inc. in Cupertino. Sarah is a business analyst for Tesla Motors Inc. at its plant in Fremont. They reside in San Francisco.



MILES GUIDON '10 has started MOCAP Design, a company that engineers, designs, manufactures and sells hardware for visual effects in the film and video game industries. He also owns Hollywood 3D Printing, offering a range of design and prototyping services.

SONYA R. LOPEZ '07, MS '08, PhD '12 has joined the Civil Engineering Department of California State University, Los Angeles as an assistant professor.

DANIEL BIOCINI '08 has entered the masters/certificate program in clinical lab science at San Jose State University.

DAHLIA CANTER (formerly Siegel) '08 has entered the MBA program at Harvard Business School.

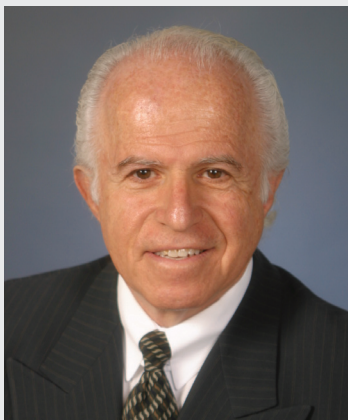
JASON GOFF, MS '08 ENG '09 obtained his California Professional Engineer License in October 2013.

TAK-SING WONG PhD '09, an assistant professor of mechanical engineering at Penn State University, received the NSF CAREER Award and was an invitee to the National Academy of Engineering Frontiers of Engineering forum. He was also named to *MIT Technology Review's* "35 Innovators Under 35" list for 2014.

STEPHEN CORWIN '11 is a software developer at Los Angeles-based community-organizing firm NationBuilder. Corwin noted that NationBuilder has inspired him to work on side projects, including CityGro.ws, a website with news on developments in residential neighborhoods, and CicLAVia, which stages bicycle rides and car-free events on Los Angeles streets.

CRISTINA CANO '12, who in 2013 received her MS in computer science from USC, specializing in human language technology, has joined Google Inc. as a software engineer.

IN MEMORIAM



AARON S. COHEN '58, a Southern California engineering entrepreneur and generous supporter of UCLA Engineering, passed away on March 21, 2014. He was 77. In 1961 Cohen founded Calabasas-based National Technical Systems Inc., which provides testing, engineering and management services to clients in the aerospace, automotive, defense and telecommunications industries. He served as president and chairman of the board of NTS for many years.

He and his wife, Nancy, created the Nancy D. and Aaron S. Cohen Engineering Scholarship, providing financial assistance to talented undergraduate students of limited means.

Cohen was a UCLA Chancellor's Associate, a UCLA Foundation Governor and a member of the UCLA Henry Samueli School of Engineering and Applied Science Dean's Advisory Council. He also served on the boards of the UCLA Engineering Institute for Technology Advancement and the Engineering Alumni Association. In 2012 he was named the UCLA Engineering Alumnus of the Year.



MARJORIE ELOISE LUND CRUMP '46, who together with her husband Ralph '50 was a major supporter of UCLA and UCLA Engineering, died of natural causes on April 1, 2014, in Trumbull, Conn. She was 89. The Crumps created and funded the William D. Van Vorst Chair in Chemical Engineering at the UCLA Henry Samueli School of Engineering and Applied Science; the Crump Institute for Molecular Imaging; the Marjorie L. Crump Chair in Social Welfare at the UCLA Luskin School of Public Affairs; and the Crump Chair in Medical Engineering at the David Geffen School of Medicine at UCLA.

The Crumps also have made significant contributions to Engineering VI, a state-of-the-art research and teaching facility now under construction.

Marjorie Crump worked as a social welfare case manager for Los Angeles County before the family relocated to Connecticut in 1962, where she and her husband founded several companies based on Ralph Crump's work in medical devices and procedures, as well as innovations in other fields.



UCLA ENGINEERING
Henry Samueli School of
Engineering and Applied Science

Birthplace of the Internet

2015
**TECH
FORUM**

**Robotics and Technologies
of the Future**

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TUESDAY, FEBRUARY 3, 2015
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FEATURING KEYNOTE SPEAKER

Dr. Marc Raiber

Chief Technical Officer and Founder

Boston Dynamics

For more information contact:

Kerri Bennett | Director, Corporate and Foundation Relations

E-mail: kbennett@support.ucla.edu | Phone: 310-794-5130

UCLA ENGINEERING 2013-2014

FACULTY AWARDS

Robert Candler, assistant professor of electrical engineering, received a Faculty Early Career Development (CAREER) award from the National Science Foundation. It is the organization's most prestigious award in support of junior faculty.

UCLA Chancellor Emeritus **Albert Carnesale**, professor of public policy and of mechanical and aerospace engineering, was named to the U.S. Secretary of Energy Advisory Board. The board serves as an independent advisory committee to Energy Secretary Ernest Moniz.

Ivan Catton, a professor emeritus in mechanical and aerospace engineering, received the 75th Anniversary Medal from the American Society of Mechanical Engineers Heat Transfer Division.

Distinguished Professor **Frank Chang**, Wintek Chair in Electrical Engineering and chair of the Electrical Engineering Department, received the John J. Guarrera Engineering Educator of the Year Award for 2014 from the Engineers' Council for "transformative contributions in undergraduate engineering education to prepare students for the challenges of the 21st century, and for pioneering research

in high-speed, high frequency semiconductor devices, materials and integrated circuits."

Tyson Condie, assistant professor of computer science, received a Faculty Early Career Development (CAREER) award from the National Science Foundation. It is the organization's most prestigious award in support of junior faculty.

Jason Cong, Chancellor's Professor of Computer Science, and colleagues, received the Best Paper Award at the 2013 International Conference on Hardware - Software Codesign and System Synthesis (CODES).

Dean **Vijay K. Dhir**, distinguished professor of mechanical and aerospace engineering, received the 75th Anniversary Medal from the American Society of Mechanical Engineers Heat Transfer Division.

Dino Di Carlo, associate professor of bioengineering, received the 2014 Analytical Chemistry Young Innovator Award from *Analytical Chemistry* and the Chemical and Biological Microsystems Society.

Suhas Diggavi, professor of electrical engineering, with co-authors, received the 2013 Association for

Computing Machinery Mobile and Ad Hoc Networking and Computing (ACM Mobihoc) Best Paper Award. Diggavi and co-authors also received a 2013 Joint Paper Award from IEEE Communications Society and Information Theory Society.

Bruce S. Dunn, the Nippon Sheet Glass Company Professor of Materials Science and Engineering, was elected to the World Academy of Ceramics in recognition of his outstanding achievements in sol-gel materials and the development of new electrochemical materials and devices.

Milos Ercegovac, professor of computer science, received the 2013 Distinguished Alumni Educator Award from the Department of Computer Science, University of Illinois at Urbana-Champaign. Ercegovac received his Ph.D. from UIUC in 1975.

Christina Fragouli, associate professor of electrical engineering, with co-authors, received the 2013 Association for Computing Machinery Mobile and Ad Hoc Networking and Computing (ACM Mobihoc) Best Paper Award.

Nasr Ghoniem, professor of mechanical and aerospace engineering and materials science and engineering, was selected as a 2014 Materials Research Society Fellow.

Dr. **Warren Grundfest**, professor of bioengineering and surgery, received the Pierre Galletti Award, the highest honor from the American Institute for Medical and Biological Engineering.

Lei He, professor of electrical engineering, was honored by the Electronic Design Automation Consortium as one of the 10 most prolific authors in the past decade.

Chih-Ming Ho, Ben Rich-Lockheed Martin Professor and distinguished professor of mechanical and aerospace engineering and bioengineering, was elected a distinguished fellow of the American Institute for Medical and Biological Engineering for his impact in microfluidic system technology for applications in medical diagnosis and biological research. He also received a Global Achievement Award from Johns Hopkins University, his Ph.D. alma mater.

Diana Huffaker, professor of electrical engineering, was selected by IEEE as a Distinguished Lecturer for year 2015 in the area of photonic devices.

Tatsuo Itoh, distinguished professor of electrical engineering and the Northrop Grumman Chair in Microwave and Millimeter Wave Electronics, was elected to the National Academy of Inventors for exceptional accomplishments in innovation and invention benefiting society.

Bahram Jalali, the Northrop Grumman Professor of Opto-Electronics and a professor of electrical engineering, bioengineering and surgery, was elected as a fellow of SPIE, the international society for optics and photonics.

Mona Jarrahi, associate professor of electrical engineering, was honored by President Obama with a Presidential Early Career Award for Scientists and Engineers (PECASE). She was also selected by the United States National Committee of the International Union of Radio Science (USNC/URSI) for the 2014 Booker Fellowship, presented to outstanding American researchers in the early years of their career. Jarrahi also received the 2014 Early Career Award in Nanotechnology from IEEE Nanotechnology.

Chandrashekhar Joshi, distinguished professor of electrical engineering, was elected to the National Academy of Engineering for “contributions to the development of laser and beam-driven plasma accelerators.”

Leonard Kleinrock, professor of computer science, received the SIGMOBILE Outstanding Contribution Award for significant and lasting contributions to research on mobile computing and communications and wireless networking.

James C. Liao, the Ralph M. Parsons Foundation Professor of Chemical Engineering and chair of the Chemical and Biomolecular Engineering Department, received the 2014 National Academy of Sciences Award for the Industrial Application of Science. He also was

named to Taiwan’s Academia Sinica, the preeminent academic institution in the Republic of China.

Kuo-Nan Liou, distinguished professor in atmospheric and oceanic sciences, mechanical and aerospace engineering and electrical engineering, was selected as the 2013 American Geophysical Union (AGU) Roger Revelle Medalist. The medal recognizes outstanding contributions in atmospheric sciences.

Christopher Lynch, professor of mechanical and aerospace engineering, was elected as a fellow of SPIE, the international society for optics and photonics. Lynch also received SPIE’s Smart Materials and Structures Lifetime Achievement Award for outstanding accomplishments in the field of smart structures and materials.

Stanley Osher, distinguished professor of mathematics, computer science and electrical engineering, was awarded the 2014 Carl Friedrich Gauss Prize at the International Congress of Mathematicians. The prize is the highest honor in applied mathematics.

Aydogan Ozcan, Chancellor’s Professor of electrical engineering, bioengineering and surgery, was named a 2014 Howard Hughes Medical Institute Professor, recognized for his breakthrough research and innovative approach to undergraduate education. He also received the 2013 *Microscopy Today* Innovation Award.

C. Kumar Patel, distinguished professor of electrical engineering and physics, was elected as a fellow of SPIE, the international society for optics and photonics.

Judea Pearl, professor of computer science, was elected to the National Academy of Sciences, one of the highest honors that can be bestowed on a scientist or engineer. Members are recognized for “distinguished and continuing achievements in original research.”

Behzad Razavi, Chancellor’s Professor of Electrical Engineering, received the 2014 American Society for Engineering Education Pacific Southwest Section Outstanding Teaching Award.

Ali Sayed, professor of electrical engineering, received the 2013 Meritorious Service Award from the IEEE Signal Processing Society. Sayed was also awarded the 2014 Athanasios Papoulis Award by the European Association for Signal Processing for “fundamental contributions to the advancement of research and education in the areas of adaptive and statistical signal processing.”

Alexander Sherstov, assistant professor of computer science, received a 2014 Sloan Research Fellowship from the Alfred P. Sloan Foundation.

Stefano Soatto, professor of computer science, was appointed a 2013 IEEE Fellow for contributions to dynamic visual processes.

Yi Tang, professor of chemical and biomolecular engineering, was named the 2014 recipient of the Eli Lilly Award from the American Chemical Society’s Division of Biological Chemistry. Tang was recognized for “outstanding research in biological chemistry of unusual merit and independence of thought and originality.”

Demetri Terzopoulos, Chancellor’s Professor of Computer Science, was elected a fellow of the Royal Society of London in recognition of his groundbreaking work in computer vision and graphics.

Alan N. Willson Jr., distinguished professor emeritus of electrical engineering and holder of the Charles P. Reames Chair in Electrical Engineering, was elected to the National Academy of Engineering for “contributions to the theory and applications of digital signal processing.” Willson, a member of Eta Kappa Nu for 55 years and the founding faculty advisor for the Iota Gamma Chapter, also received the 2014 HKN Distinguished Service Award.

Ya-Hong Xie, professor of materials science and engineering, was elected as an IEEE Fellow. He was recognized “for contributions to strained-silicon materials and devices.”

Yang Yang, the Carol and Lawrence E. Tannas Chair in Engineering and a professor of electrical engineering and bioengineering, was elected as a fellow of SPIE, the international society for optics and photonics.

Lixia Zhang, professor of computer science, was selected by the Internet Corporation for Assigned Names and Numbers (ICANN) to serve on its “Identifier Technology Innovation” panel.

PH.D. ALUMNI ACADEMIC APPOINTMENTS

Shiuh-hua Wood Chiang PhD ’13
Electrical and Computer Engineering
Brigham Young University
FACULTY ADVISOR: Behzad Razavi

(Brandon) Jun Choi PhD ’14
Electrical Engineering and
Computer Science
Syracuse University
FACULTY ADVISOR: Tatsuo Itoh

Henry A. Colorado PhD ’13
Composites Laboratory
Universidad de Antioquia,
Medellin, Colombia
FACULTY ADVISOR: Jenn-Ming Yang

John Gallagher PhD ’14
Civil & Mechanical Engineering
Merrimack College, Boston
FACULTY ADVISOR: Christopher Lynch

Ming-Chun Huang PhD ’14
Electrical Engineering and
Computer Science
Case Western Reserve University
FACULTY ADVISOR: Majid Sarrafzadeh

Daniel Hyduke PhD ’06
Biological Engineering
Utah State University
FACULTY ADVISOR: James C. Liao

Ethan I. Lan PhD '13
Biological Sciences and Technology
National Chiao Tung University,
Taiwan

FACULTY ADVISOR: James C. Liao

Euntaek Lee PhD '14
Mechanical and Aerospace
Engineering
Seoul National University
FACULTY ADVISOR: Laurent Pilon

Yuguo Lei PhD '10
Chemical and Biomolecular
Engineering
University of Nebraska
FACULTY ADVISOR: Tatiana Segura

Han Li PhD '13
Chemical Engineering and
Materials Science
UC Irvine
FACULTY ADVISOR: James C. Liao

Sami Maalouf PhD '14
Civil Engineering and Construction
Management
California State University, Northridge
FACULTY ADVISOR: William W.-G. Yeh

Peerapong Pornwongthong PhD '14
Agro-Industrial, Food, and
Environmental Technology
King Mongkut's University of
Technology North Bangkok, Thailand
FACULTY ADVISOR: Shaily Mahendra

Vahab Pournaghshband PhD '14
Computer Science
California State University, Northridge
FACULTY ADVISOR: Peter Reiher

Fengbo Ren PhD '14
Electrical Engineering
Arizona State University
FACULTY ADVISOR: Dejan Markovic

Claire R. Shen PhD '11
Chemical Engineering
National Tsing Hua University, Taiwan
FACULTY ADVISOR: James C. Liao

Salih Tileylioğlu PhD '08
Civil Engineering
Cankaya University, Ankara, Turkey
FACULTY ADVISOR: Jonathan P. Stewart

Wilson Wong PhD '07
Biomedical Engineering
Boston University
FACULTY ADVISOR: James C. Liao

Chung-Tse Michael Wu PhD '14
Electrical and Computer Engineering
Wayne State University
FACULTY ADVISOR: Tatsuo Itoh

Lap-Fai (Craig) Yu PhD '13
Computer Science
University of Massachusetts, Boston
FACULTY ADVISOR: Demetri Terzopoulos

Zhibin Yu PhD '10
Industrial and Manufacturing
Engineering
Florida State University
FACULTY ADVISOR: Qibing Pei

Yue Zhao PhD '11
Electrical and Computer Engineering
SUNY Stony Brook
FACULTY ADVISOR: Gregory J. Pottie

POST-DOCTORAL SCHOLARS ACADEMIC APPOINTMENTS

Hung Cao
Electrical Engineering
École Polytechnique de Montréal
FACULTY ADVISOR: Tzung Hsiai

Nicholas Graham
Chemical Engineering
University of Southern California
FACULTY ADVISOR: Thomas Graeber

David Hoelzle
Mechanical and Aerospace
Engineering
University of Notre Dame
FACULTY ADVISOR: Amy Rowat

Youcai Hu
Institute of Materia Medica
Chinese Academy of Medical Science
and Peking Union Medical College
FACULTY ADVISOR: Yi Tang

Chris Rhodes
Chemistry and Materials Science
departments
Texas State University
FACULTY ADVISOR: Bruce Dunn

Guangyi Sun
Institute of Robotics and Automatic
Information Systems
Nankai University, China
FACULTY ADVISOR: CJ Kim

Wenbing Yin
The Institute of Microbiology
Chinese Academy of Sciences
FACULTY ADVISOR: Yi Tang

FACULTY ENDOWED CHAIR HOLDERS

L.M.K. Boelter Chair in Engineering
Rotating

Norman E. Friedmann Chair in
Knowledge Sciences
Carlo Zaniolo

Evalyn Knight Chair in Engineering
Ali Mosleh

Richard G. Newman AECOM Chair in
Civil Engineering
William W.-G. Yeh

Nippon Sheet Glass Company Chair in
Materials Science

Bruce S. Dunn

Northrop Grumman Chair in
Electrical Engineering

Tatsuo Itoh

Northrop Grumman Chair in
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Electromagnetics

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FACULTY PATENTS ISSUED

Yong Chen, professor of mechanical and aerospace engineering: Memory capacitor made from field configurable ion-doped materials.

Yong Chen: Nanoscale electric lithography.

Yong Chen and **Suxian Huang**: Bioassays based on polymeric sequence probe.

Ian A. Cook, professor of psychiatry and bioengineering; **Christopher DeGiorgio**, **Alejandro Covalin**, **Patrick R. Miller**, **Lara Schrader**: Devices, systems and methods for treatment of neuropsychiatric disorders.

Ian A. Cook, **Christopher DeGiorgio** and **Alejandro Covalin**: Systems, devices and methods for the treatment of neurological disorders and conditions.

Timothy J. Deming, professor of bioengineering, **Michael V. Sofroniew**, **Chu-Ya Yang**, **Bingbing Song**, and **Yan Ao**: Synthetic diblock copolypeptide hydrogels for use in the central nervous system.

Dino Di Carlo, associate professor of bioengineering, **Aydogan Ozcan**, Chancellor's Professor of Electrical Engineering and Bioengineering, **Bahram Jalali**, Northrop Grumman Professor of Opto-Electronics; **Soojung Hur**, and **Henry T.K. Tse**: Inertial particle focusing flow cytometer.

Bruce Dunn, Nippon Sheet Glass Company Professor of Materials Science, **Erik Menke**, **Grant Umeda**, **Brittnee Veldman**, **Fred Wudl**, professor emeritus of materials science and engineering, **Monique Nathalie Richard**, and **Kimber Lee Stamm**: Electrode compositions and processes.

Bruce Dunn, **Sarah Tolbert**, professor of chemistry and biochemistry, and materials science and engineering, **John Wang**, and **Torsten Brezesinski**: Mesoporous nanocrystalline film architecture for capacitive storage devices.

Mark Goorsky, professor of materials science and engineering, and **Monali B. Joshi**: Composite semiconductor substrates for thin-film device layer transfer.

Dr. Warren Grundfest, professor of bioengineering and surgery; **Martin Culjat**, adjunct assistant professor, **Priyamvada Tewari**, **Jean-Louis Bourges**, **Jean-Pierre Hubschman**, **Rahul S. Singh**, and **Zachary Taylor**: Corneal hydration sensing system.

Lei He, professor of electrical engineering: Low-power field programmable logic array (FPGA) circuits and methods.

Bahram Jalali and **Ali Motafakker-Fard**: Differential interference contrast serial time encoded amplified microscopy.

Bahram Jalali, **Shalabh Gupta**, and **Ali Motafakker-Fard**: Time stretch enhanced recording scope.

Chang-Jin Kim, professor of mechanical and aerospace engineering, and **Junghoon Lee**: Electrowetting-driven micropumping.

Yunfeng Lu, professor of chemical and biomolecular engineering, **Mei Cai**, **Hiesang Sohn**, and **Qiangfeng Xiao**: Nanostructured porous hollow spheres with tunable structure.

Qibing Pei, professor of materials science and engineering, **Yang Yang**, Carol and Lawrence E. Tannas Jr. Professor of Materials Science, and **Chenjun Shi**: Copolymers of alkoxythiophene.

Stefano Soatto, professor of computer science, and **Taehee Lee**: End-to-end visual recognition system and methods.

John Villasenor, professor of electrical engineering and public policy, and **Lok-Won Kim**: Trojan-resistant bus architecture and methods.

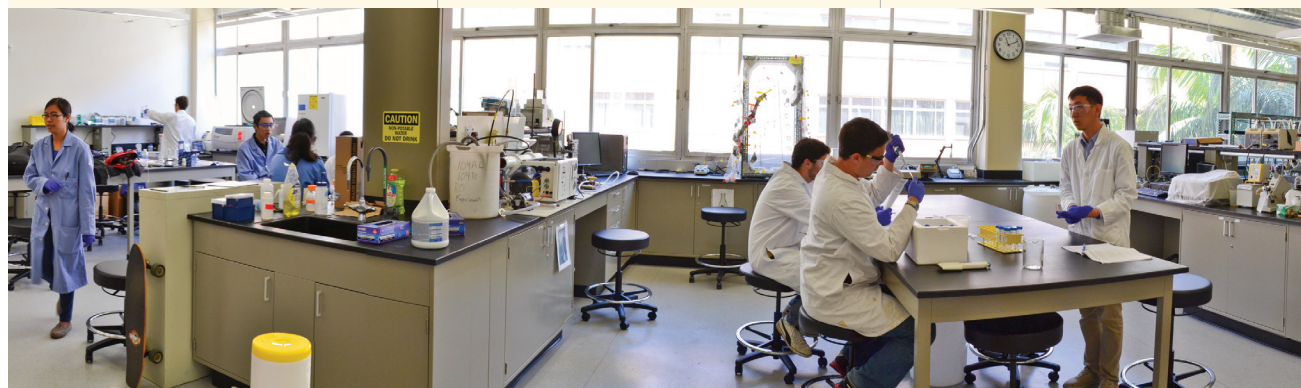
Kang L. Wang, Raytheon Professor of Electrical Engineering, **Jiyoung Kim**, **Yong-Jik Park**, **Jeong-Hee Han**, **Augustin Jinwoo Hong**: Semiconductor device.

Kang L. Wang, **Jiyoung Kim**, **Yong-Jik Park**, **Jeong-Hee Han**, and **Augustin Jinwoo Hong**: Integrated circuit memory devices with vertical transistor arrays.

Kang L. Wang, **Omar Yaghi**, **Alexander U. Czaja**, **Bo Wang**, **Hiroyasu Furukawa**, and **Kosmas Galatsis**: Gas sensor incorporating a porous framework.

Kang L. Wang, **Omar Yaghi**, **Alexander Czaja**, **Bo Wang**, **Kosmas Galatsis** and **Hiroyasu Furukawa**: Gas sensor incorporating a porous framework.

Richard Wesel, professor of electrical engineering, **M.C. Frank Chang**, Wintek Professor of Electrical Engineering, **Yuan-Mao Chang**, **Andres I. Vila Casado**: Lower-complexity layered belief propagation decoding low density parity check (LDPC) codes.



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