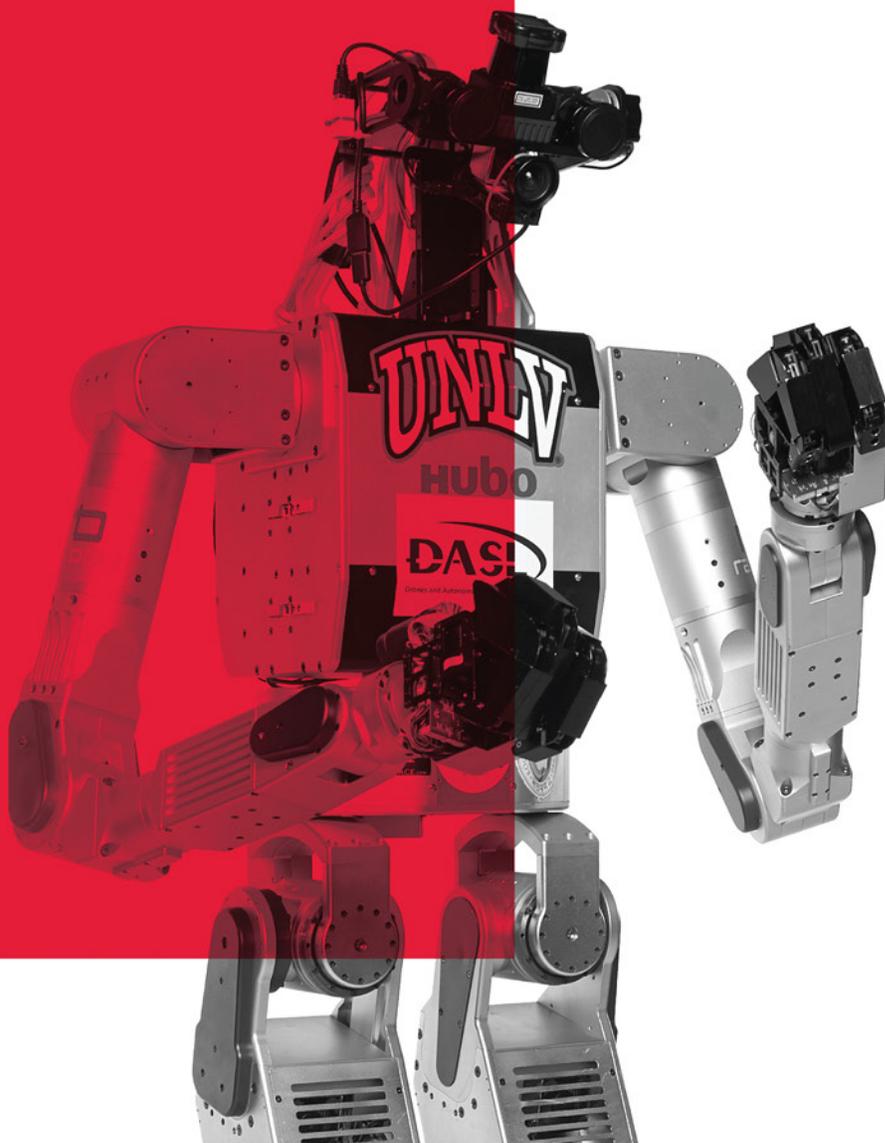


UNLV | HOWARD R. HUGHES College of ENGINEERING



Educate, Engage, Inspire, Innovate / SPRING - SUMMER 2016

Educate, Engage, Inspire, Innovate



DEAN RAMA VENKAT, Ph.D.
COLLEGE OF ENGINEERING

For the Howard R. Hughes College of Engineering at the University of Nevada, Las Vegas, these are not simply four words but our mission. I am incredibly proud of the achievements of all of our college's faculty and students who are embracing what these words represent: creating hands-on experiential learning at all student levels; fostering an environment of innovation and high-impact research; engaging the community and collaborating with other academic departments and external entities; and inspiring each other and their colleagues to continue learning and overcoming whatever challenges they face.

This past year has been quite exciting for the college. From key faculty appointments that will help us grow in strategic areas, to cutting-edge graduate student research and participating in competitions on the national stage, our activities are not only supporting our own mission but the University's path to becoming a Top Tier institution.

A FEW OF OUR HIGHLIGHTS INCLUDE:

- Placing eighth in the world in the 2015 DARPA Robotics Finals against competition including teams from MIT, NASA and Carnegie Mellon.
- Having UNLV'S submission to the 2017 Department of Energy's Solar Decathlon competition accepted. One of only 16 universities competing, the team is led by Principal Faculty Investigator, David James, associate professor, in the College of Engineering.
- Assistant Professor of Computer Science Andreas Stefik being recognized as a "White House Champion of Change" for his work advancing computer science education.
- Environmental engineering doctoral student Erica Marti, one of 55 students selected from the United States, being invited to and participating in the annual Lindau Nobel Laureate Meeting in southern Germany.

And these are just a few of our successes. As a college we added more resources to assist undergraduate students with their tutoring needs and new staff to support all students with internship and job placement opportunities. Our enrollment continues to increase, along with the amount of research awards secured. We opened a Drones and Autonomous Systems Lab (DASL) and will be rolling out an Engineering Entrepreneurship Certificate program in the fall.

At the end of this semester we will once again welcome over 30 engineering student teams to the 15th Annual Fred and Harriet Cox Senior Design Competition. An undergraduate capstone class that challenges students to apply what they learn in engineering courses to create practical, real-world solutions, the competition has resulted in multiple patents and even the creation of start-up businesses.

I am extremely proud of the work our faculty and students continue to do and excited as I look toward the future of our college and our fields of study. Thank you for your interest and support of the Howard R. Hughes College of Engineering.

learn more online: unlv.edu/engineering / unlv.edu/toptier



Designed by engineering professor Moses Karakouzian, The Cube sculpture in the courtyard of the Thomas T. Beam Engineering Complex represents disciplines of the Howard R. Hughes College of Engineering at UNLV

Creating the Future

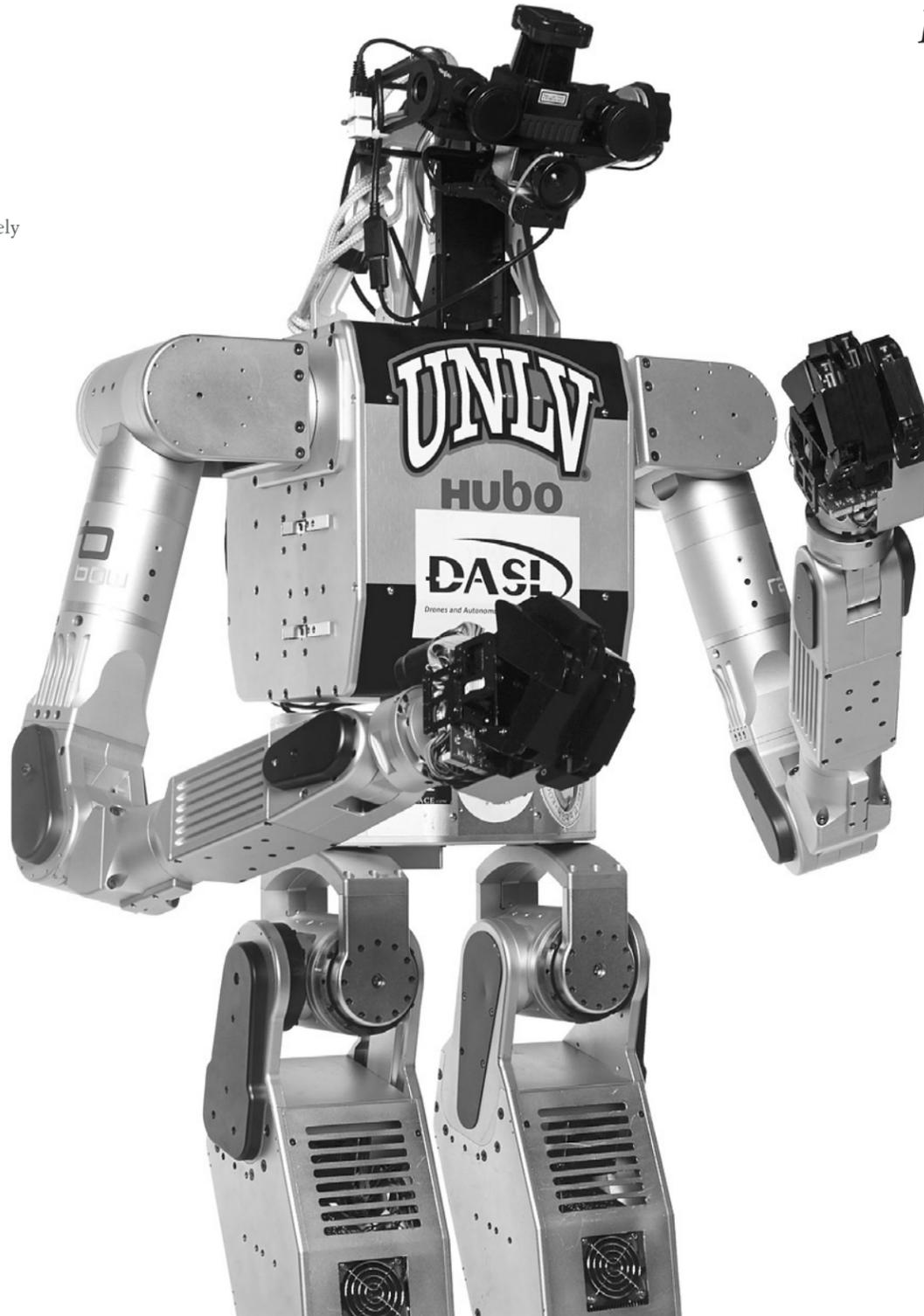
IDEAS TAKE FLIGHT IN UNLV'S DRONES AND AUTONOMOUS SYSTEMS LAB (DASL)

In June 2015, UNLV appeared with their robot, Metal Rebel, in the Defense Advanced Research Projects Agency (DARPA) Robotics Challenge Finals (DRC), the world's premier showcase for state-of-the-art robots. Participating against international heavyweights such as Carnegie Mellon, MIT and NASA, Metal Rebel and the UNLV team put on an impressive show, ultimately placing eighth in the world out of a field of 25. Although UNLV's participation was a surprise to some, the university's DRC leader had spent his life and career working with autonomous systems and robotics. Paul Oh, Lincy Professor for Unmanned Aerial Systems at UNLV, came to the university in 2014 by

"This is one of the best hires the College of Engineering has ever made. With the addition of Professor Oh, this sets the stage for UNLV to become an international leader in discovering the most updated applications for autonomous systems."

DEAN RAMA VENKAT
COLLEGE OF ENGINEERING

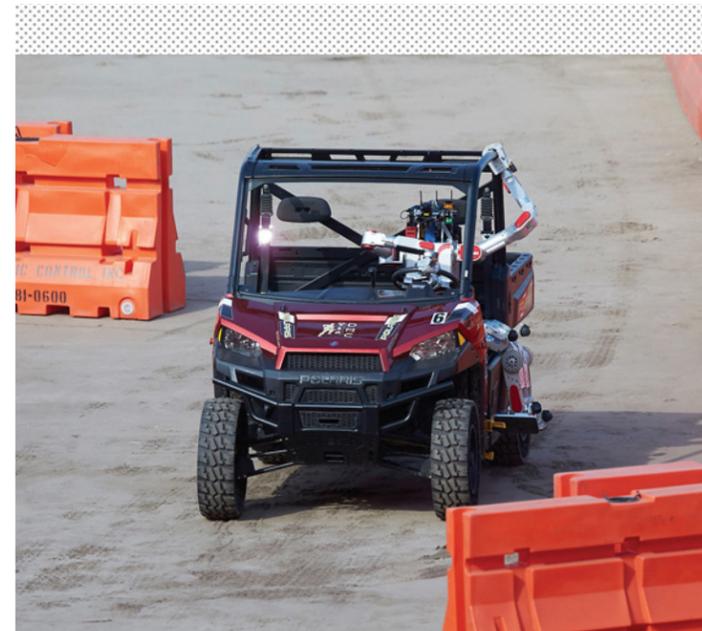
way of Drexel University in Philadelphia. Previous to that he served as a program director for robotics at the National Science Foundation, where he managed a portfolio that supported almost all nonmilitary university robotics research in the U.S. He also served as a fellow for Boeing, the Office of Naval Research, and NASA's Jet Propulsion Lab at CalTech.



DARPA

The DRC was designed to challenge participating robotics teams and their robots to complete tasks relevant to disaster response. It was a response to the Fukushima nuclear disaster with a goal to accelerate progress in robotics and develop robots capable of navigating environments too dangerous for humans. Participating robots had to do such tasks as drive a vehicle, open a door and turn a valve. Oh's DARPA team included a small team of researchers, professors and students from UNLV. The team has already published more than 20 academic papers emanating from their findings during the DARPA challenge, more than any other participating team. Many of these published findings focus on how to program and control robots in an environment with "degraded" communications, the type of situation that might ensue following a natural or man-made catastrophe. The team's eighth-place finish was a testament to the research heft of the team. During the competition, Metal Rebel excelled in the

competition's driving task. Having robots drive vehicles was unprecedented and posed interesting research challenges. DARPA felt it was an important element to add to the competition as in a disaster-response situation, quickly getting a robot into a contaminated/radiated area is essential. Oh's team decided to aggressively do the necessary research and development for the robot driving task, and they succeeded. Rather than approaching the driving task by deploying techniques developed for driverless cars: scanning the environment, building a computer model, then deploying an algorithm to instruct the robot, Oh's approach is to emulate how a human drives, i.e., by having the robot observe objects as they appear and then reacting to them. In the future, robots could be programmed to drive nearly any non-robotic vehicle—long-haul trucks, ocean-going ships, etc.



"Over the next two to five years, I want our robotics lab to dazzle. Whether it's with drones, vehicles, or legged robots, we feel we could really make an impact by partnering with business. It's part of putting Southern Nevada on the map in the robotics world."

PROFESSOR PAUL OH
COLLEGE OF ENGINEERING

learn more online: darpa.mil / theroboticschallenge.org / drc-hubo.com

Unmanned Aerial Systems (UAS)

UNLV is committed to becoming an intellectual and research hub for the burgeoning UAS industry, and is in a perfect position to lead the way. Oh's plans include unmanned aerial systems with limbs or dexterous manipulators that can actively interact with objects. The idea is that such creation could assist with all sorts of tasks that are difficult or dangerous for human workers, such as bridge repairs on busy highways or maintenance projects on skyscrapers.

In research funded by the National Science Foundation, Oh and his team are not only building such useful limbs but also working to discover how to utilize them effectively in aircraft. They are conducting research on stabilizing the aircraft while these appendages are at work. Most current research in this area involves systems with wheels or those confined to a clearly defined track. Using limbs on aerial vehicles, Oh says, is "unchartered territory."

"This is cutting-edge work, pioneered by our group and gaining traction all over the world," Oh says. "It's a real paradigm shift because most of today's drones are passive, only taking videos or photos."

One thing that won't remain passive or static—research in the DASL. In addition to UAS and robotics, Oh is also exploring issues particularly relevant to Southern Nevada including how robotics systems might be better used in cutting water consumption and growing food locally.

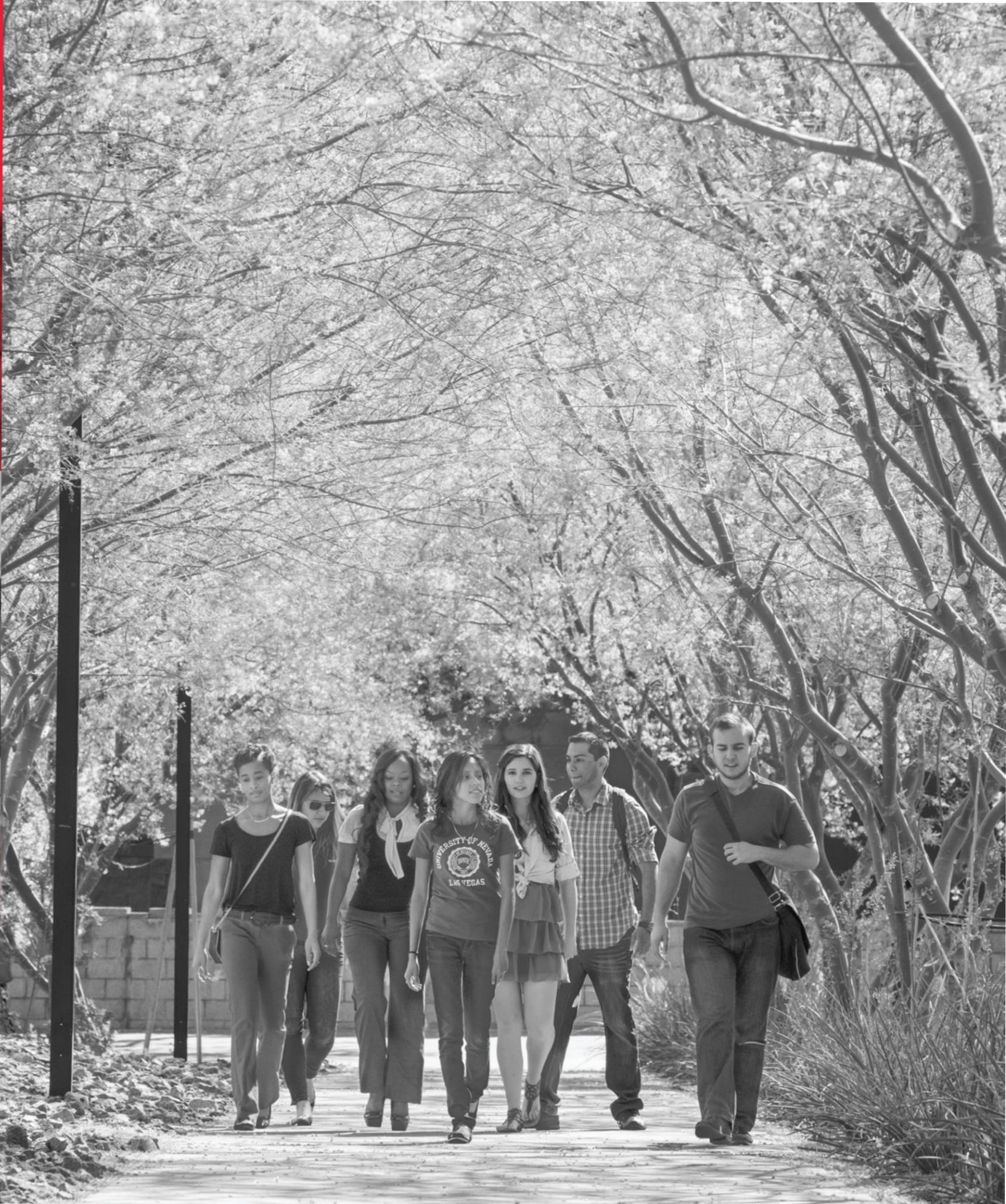
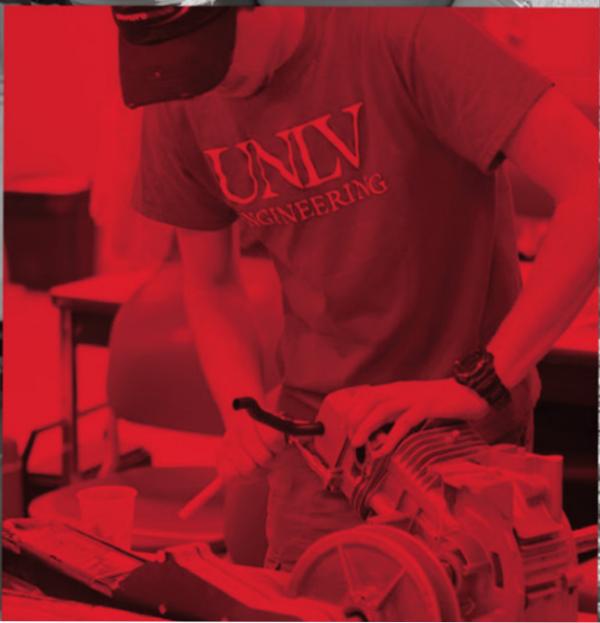
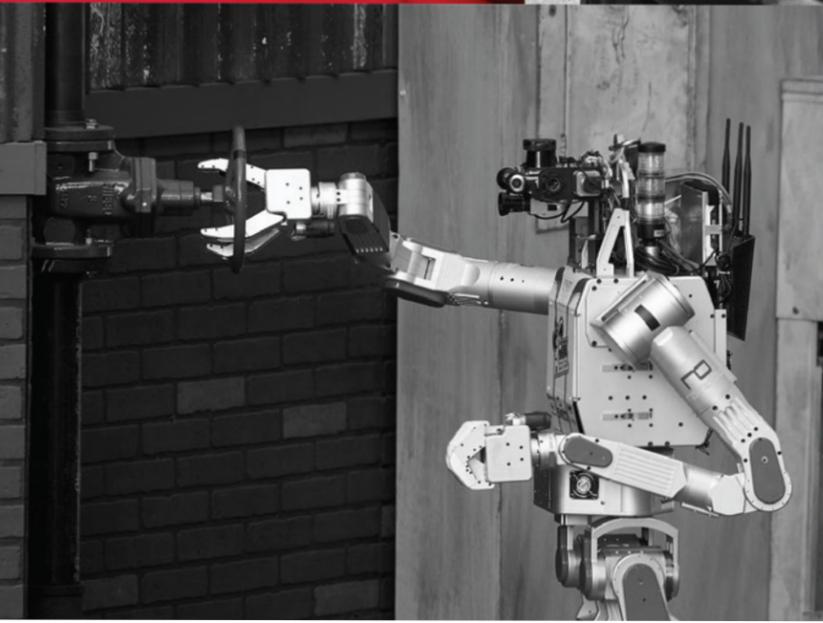
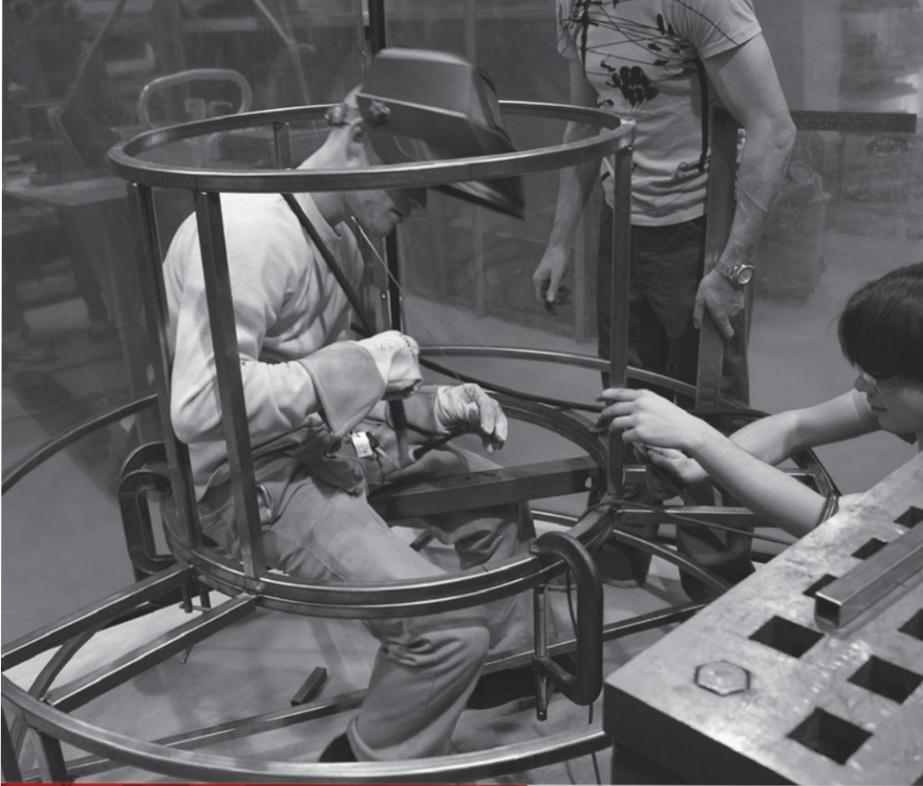


PROF. PAUL OH, Ph.D.
COLLEGE OF ENGINEERING

Oh has a Ph.D. in mechanical engineering from Columbia University, an M.S. in mechanical engineering from Seoul National University in South Korea and a B.S. in mechanical engineering from McGill University in Canada.



UNLV graduate Jinger Zeng and Greg Friesmuth, co-founders of Dronesmith Technologies, conducting a test flight
learn more online: [nsf.gov](https://www.nsf.gov)



Recent Grants

COLLEGE OF ENGINEERING

Jacimaria Batista, Professor, Civil and Environmental Engineering and Construction

PROJECT: CHROMIUM CONTAMINATION REMEDIATION USING ACTIVATED CARBON COATED WITH POLYSULFIDE RUBBER AND ZEOLITES COATED WITH SURFACTANTS

AGENCY: SAVANNAH RIVER NUCLEAR SOLUTIONS, LLC-FPT

AMOUNT: \$282,105

William Culbreth, Associate Professor, Mechanical Engineering

PROJECT: MOLTEN SALT RESEARCH

AGENCY: OFFICE OF NAVAL RESEARCH

AMOUNT: \$250,000

Yi-Tung Chen, Co-director of the Center for Energy Research, Professor, ASME Fellow, Mechanical Engineering

PROJECT: THERMAL DYNAMICS AND NEUTRONICS MODELING SIMULATIONS ON RTMSR REACTOR DESIGN – PHASE II

AGENCY: UTAH GREEN ENERGY TECHNOLOGIES, LLC

AMOUNT: \$250,000

Daniel Gerrity, Assistant Professor, Civil and Environmental Engineering and Construction

PROJECT: EARLY CAREER AWARD: FRAMEWORK FOR QUANTIFYING MICROBIAL RISK AND SUSTAINABILITY OF POTABLE REUSE SYSTEMS IN THE U.S.

AGENCY: ENVIRONMENTAL PROTECTION (EPA)

AMOUNT: \$329,650

PROJECT: ASSESSMENT, PURIFICATION AND REUSE OF TESLA GIGAFACTORY WASTEWATER STREAMS – TASK 1

AGENCY: TESLA MOTORS

AMOUNT: \$50,000

Kwang Kim, Southwest Gas Professor of Energy and Matter, ASME Fellow, Mechanical Engineering

PROJECT: PIRE: ADVANCED ARTIFICIAL MUSCLES FOR INTERNATIONAL AND GLOBALLY COMPETITIVE RESEARCH AND EDUCATION IN SOFT ROBOTICS

AGENCY: NATIONAL SCIENCE FOUNDATION (NSF)

AMOUNT: \$691,899

Hui Zhao, Associate Professor, Mechanical Engineering

PROJECT: SUPER-HYDROPHOBIC SURFACE ENABLED MICROFLUIDIC ENERGY CONVERSION

AGENCY: NATIONAL SCIENCE FOUNDATION (NSF)

AMOUNT: \$276,674

PROJECT: BEYOND THE POISSON-NERNST-PLANCK MODEL: THE IMPACTS OF ION SPECIFICITY AND ELECTROSTATIC CORRELATIONS ON BIOLOGICAL SYSTEMS

AGENCY: NATIONAL INSTITUTES OF HEALTH

AMOUNT: \$691,899

White House Recognizes UNLV Professor as “Champion of Change”

ENGINEERING PROFESSOR ANDREAS STEFIK HONORED FOR FURTHERING COMPUTER SCIENCE EDUCATION DURING CEREMONY IN THE NATION’S CAPITAL

Andreas Stefik, who has spent a decade creating technologies that make it easier for people, especially those with visual impairment or other disabilities, to use computer software or invent their own, was recently recognized as a "White House Champion of Change for Computer Science Education." An assistant professor of

computer science in UNLV's College of Engineering, Stefik was among nine recipients who were honored at a January event in Washington, D.C.

Stefik is the inventor of Quorum, the first evidence-oriented programming language. The design of Quorum is based on rigorous empirical data from

experiments on human behavior. With grants from the National Science Foundation, Stefik also established the first national educational infrastructure for blind or visually impaired students to learn computer science—a model being used in nearly 20 states and overseas, including in Clark County and the United Kingdom.

The Champions of Change program was created as an opportunity for the White House to feature individuals doing extraordinary things to empower and inspire members of their communities. The White House considers access to computer science education a critical step for ensuring that the United States remains competitive in the global economy and strengthens its cybersecurity.

Winning the honor may have been an easier feat than getting to the nation's capital to accept it. The ceremony was held at the end of January in the midst of a terrible East Coast winter storm. Following canceled flights and failed train attempts, Stefik finally made it.

“It was definitely humbling and a little surreal,” Stefik, 37, said about his surprise nomination and subsequent trip to D.C. “There are people all over the country doing amazing work in computer science education right now.



Stefik (2nd from left) with the White House Champions of Change for Computer Science Education

I’m honored to be recognized alongside just a few of them.”

Stefik was nominated by Clayton Lewis, a professor of computer science at the University of Colorado, Boulder whom he had met at various conferences. Stefik, who has been teaching at UNLV for four years, has a B.S. in computer science and a B.A. in music from Central Washington University, and an M.S. and Ph.D. in computer science from Washington State University.

learn more online: quorumlanguage.com / whitehouse.gov/champions / nsf.gov

UNLV Competing in National DOE 2017 Solar Decathlon

STUDENT-LED TEAM TO BUILD SUSTAINABLE, "AGE-IN-PLACE" HOME FOR U.S. DEPARTMENT OF ENERGY CONTEST

UNLV is one of 16 university teams worldwide picked to compete in the 2017 U.S. Department of Energy's Solar Decathlon contest that showcases innovative solar powered houses that are designed, built, and operated by

collegiate teams. Led by Principal Investigator David James, associate professor in the Howard R. Hughes College of Engineering, the project is a university-wide collaboration involving faculty and students from multiple

UNLV colleges including the School of Architecture, the School of Allied Health Sciences and the William F. Harrah College of Hotel Administration.

"Competitions like the Solar Decathlon combine research, education, and community engagement in unique and meaningful ways, which is critical for UNLV as we continue on our path to become a top tier national public research university."

LEN JESSUP
UNLV PRESIDENT

The 2017 team has a challenging road ahead as they try to beat the university's 2013 entry, DesertSol. In the last competition, the UNLV team finished first among American universities and second overall in the competition. Of the ten areas the homes were judged on, DesertSol ranked No. 1 in Market Appeal, No. 2 in Communications and No. 3 in Engineering out of a field of 20.

The winner of the competition is the team that best blends technology, market potential, and design excellence with smart energy production and maximum efficiency. For 2017, the UNLV team has chosen to design a home that meets a growing social need—an aging-in-place home.

Nationally it is projected that by 2030 one out of every five people in the United States will be 65 or older. This "graying" of America's population through which the proportion of people in older age groups grows faster than the proportion of the population in younger age groups, is referred to as the "Gray Tsunami."

To address this, UNLV's home will integrate telemedicine with design for accessibility and interior comfort to create a smart-home that will help older adults and those with disabilities avoid accidents, stave off institutionalized care and remain in their homes longer.

The team has approximately 18 months to design, test and build the home, then transport it to the as-of-yet undisclosed competition site for judging. In 2013 more than 60 students, 20 faculty and outside industry mentors were engaged in the project. This year participation across the campus is expected to be similar with the added benefit of having several 2013 student participants available to be project advisors to the 2017 team.

"The competition allows us to collaborate with students across disciplines and develop skills that just wouldn't be possible in a normal classroom environment," said Nasko Balaktchiev, architecture major and project manager for Team UNLV.

"We're learning more about our own field of study, becoming more knowledgeable in other areas, and designing a home to address an important societal issue."

While for the first time in the competition's history the DOE will be awarding prize money for winning teams at the conclusion of the competition, the financial cost of UNLV's house is estimated at \$1 million. The university is currently seeking sponsors and financial contributions for the project.

Contact Jack Aylor at jack.aylor@unlv.edu or 702-895-2913 for sponsorship and donation opportunities. Visit www.unlv.edu/engineering/solar-decathlon for more information on Solar Decathlon 2017.

learn more online:
solardecathlon.gov
solardecathlon.gov/past/2013/team_lasvegas.html

UNLV Alumna Vying for National Association's Top Role

KRISTINA SWALLOW, '04 MS ENGINEERING RUNNING FOR PRESIDENT OF ASCE

As a recent civil engineering graduate and new transplant to Las Vegas, Kristina Swallow originally became involved with the American Society of Civil Engineers (ASCE) as a way to get engaged in her community and network with others in her field. Although she wasn't attending UNLV yet, it was actually UNLV alumni who contacted her about starting a young engineers group for ASCE.

That experience, as well as her later master of science degree, have been invaluable to her.

Currently Swallow is running for president elect of ASCE. This is the first time in the organization's 164-year history that two women are running for president. Whomever gets elected will be only the fourth female ASCE president; and if successful, Swallow would be the first from Nevada. In a time when not only introducing more women to engineering but keeping them in the field is an important focus of the industry and engineering educational institutions, this is a significant achievement.

Swallow's decision to return to a university for a graduate degree parallels the importance ASCE has placed on education beyond the baccalaureate for individuals practicing civil engineering in the future.

"As the profession has changed, we as civil engineers, whether practitioners or educators, need to make sure that the engineers of tomorrow are prepared," said Swallow.

Swallow graduated with a master of science in civil and environmental engineering from UNLV in 2004. She points to the diversity of the student body, the ties she developed to the community, and the ongoing relationships with current UNLV faculty—both as mentors and friends—as highlights of her extended educational experience. In 2013 Swallow was recognized as Alumna of the Year by the College of Engineering.



"Civil engineers do not consistently have a seat at the table where critical decisions are made. To be leaders in shaping public policy and enhancing our communities, we need to move beyond the stereotypes of the typical engineer, position ourselves as technical advisors, and demonstrate our abilities to communicate, interact and influence a variety of stakeholders."

KRISTINA SWALLOW
PROGRAM MANAGER FOR THE CITY OF
LAS VEGAS, DEPARTMENT OF PUBLIC WORKS



Watch Kristina's video interview here

But it isn't just her educational experience that has shaped Swallow and her career. Her varied background includes working for the public sector—she is currently Program Manager for the City of Las Vegas, Department of Public Works—and private sector where she worked for engineering consulting firms and even owned a small engineering consulting business.

Perhaps one of her most unique experiences was working for United States Senator Tom Udall from 2009 – 2012 as his lead on transportation policy, drafting language for the Federal Aviation Administration reauthorization bill and the development and passage of the MAP-21 surface transportation authorization bill. Swallow quickly recognized the impact of effectively communicating to elected officials and other leaders the importance of the nation's infrastructure for our overall health, economy and quality of life.

Add to Swallow's educational and work background her extended involvement in ASCE, and she is uniquely qualified to lead the premier national organization for civil engineers. Over a 20-year period, Swallow has grown from leading ASCE's Younger Member Forum, to serving as its Southern Nevada Branch President, Nevada Section President, Region Governor, Congressional Fellow, and Region Director. Along the way she's met mentors and advisors and learned not be afraid of change and follow her passion.

One small but meaningful thing she's passionate about: the hashtag "#ASCEmademe." While occasionally used tongue-in-cheek by tired engineering students burning the midnight oil, for Swallow and others it is a proclamation about the important role the organization and other engineers have and continue to play in their career and lives.

You can follow Kristina on Twitter @ASCEKristina.

Association presidential elections for ASCE members will be online, May 1 through June 1, 2016.

Recently Published Books by Faculty

THE FINITE ELEMENT METHOD:

BASIC CONCEPTS AND APPLICATIONS, 3RD EDITION (DUE OUT 2016)

Darrell W. Pepper / Professor, Mechanical Engineering (co-authored with J. C. Heinrich)

Published by Taylor and Francis

COMPILER WRITING MADE EASY, JANUARY 2016

Jan Pedersen, Associate Professor in Computer Science

DIGITAL DESIGN AND COMPUTER ARCHITECTURE:

ARM® EDITION, MAY 2015

Sarah Harris, Associate Professor, Electrical and Computer Engineering

(co-authored with David Money Harris, no relation)

Published by Morgan Kaufmann

learn more online: asce.org / #ascemademe

UNLV Engineering Doctoral Student Receives Top Regents' Award

ERICA MARTI CONTINUES HER ACADEMIC SUCCESS AND RECOGNITION

When Erica Marti came to Las Vegas, it wasn't originally to be a student herself but to teach others. Through the Teach for America program, she taught chemistry to Clark High School students for four years.

However, she always knew that she wanted to go back to school. With an interest in water, and water treatment and reuse, she was in an excellent area to do just that.

Currently working on her Ph.D. in civil and environmental engineering, this latest recognition—receiving the 2016 Regents' Graduate Scholar Award—is just one in a long list of accomplishments for this researcher and scholar.

"We are so proud of Erica's accomplishments and the prestige she has brought to our college. We are thrilled to have one of our students learn from the world's most compelling scholars and scientists."

DEAN RAMA VENKAT
HOWARD R. HUGHES COLLEGE
OF ENGINEERING



In 2014, Marti was among 25 graduate students across the county selected to conduct research in Australia as part of the East Asia and Pacific Summer Institute (EAPSI). For eight weeks she conducted research at Curtin University in Perth, Australia, involving potable water reuse and an emerging disinfection byproduct. Her work at UNLV has centered around wastewater treatment with an emphasis on chemicals used to disinfect drinking water. Such treatments are often used to kill pathogens in water but can create byproducts that are harmful to humans. Marti is investigating methods for preventing the formation of these harmful byproducts as well as ways to safely remove them.

She is also the recipient of a \$25,000 UNLV Presidential Research Scholarship, the most prestigious award given to UNLV graduate students, and the Dave Caldwell Scholarship given by the American Water Works Association. In addition she has been working as an intern at the Southern Nevada Water Authority since 2011.

But perhaps her most distinguished accomplishment was being selected to join the U.S. delegation—after a competitive national and international selection process—and attend the 2015 Interdisciplinary Lindau Nobel Laureate meeting in Lindau, Germany.

Since 1951, Nobel laureates have convened each year in Lindau to have open and informal meetings with students and young researchers. During the week-long event, she engaged with some of the world's greatest minds in medicine, physics, and chemistry for 88 countries.

In addition to the standard program at the meeting, Marti was selected to participate in a master class, "A 21st Century Career in Research," with Brian Schmidt, a physicist who received the Nobel Prize in 2011 for findings related to the accelerating expansion of the universe.

"It was a real honor to attend and meet scientists from all over the world," Marti says. "The Nobel laureates were friendly and generous with their time. They shared their inspiring stories about achieving groundbreaking discoveries despite failures along the way, which is a testament to persistence in research and a vital lesson for all young scientists to learn."



2016 Senior Design Spurs Innovation and Entrepreneurship

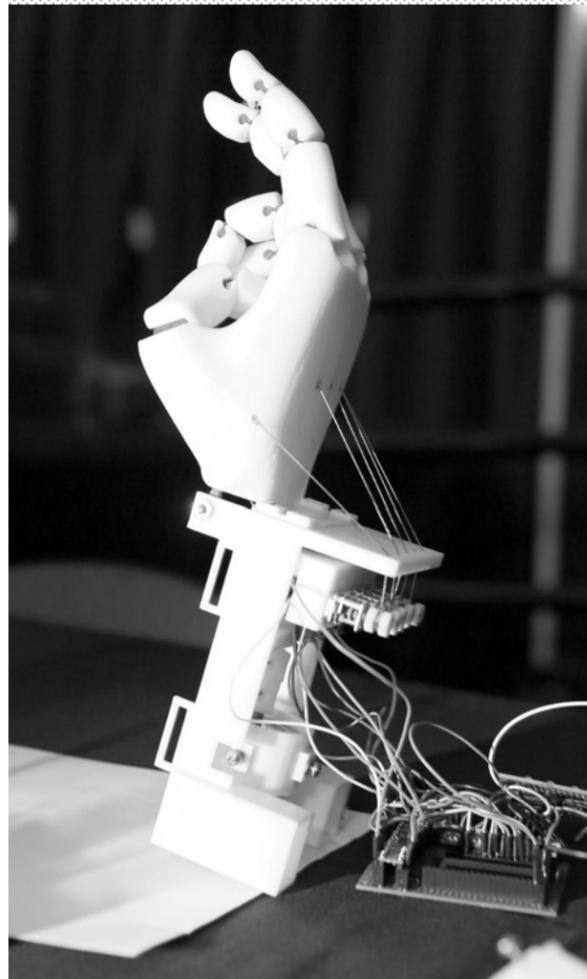
\$3,000,000 GIFT PERMANENTLY FUNDS BI-ANNUAL COMPETITION

Senior Design, the capstone experience for every UNLV engineering student, was created to stimulate engineering innovation and entrepreneurship. Each student in their senior year chooses, plans, designs and prototypes a product. Working in teams, the senior design project encourages students to use everything they've learned in their academic program to create a practical, real-world solution to an engineering challenge. The required teamwork also helps students build good communication, presentation, budgeting, and business writing skills.

Beginning in 2002, College of Engineering supporters Fred and Harriet Cox generously provided for monetary awards to be given to the top projects in the senior design competition. In 2015 the \$3 million Fred and Harriet Cox Endowed Senior Design Fund was established to permanently fund the bi-annual competition and awards banquet, and give students access to the materials and supplies needed to complete their design prototypes.

UNLV's Senior Design is judged by local industry representatives and involves students across engineering disciplines. With thousands of dollars in prize money on the line, the inventions have to be created with marketability in mind. Senior Design teams are offered the opportunity to partner with MBA students from UNLV's Lee Business School to create a business plan as part of their MBA curriculum. This collaboration has resulted in UNLV teams winning multiple Nevada state business plan competitions. In addition, the competition has sparked ideas for successful businesses for students upon degree completion and resulted in two patents in one year.

Over 30 teams are competing in the Spring 2016 Fred and Harriet Cox Senior Design Competition. Projects include: an automobile safety sensor that would sense the presence of a live subject and alert the driver if a child or pet had been left in the car; a commercially available drone platform capable of transitioning between aerial and underwater travel while retaining the ability to take off again after reemergence from underwater travel; and an economical helmet that gives immediate feedback on the magnitude of a head impact and provides the wearer to set their own thresholds for notification.



Fast Facts

UNLV & HOWARD R. HUGHES COLLEGE OF ENGINEERING

3006

FUNDED PROPOSALS
OVER THE PAST THREE YEARS

15
3

PATENTS
IN 3 YEARS

LICENSES
IN 3 YEARS

32

DIFFERENT DEGREES AVAILABLE
IN THE COLLEGE OF ENGINEERING



BIOMEDICAL



ELECTRICAL
& COMPUTER



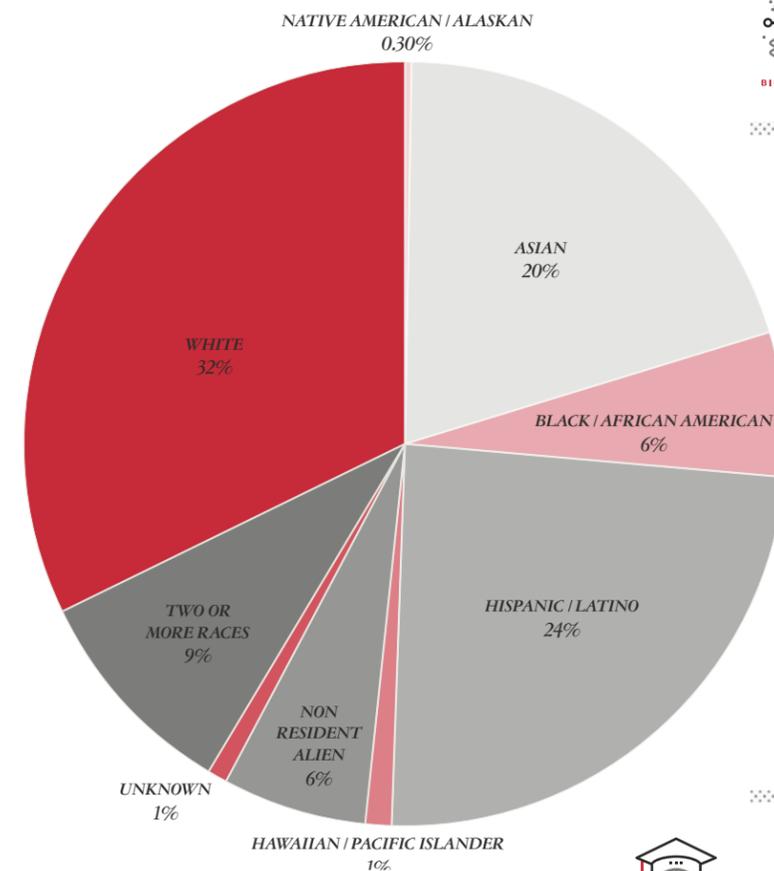
COMPUTER
SCIENCE



CIVIL



MECHANICAL
& NUCLEAR



2nd

MOST DIVERSE CAMPUS IN THE NATION

U.S. News & World Report, 2014/2015 academic year

5 CONSECUTIVE YEARS
RANKED IN TOP 10
CAMPUSES FOR
ETHNIC DIVERSITY

55% INCREASE IN
FEMALE ENGINEERING
GRADUATE STUDENTS
IN THREE YEARS

2,500+

2,300+ UNDERGRADUATE STUDENTS
240 GRADUATE STUDENTS

99%

INCREASE IN GRANT EXPENDITURES
OVER THE PAST THREE YEARS

Educate, Engage, Inspire, Innovate    **UNLVENGINEERING**

“This is an exciting example of how public-private partnerships can benefit both the commercial and academic communities. Our faculty are performing high-caliber research and are enthusiastic about collaborating with a leader in the electrical vehicle manufacturing industry.”

LEN JESSUP
UNLV PRESIDENT



UNLV President Len Jessup, left, and Tesla Motors Vice President for Business Development Diarmuid O'Connell sign a research partnership agreement witnessed by Nevada Gov. Brian Sandoval in the UNLV Science and Engineering Building

The five-year, million dollar agreement includes two projects led by UNLV engineers and scientists to enhance battery manufacturing processes, including water recycling and treatment