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azengineering



College of Engineering/Pete Brown

Water Over the Bridge—SHPE team members, from left, Lucio Cota, Jose Valdez, Dana Cordova (top) and Karen Rivas prepare for the E-Week parachute drop challenge, which required teams to drop a cup of water from the AME bridge with minimal spillage. Less spillage earned more points.

Student Spirit Shines at E-Week

Engineering students hit the UA campus and the Tucson community during Engineers Week with competitive events to raise food, mood and awareness.

E-Week 2012, a week of competitive events run by various clubs, organizations and societies under the auspices of the Engineering Student Council, took place Feb. 16–25. The goal was to promote engineering careers among UA students and the wider community while having some fun and taking part in community fundraising and outreach.



Engineering club members volunteered more than 60 hours at the Raytheon-sponsored Math-Science-Technology Funfest, and

donated about 2,500 pounds of food to Casa Maria, a charity that helps feed Tucson's hungry. The Society of Hispanic Professional Engineers led the way, coming first in points scored from the various events, and by being voted outstanding organization of the year. Tau Beta Pi came second, Theta Tau third.

The Engineers Without Borders Bolivia water project won community project of the year, and the UA Rube Goldberg Club won best club project of the year for its machine, Wilma Wildcat and the Restless Restroom.

Building a Better College

Swelling intellectual capital plus bricks and mortar investment equal exciting times ahead

By the time you read this we will have selected an architect for the new Engineering Innovation Building, and Design Day 2012 will have been a great success.

The Engineering Innovation Building will anchor a complex of engineering buildings north of Speedway Boulevard and will create a new sense of identity for the College. We are designing research and development

labs that will enable the College to move forward on key engineering challenges, including biomedical systems and devices, computational and experimental materials engineering, and defense systems. We are also planning a workshop for student clubs and design projects, and the University is considering adding classrooms. It will be a tremendous project for the College over the next few years, so please stay tuned for updates!

New facilities are exciting, but strong faculty and students are essential. Paul Blowers of the chemical and environmental engineering department was named a University Distinguished Professor, and Jesse Little and Ricardo Sanfelice, assistant professors in aerospace and mechanical engineering, both received research awards under the Young Investigator Program of the Air Force Office of Scientific Research.

Guzin Bayraksan of the systems and industrial engineering department won the UA's 2012 Five Star Teaching Award and an NSF Faculty Early Career Award, and Achintya Haldar of civil engineering and engineering mechanics was made a distinguished member of the American Society of Civil Engineers.

Jennifer Ramin, a sophomore in the chemical and environmental engineering

department, was awarded a Goldwater Scholarship, and civil engineering senior Dylan Moriarty won the UA Undergraduate Centennial Achievement Award. This year was outstanding for our team.

I want to close with our strongest measure – student retention. Gone are the days of 25 percent engineering graduation rates and 65 percent first-year retention. Due largely to the hard work of our students, faculty, staff and alumni, close to 50 percent of our freshmen graduate in engineering, with an additional 15–20 percent graduating elsewhere at the UA. Last year we retained more than 87 percent of our freshman students. We provide the talent that is needed to build successful companies that will drive our national economy. I could not be more proud of our efforts in this area and we will continue improving by recruiting outstanding students and bringing proven strategies in teaching, learning and mentoring to our engineering experience.

Thank you for your continued support and I hope you have a great summer!



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Many stories in this print edition have been edited for length, and it is not feasible to include related multimedia material such as video and audio files, and hyperlinks to related websites.

 To get the full story, look for the story number by the **Ae** icon embedded in the article, then go to the online edition and enter the story number in the search box.



Civil engineering students Curtis Miles (right) and Casey Quackenbush work on a sun shade at World Care during Cats in the Community.

College of Engineering/CEEM

Civil Engineering Volunteers Involved in Shady Business

Civil engineering students, staff and faculty recently completed construction of a large shade structure for the nonprofit organization World Care, based in Tucson, Ariz..

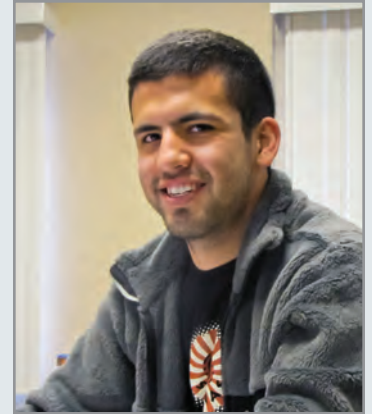
The seven-person civil engineering and engineering mechanics departmental team was taking part in Cats in the Community, the UA's annual volunteer event that each year helps refurbish a local nonprofit organization. About 400 volunteers from across the UA helped paint, build, recycle and much more in what has become known as the "UA extreme nonprofit makeover."

The recipient organization, World Care Civilian Emergency Relief Center, provides humanitarian aid in the areas of education, health, emergency relief, and environment to Southern Arizona and international communities that lack the resources necessary for daily life.

The engineering team built the shade to provide a cool area for loading and unloading donated materials. World Care's philosophy of recycling and reuse means that a vast variety of reusable items are brought to their facilities. These items are then fixed, cleaned and redistributed into the community.

With aesthetic input from the UA visual communications department, the shade was designed and built entirely by civil engineering students Curtis Miles, Luis Madrid, Casey Quackenbush, Chris Leon and Kelsey Palmer, aided by department staff member Therese Lane and faculty member Robert Fleischman. Funding for the project was provided by the College and Dean Jeff Goldberg.

Commencement Honor for UA Engineering Undergraduate



Dylan Moriarty

UA Engineering senior Dylan Moriarty was honored at the 2011 winter commencement with the Undergraduate Centennial Achievement Award.

This award is given annually by Student Affairs at the December commencement to one male and one female

graduating senior, and recognizes students who have shown integrity, overcome great challenges to acquire a university education, and who have made contributions to their family and community.

Moriarty grew up on the Navajo Nation with his mother, to whom he attributes most of his success. He attended St. Michael's Indian School and was later awarded the Gates Millennium Scholarship, which allowed him to attend the University of Arizona.

Moriarty said the award means a great deal to him, his family, and his community. "I didn't grow up in a privileged household," he said. "But my mother, who is a teacher on the Navajo Nation, taught me from a young age that I shouldn't let anything stand in my way when pursuing an education."

Since his freshman year, Moriarty has worked for the Office of Early Academic Outreach, whose mission is to increase the number of ethnic minority, low-income and first-generation college-bound students. As part of the outreach program, he was exposed to the challenges faced by Native American and underrepresented students and wanted to make a difference.

"Native Americans have the lowest retention rates in higher education and it is always celebrated when students receive such academic awards," Moriarty said. "I hope receiving this award can show other underrepresented students that it is possible to succeed even if they are from underprivileged backgrounds."

During Moriarty's junior year at the UA he was accepted into the Ronald E. McNair Achievement program, which strives to prepare underrepresented students for doctoral programs through undergraduate research.



Community, the UA's annual volunteer event that each year helps refurbish a local nonprofit organization. About 400 volunteers from across the UA helped paint, build, recycle and much more in what has become known as the "UA extreme nonprofit makeover."



graduating senior, and recognizes students who have shown integrity, overcome great challenges to acquire a university education, and who have made contributions to their family and community.

ECE Grad Wins IEEE Doctoral Research Award

The Antennas and Propagation Society of the Institute of Electrical and Electronics Engineers awarded its 2011–2012 doctoral research award to Min Liang, a PhD student in the department of electrical and computer engineering.



Min Liang

The annual award is only given to a few students worldwide and is based on their current research achievements

and potential to become future leaders in electromagnetics research.

“I’m so honored to receive this award,” Liang said. “It is not only a recognition of my recent work, but also an encouragement for me to continue to do my best in the future.” The award includes a \$2,500 fellowship.

Hao Xin, an associate professor in the electrical and computer engineering department who has been Liang’s PhD supervisor since August 2010, said Liang showed impressive research capability and a superb work ethic.

“He is one of the rare students that work in the lab seven days a week with endless enthusiasm,” Xin said. “This recognition exemplifies the high-quality research performed at the University of Arizona,” said Xin, who added that Liang’s work in the area of terahertz technology will “contribute significantly to the next frontier for wireless sensing and communication.”



College of Engineering/Steve Delgado

Goal Oriented—UA wide receiver and aerospace engineering senior David Roberts.

Arizona Wide Receiver Balances Football and Aerospace Engineering

An aspect of college sports unknown to many fans, but all too familiar to student athletes, is the age-old trial of balancing academics with athletics.

Keeping class schedules straight, submitting assignments on time, and maintaining the minimum grade point average established by the National Collegiate Athletic Association can be a challenge for any industrious student. But what if you’re studying something as challenging as aerospace engineering?

Aerospace engineering senior David Roberts knows this balance. He’s a wide receiver for the University of Arizona Wildcats Football team who has been playing in the starting rotation as an inside wide receiver.

Roberts earned UA Student Athlete of the Month honors in 2009 and was named offensive player of the week in

2010. He finished third in receiving for the team in 2010 with 44 receptions for 487 yards and two scores.

“The biggest challenge during my engineering experience is the lack of time,” Roberts said. “There were definitely many a long night during my college career... but I have to say that the professors helped me out by allowing me to obtain alternate office hours,” he said.

Roberts hails from Rialto, Calif., and says that he always held a fascination for space and aviation while growing up. “I’m also good at math, so engineering was an easy choice for me. It was one of the reasons that I chose UA during recruiting.”

Roberts says he’s also big history and politics buff. He’d love to play football for the NFL, but will be prepared for an engineering career.

Engineering Students Log Biodiversity During Saguaro National Park BioBlitz

Engineering students joined thousands of other volunteers in the 2011 BioBlitz at Saguaro National Park.

The National Park Service estimates that 2,200 students representing 60 schools took part in the mammoth field trip, along with 1,500 weekend wildlife buffs and more than 100 wildlife experts.

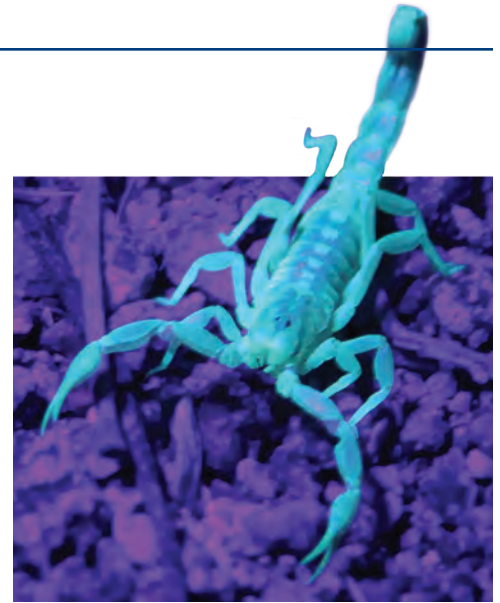
The 11-person UA Engineering team consisted of members, friends and family of the UA Association of Environmental and Engineering Geologists, or UAAEG, which is based in the department of mining and geological engineering.

The National Park Service, National Geographic, Arizona-Sonora Desert Museum and the Friends of Saguaro National Park organized the BioBlitz to

gain a greater understanding of Sonoran Desert biodiversity, which they achieved by recording as many park species as possible during a 24-hour period.

“Part of the mission of our student group is to expose engineering students to the biodiversity and other environmental issues related to the lands we end up excavating and constructing on,” said UAAEG President Johnny Lyons-Baral, a master’s student in geological engineering. “The BioBlitz was a fun and exciting way to see just how much is out there and to meet the people who are fighting to protect it.”

The UAAEG team took part in the insect count at 10 p.m. on a Friday night. “We had to drive way out to the darker west side of the Tucson Mountains and up



College of Engineering/UAAEG

Sting in the Tail—A scorpion found by the UAAEG team glows under blacklight at the Saguaro National Park BioBlitz.

a long, sinuous dirt road,” said Lyons-Baral. “We eventually noticed some lights out in the vast desert wilderness, and arrived to find two white sheets set up covered in insects.” One of the white sheets at the main count site, explained Lyons-Baral, was illuminated by regular light and the other by blacklight, which causes some insects to glow in the dark.

Students Win Best Research Paper at Transportation Meet

Two UA Engineering students won an award for best research paper after presenting their ideas at a meeting of transportation professionals.

Measurement of Travel Times Utilizing Bluetooth Detection, by systems engineering students Chris Utter

and Paul Hoffer, was awarded the honor by officials from ITS Arizona, the state chapter of the national Intelligent Transportation Society of America. ITS Arizona is a nonprofit organization consisting of transportation professionals dedicated to improving transportation efficiency and safety using advanced technologies.

“Getting to present our work was a great experience for both of us,” said co-author Utter. “To see that what we



College of Engineering/SIE

Have Bluetooth, Will Travel—From left: Larry Head, Paul Hoffer and Chris Utter.

have done is valued in the real world, and draws the interest of professionals in this field, is very rewarding.”

ITS Arizona’s 18th Annual Conference Program, dubbed Streamlining ITS – How to Make the Most Use of What We Have, featured noteworthy speakers such as James Pol of the U.S. Department of Transportation’s

Research & Innovative Technology Administration, and UA’s Larry Head, of the systems and industrial engineering department. This year’s meeting was held in Mesa, Ariz.

Utter attributes some of the paper’s success to assistance from project advisors Head and Mark Hickman, director of the UA’s Advanced Traffic and Logistics Algorithms and Systems research center, known as ATLAS. “Paul and I are both continuing work on this project and are very excited to see what it can become,” Utter said.

Utter and Hoffer’s project explores methods of measuring travel times of vehicles on major arterial roadways using a Bluetooth-based detection system. They have developed an application that can collect, sort and present Bluetooth travel-time data to professionals and the general public.

Double Win for Guzin Bayraksan

Assistant Professor Guzin Bayraksan of the UA department of systems and industrial engineering won the 2012 Five Star Teaching Award.

Bayraksan was teaching a class March 30 in the Aerospace and Mechanical Engineering building, when, to her great surprise, in burst a group of people bearing flowers and cookies.

Making the award were Patricia MacCorquodale, dean of the Honors College, Jeff Goldberg, dean of the College of Engineering, and Lizzie Greene, head of the award's student selection committee and a sophomore in systems and industrial engineering.

In keeping with tradition, Five Star Teaching Award recipients are kept completely in the dark about their award, and only find out when the Honors College springs it on them.

The Honors College has sponsored the Five Star Faculty Award since 1983. The award is unique at UA in that it is the only universitywide teaching award for which nominees and winners are selected exclusively by students. The award recognizes excellence in undergraduate teaching and comes with a \$1,000 prize.

Bayraksan managed to stay composed as MacCorquodale gave a brief speech to the cheering class and Greene presented flowers. "I am ecstatic. I'm very pleasantly surprised and very honored," Bayraksan said. "It's an honor just to be nominated, but to win it is unbelievable."

Bayraksan's Five Star Faculty Award comes hot on the heels of another award that pays tribute to her teaching, and research, excellence. She recently received a grant of \$400,000 from



College of Engineering/Pete Brown

Twin Win—Guzin Bayraksan, assistant professor in the UA department of systems and industrial engineering and winner of both an NSF Career Award and the 2012 Five Star Teaching Award.

the National Science Foundation to research sustainability of water resources in the Southwest.

Bayraksan was awarded the 5-year grant under the NSF's prestigious Faculty Early Career Development Program. The program supports junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education, and the integration of education and research. This award also recognizes junior faculty with the highest potential to become future leaders in their research areas.

Bayraksan, who is also a member of the UA graduate interdisciplinary program in applied mathematics research, will focus her research on developing methods and models for managing the water resources and infrastructures essential to the 25–30 million people who live in the southwestern United States. Under this NSF grant, her research will tackle two specific problems: allocation of water from the Lower Colorado River Basin, and the design and operation of a regional infrastructure for water reuse.

Paul Blowers Named UA Distinguished Professor

Paul Blowers of the UA department of chemical and environmental engineering has been named one of two 2012 University Distinguished Professors.

The award will be presented to Blowers by the Arizona Board of Regents in December.

This makes it four in row for the UA College of Engineering.

Eduardo Sáez, also of the department of chemical and environmental



Paul Blowers

engineering, was a 2011 University Distinguished Professor. Mary Poulton, head of mining and geological engineering, was honored in 2010 and Jerzy Rozenblit of the department of electrical and computer engineering was inducted in 2009. "Amazing" is how Blowers described receiving UA's highest teaching honor in recognition of doing something he loves.

"To be surrounded by colleagues who engage so many of our students in undergraduate research, to work with peers who challenge and support students in the classroom, and to have the support from the administration," Blowers said. "All lead to me enjoying my work every day."

"I want to congratulate Dr. Paul Blowers on being named University Distinguished Professor," said Engineering Dean Jeff Goldberg. "Paul is a master teacher and all around good guy, and our students are lucky to have him as an advisor, mentor and teacher."

Larry Head Named Leading Edge Researcher

Professor Larry Head, systems and industrial engineering department head, was named a leading edge researcher at UA Innovation Day.

Head's research in traffic and transportation systems engineering is

Ae FULL STORY Number 422 currently focused on priority-based traffic signals that can reduce fatalities among fire and rescue first responders.

Nearly 13 percent of the firefighters and police officers who die in the line of duty are killed in vehicle-related incidents, and fire trucks are involved in ten times as many collisions as other heavy trucks.

Head is working with the Maricopa County Department of Transportation in an attempt to reduce these deaths by creating a system that will make

intersections safer for emergency responders and the general public.

"I'm honored to be recognized as a Leading Edge Researcher," Head said. "Usually transportation is not considered to be a cutting edge area for research, but our work should be able to help save lives of our first responders and make traffic systems safer and more efficient."

A prototype system has been installed at six intersections in Anthem, Ariz., and a demonstration and press event was held in April 2012. Head says the system being installed in Maricopa County could be one of the first steps in deploying a smart-vehicle system throughout the country. "I am also grateful for our partners at Maricopa County, ADOT, and City of Tucson."



College of Engineering/Pete Brown

Ahead of the Curve—Larry Head's traffic systems are saving first-responder lives.

College Appoints First Nine Education Fellows

Nine UA College of Engineering faculty members with exemplary teaching records were recently named the inaugural Arizona Engineering Education Fellows.

The education fellows were only eligible for this new fellowship program if their departmental heads and committees had regularly evaluated them as "exceeds expectations" or "truly outstanding" in their teaching.

"The objective of creating this new fellows program is to develop a faculty team that can improve the undergraduate experience," said College of Engineering Dean Jeff Goldberg. "One way to do that is to recognize the best instructors."

Each year of fellowship includes a \$5,000 stipend, and the College of



College of Engineering/Matt Brailey

One of Nine—ECE professor Kathie Melde is an inaugural education fellow.

Engineering will provide a pool of at least \$5,000 annually for the fellows to spend on teaching materials and training to improve education of lower-division students.

Three-Year Fellows

- **Cho Lik Chan**, professor, aerospace and mechanical engineering
- **Armin Sorooshian**, assistant professor, chemical and environmental engineering
- **Ted Trouard**, associate professor, biomedical engineering

Two-Year Fellows

- **Rob Erdmann**, assistant professor, materials science and engineering
- **Achintya Haldar**, professor, civil engineering and engineering mechanics
- **Kathie Melde**, professor, electrical and computer engineering

One-Year Fellows

- **Paul Blowers**, associate professor, chemical and environmental engineering
- **Rob Fleischman**, associate professor, civil engineering and engineering mechanics
- **Mike Marcellin**, Regents Professor, electrical and computer engineering

Three UA Engineers Made IEEE Fellows

Three UA engineers have been made fellows of the IEEE, the world's largest technical professional association, with more than 400,000 members in 160 countries.

The IEEE board of directors only confers fellowships upon engineers with an extraordinary record of accomplishments.

The total number of fellows selected in any year does not exceed one-tenth of one percent of the total voting membership.



Bane Vasić

The three fellows are Kathie Melde, professor of electrical and computer engineering; Bane Vasić, professor

of electrical engineering and mathematics; and Scott Tyo, professor of optical sciences and electrical and computer engineering.

IEEE cited Melde for contributions to tunable antennas and their integration in electrical packaging. She has spent her career on small antennas, establishing numerous patents, and her work has been used in many smart phone technologies.

Vasić was cited for contributions to coding theory and its applications in data storage systems and optical communications. In particular, his error-correction research has played a vital role in ensuring that digital data keeps its integrity within computer communication and storage systems.

Tyo was cited for his antenna research, mostly for military applications.

SPIE Confers Lifetime Achievement Award on Civil Engineering's Tribikram Kundu

Tribikram Kundu, a professor in the UA department of civil engineering and engineering mechanics, recently received a lifetime achievement award from the Society of Optical Engineering.

Kundu received his award March 12 at the 19th annual SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring conference in San Diego. The Society of Optical Engineering used to be called the Society of Photo-Instrumentation Engineering, and is still known as SPIE.

The conference features the latest research in areas such as smart sensors, biologically inspired robotic systems, electroactive polymers, civil infrastructures, and nondestructive evaluation, or NDE. This research addresses challenges in a broad range of fields from healthcare to homeland security.



Photo courtesy of SPIE

Once in a Lifetime—Tribikram Kundu, left, at a SPIE conference in San Diego, receives his prize from SPIE symposium co-chairs Norbert Meyendorf, right, and Victor Giurgiutiu.

Kundu's NDE Life Time Achievement Award reflects the quality and quantity of his research work spanning a 30-year career, during which he has made significant and original contributions to research in nondestructive testing and structural health monitoring of civil and aerospace engineering structures using ultrasonic and electromagnetic techniques.

"I consider this award from the SPIE as one of the two most prestigious awards of my career," Kundu said. He said the other was the Humboldt Research Prize awarded by the Alexander von Humboldt Foundation of Germany.

ECE Gets New Head

Tamal Bose is the new head of the UA department of electrical and computer engineering.

Bose will join the UA College of Engineering in July 2012 from Virginia

Tech, where he is a professor in the Bradley Department of Electrical and Computer Engineering.

At Virginia Tech, he was director of the National Science Foundation's Wireless Internet Center for Advanced Technology, and associate director of Wireless@VT, a universitywide wireless research group.



Tamal Bose

Bose's teaching interests are communications, digital signal processing, stochastic processes, and image processing. His research

interests include adaptive filtering, spectrum sensing, cognitive radios, and channel equalization.

"I am honored and excited to become the next department head of electrical and computer engineering," Bose said. "The ECE department at the University of Arizona is top notch with eminent faculty and bright students."

Wolfgang Fink Launches Robotic Planetary Lake Lander

Wolfgang Fink has developed an autonomous robotic lake lander that could be used to explore this planet and others.

Fink unveiled the lake lander, named Tucson Explorer II, or TEX II, in a paper titled Robotic Lake Lander Test Bed for Autonomous Surface and Subsurface Exploration of Titan Lakes, which he presented March 8 at an aerospace conference organized by the Institute of Electrical and Electronics Engineers in Big Sky, Mont.

Fink presented TEX II as an autonomous exploration vehicle that potentially could be used to explore the lakes of liquid hydrocarbon known to exist on Saturn's largest moon, Titan.

TEX II is the second vehicle designed by Fink as part of his NASA-award-winning concept of future planetary exploration, which he calls "tier-scalable reconnaissance." The first vehicle was a land-based planetary rover.

Fink envisions future planetary research being conducted by a hierarchy of intelligent, autonomous robots that could include satellites, airships or blimps, and a fleet of rovers and lake landers.

Fink's aim is to endow robots with curiosity. He wants them to *want* to investigate certain situations and environments, and then learn from those investigations so they can make increasingly smarter choices about where to go and what to investigate next.

A mission to Titan is many years away, but Fink made it clear that TEX II is close to being ready for more earthly

duties. Like his planetary rovers, in its current configuration TEX II can be controlled from anywhere in the world via an Internet connection, and will soon be fully autonomous.

"TEX II is ready to deploy on missions related to defense and security, such as harbor surveillance and cleanup operations of littoral munitions dumps and mines," Fink said. It is also ideal for search and rescue operations in oceans, lakes, and hazardous environments, as well as for environmental research projects, he added.



College of Engineering/Wolfgang Fink

Flagship Operation—The lake lander TEX II is the latest component of Wolfgang Fink's autonomous planetary exploration fleet.

UA and Good Housekeeping Test Water Filters



Shane Snyder

The Good Housekeeping Research Institute recently partnered with UA to perform extensive testing on everyday filters found in water pitchers

and refrigerators to see if the consumer products are able to remove chemicals considered an emerging concern for public safety. This is the first such removal analysis performed on these products, according to the magazine. The study looked at the removal

efficiency of 15 chemicals of emerging concern, also known as CECs, by five commercially available refrigerator and pour-through pitcher devices.

The project was completed by the Snyder Research Group and the Arizona Laboratory for Emerging Contaminants at the University of Arizona.

The group is headed by Shane Snyder, a professor in the UA department of chemical and environmental engineering and a leading expert on the detection of emerging water contaminants.

Snyder operates two labs, one on the UA main campus and the other at the UA's BIO5 Institute. Snyder's

research focus is on the fate, transport and treatment of known emerging contaminants, such as endocrine-disrupting compounds, perchlorate, nanoparticles and pharmaceuticals.

To test the drinking water filters, municipal water was spiked with 15 contaminants of concern that have been discovered in drinking water.

Then, to simulate the weeks or months of use that pitcher and fridge filters would get in a real home, researchers passed gallons of contaminated water through each device until it reached the manufacturer's estimated filter lifetime, then recorded the results.





Ricardo Sanfelice



Jesse Little

Two AME Faculty Awarded Air Force Young Investigator Research Grants

Jesse Little and Ricardo Sanfelice, assistant professors in the UA aerospace and mechanical engineering department, both recently received a research award under the Young Investigator Program of the Air Force Office of Scientific Research.



recently received a research award under the Young Investigator Program of the Air Force Office of Scientific Research.

The AFOSR awarded approximately \$18 million in grants to 48 researchers who submitted winning research proposals through the Air Force's Young Investigator Research Program. Little and Sanfelice were each awarded approximately

\$360,000 over a 3-year period in response to the research proposals they submitted.

Sanfelice will research autonomous systems that can predict how adversaries might act or how situations might change, and how those systems can be designed to make the right control decisions during uncertain and rapidly altering circumstances. "These systems could support Air Force missions conducted under dangerous and volatile conditions," Sanfelice said.

Aerospace researchers already know that localized airflow disturbances, created by small mechanical actuators, can affect flow around the entire aircraft, which has led to some radical new design concepts. But this effect tends not to work at high speed, and research remains stuck in the lab.

Little proposes to use lasers and plasmas to investigate the physics underlying how performance and efficiency can be improved by creating localized hot spots on aircraft surfaces.

Heating seems to have the same effect. "Rapid localized heating has shown potential for high-speed flow control but the physics behind this is not well understood," Little said.

"This could help revolutionize aerospace vehicles by improving both performance and efficiency through weight reduction and elimination of moving parts associated with traditional control surfaces," Little said.

Chiu Gets \$1.2M to Research Effects of Human Behavior on Traffic Patterns

The Federal Highway Administration is funding a \$1.2 million traffic analysis research program led by civil engineering associate professor Yi-Chang Chiu.

UA traffic engineer Yi-Chang Chiu has embarked on a three-year traffic modeling research project to replace the 1950s model still used to forecast current transportation needs.

Chiu's new model incorporates individual human behavior traits into



traffic modeling on a day-by-day basis, which will allow him and his team to forecast the evolution of behavior with a transportation system over a long period of time.

The project is known as VASTO, which comes from its full title, Evolutionary Agent System for Transportation Outlook. "The deficiency in past

practices basically lies in the inability to describe human behavior in a realistic manner," said Chiu, who is also director of the DynusT Lab at the UA College of Engineering. "In our past predictions, we treated everybody pretty much the same." Previous models predicted population movement more on a macro level, Chiu said. "We simulate individuals."

The human behavior element will be derived from census data and metropolitan planning organization travel surveys. This will incorporate the range of human whims with driving decisions, such as stopping at the store or suddenly deciding to go straight if too many cars are in the left-turn lane.



Yi-Chang Chiu

VASTO simulates habitual patterns with real-time reactions.

This proposed VASTO modeling system marks the first time that individual

human behavior is at the heart of traffic modeling rather than relying on past traffic trends and extrapolating them.

Chiu's ambition for VASTO is to give transportation planners a robust behavior-based tool to find alternative ways to provide adequate transportation without necessarily just adding more lanes or building more roads.

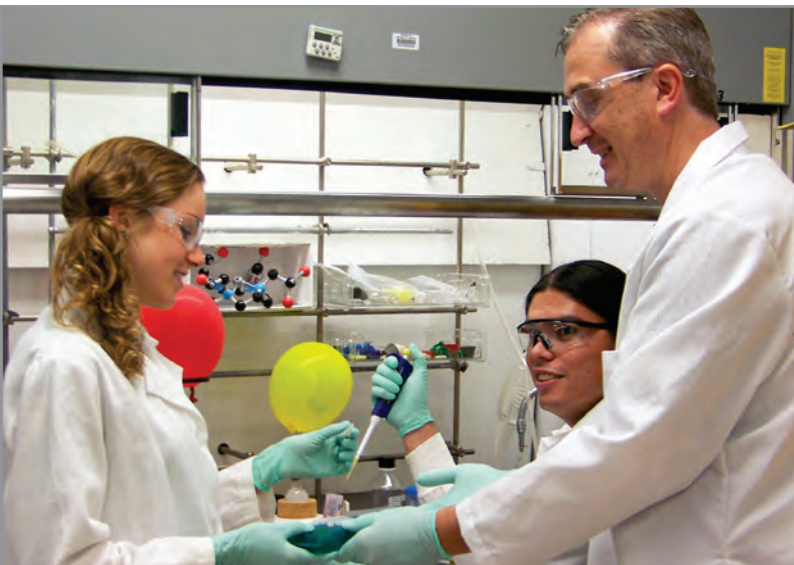


Photo courtesy of Marty Pagel

Soda, So Good—Marty Pagel, right, with chemical engineering student Michelle Benson, left, and Cancer Center student Tony Ward.

Biomedical Engineers Evaluate Baking Soda as Cancer Therapy

A \$2 million grant from the National Institutes of Health will enable University of Arizona biomedical engineering researchers to improve the way doctors measure the effectiveness of drinking baking soda to fight breast cancer.

The grant will be used to refine a new magnetic resonance imaging method for measuring pH, or acid content, of a tumor that has been discovered in a patient but not yet treated. By measuring the acid content of the tumor, doctors can monitor the effectiveness of personalized treatments such as baking soda on both tumors and healthy tissue, and even predict the effectiveness of chemotherapies before the patient starts the medication.

Drinking baking soda has been proven to reduce or eliminate the spread of breast cancer to the lungs, brain and bone, but too much baking soda can also damage normal organs.

“This test is designed to lead to personalized medicine for cancer patients, by optimizing the therapy to each individual,” said Mark “Marty” Pagel, associate professor of biomedical engineering at the University of Arizona and lead researcher on the project.

Just as people feel the burn from lactic acid produced in their muscles during rigorous exercise, tumors also produce lactic acid when they are actively growing, Pagel said. This acid destroys surrounding tissue, which allows the tumor to grow, invade surrounding areas, and metastasize to other organs in the body. “The acid also provides resistance to common chemotherapies,” Pagel said.



College of Engineering/Pete Brown

Ground-Breaking Research—Pinnaduwa H. S. W. Kulatilake, professor of geological engineering, with an emphasis on rock mechanics and rock engineering, in the UA College of Engineering.

Geotechnical Engineer To Study Ground Failure

Pinnaduwa H. S. W. “Kumar” Kulatilake, professor of geological engineering in the UA College of Engineering, has been awarded \$1.25 million to conduct research that could provide safer working conditions for miners and construction workers.

The true extent of mining fatalities globally is hard to gauge, but some estimates suggest that as many as 12,000 miners die every year in mine accidents. The primary cause of these fatalities is ground failure.

Tunnel or cavern collapse and catastrophic failure of slopes, dams and foundations are examples of ground failure encountered in mining and civil engineering projects.

Part of the problem is that current methods of rock assessment are simply not up to the task of providing a detailed picture of what engineers are truly getting into when they start blasting and tunneling.

Kulatilake points out that it is not only miners who will benefit from being able to evaluate rock masses for potentially hazardous working conditions.

“This is not only for mining,” he said. “This work also relates to civil rock engineering projects such as tunnels, caverns, foundations, dams, and slopes.”

In terms of creating a new generation of experts in this area, he expects the research to lead to the completion of seven doctoral dissertations. “We need to have some young blood,” said Kulatilake. “It is time to create a new generation of mining professionals who are experts in ground control.”



FULL STORY
Number 429



FULL STORY
Number 394

A Decade of Design Day

Engineering Design Day was 10 years old this year, and seniors celebrated with a record number of innovative engineering designs and industry-sponsored prizes.

The tenth annual College of Engineering Design Day, held in the Bear Down Gymnasium on May 1, saw around 300 seniors present almost 60 projects in a competition for 22 prizes totaling nearly \$14,000.

“This was one of the most successful Senior Capstone Design cycles to date in terms of the number and variety of industry sponsors, the challenges their projects presented, and the quality of the designs and prototypes the students in the course produced,” said Ara Arabyan, coordinator of the Senior



Capstone Design Program and an associate professor in aerospace and mechanical engineering.

When the 71 industry judges finished their deliberations, the top prize, for best overall design, went to the Computational Optics design project, sponsored by Raytheon Missile Systems.

The team of systems, industrial, electrical and optical engineering students designed an experimental test bed to demonstrate how computational optics could outperform the inflexible opto-mechanical systems found in current aerospace sensor platforms.



Highly Focused—The Computational Optics team won the top prize at Engineering Design Day 2012. Team members are Josh Brent (team leader), Nan Ding, Lena Wolfe and Ara Arabyan.

The second place winner, sponsored by Tucson Embedded Systems, was SAMURAI, which derives from semi-autonomous mapping and urban rescue area inspection. The team built on designs from previous years to develop an autonomous unmanned ground vehicle loaded with sensors, for use in hazardous environments, that can map the interior of a building and transmit data back to the user through a command and control center, where a visualization of the building is created.

Although many projects at Design Day are experimental prototypes, some are just a few steps away from real-world deployment. “Some of the products produced by the students, such as the digital upgrade of a fuel flow indicator for Airtronics, and the portable survey tool for Raytheon Missile Systems, are ready to be used by their sponsors,” Arabyan said.



College of Engineering/Pete Brown

Green Machine—Agricultural and biosystems engineering senior Sarah Cook checks on tilapia under the hydroponic beds. The Portable Aquaponics team set out to combine aquaculture and hydroponics in a portable design that could be used as an educational exhibit to demonstrate efficient resource use with minimal waste and environmental impact.



College of Engineering/Pete Brown

... was awarded the best overall design prize at ... , from left to right, Saúl Corrales, Kate Green and Matt Barnum.

“This was one of the most successful Senior Capstone Design cycles to date”

Other projects, such as Computational Optics for Raytheon and Viewing Earth’s Curvature with a Weather Balloon for Lockheed Martin, produced results that exceeded the expectations of their sponsors, Arabyan added.

“As in past years, this cycle demonstrated that our engineering graduates are ready for the marketplace in terms of their training, creativity, and boundless energy,” Arabyan said. “It was also proof of the active participation of the industrial partners of the College of Engineering in the education and training of engineering students.”

Prize Winners

Best Overall Design, First Place • \$1000

Computational optics

Design team: Kate Green, Lena Wolfe, Nan Ding, Josh Brent, Matthew Barnum, Saúl Corrales

Project sponsor: Raytheon Missile Systems

Prize sponsor: BAE Systems

Best Overall Design, Second Place • \$750

SAMURAI: semi-autonomous mapping and urban rescue area inspection

Design team: Roger Anderson, Delbert Gallego, Sean Culbertson, Craig Cumblidge, Jarl Haggerty

Project sponsor: Tucson Embedded Systems

Prize sponsor: BAE Systems

Best Analog Design, First Place • \$1500

Electronic pH pool water tester

Design team: Ahmed Alani, Alex Mattioli, Ryan Caskey, Emanuel Solimaru, Trevor Hussein

Project sponsor: Texas Instruments

Prize sponsor: Texas Instruments

Best Analog Design, Second Place • \$500

Jockey “smart helmet” for horse racing

Design team: Stephen Nelson, W. A. Garret Weaver, Trevor West, Patrick Lull, Cedric Bosch, Louie Benitez

Project sponsor: Equisight LLC

Prize sponsor: Texas Instruments

Innovation in Engineering • \$1000

Intelligent webcrawler for identifying construction leads

Design team: Jesse Gunsch, Gregory Ksionda, Gregory Reid, Alberto Molina

Project sponsor: Sundt Construction Inc.

Prize sponsor: Ventana Medical Systems Inc.

Best Computer Modeling/Analysis • \$1000

High power and efficiency generator shaft conduction cooling

Design team: Daniel Hand, Kevin Witwer, Dana Sandoval, Gavin Stockus, Levi Tubb

Project sponsor: Honeywell Aerospace

Prize sponsor: Hydranalix

Best Use of Off-the-Shelf Components • \$750

Autopilot integration on micro air vehicles

Design team: Jared Hainsworth, Kyle Merry, Daniel Schucker, Chris Wozny

Project sponsor: Jonathan Sprinkle and Sergey Shkarayev

Prize sponsor: Edmund Optics

Best Use of Prototyping • \$750

Digital upgrade of a fuel flow indicator

Design team: Jared Evans, Alex Hale, Kira Travis, Kyle Sheets

Project sponsor: Airtronics Inc.

Prize sponsor: PADT

Best Engineering Analysis • \$750

ASME: human-powered vehicle

Design team: Giancarlo Guevara, Michael Lesnewski, Justin Monson, Charles King, Abdulla Al-Hail

Project sponsor: UA student chapter of ASME

Prize sponsor: Raytheon

Best Presentation • \$750

Remote listening device

Design team: Nick Neuenfeldt, Matt Hamel, Nick Melena, Adam Slagel, Collin Smith, Charles Mackin

Project sponsor: Lockheed Martin Corp.

Prize sponsor: Rincon Research Corp.

Best Design Documentation • \$750

Enhanced digital passenger control unit

Design team: Miguel Ruiz, Daigaro Cota, Corey Coolidge, Ronald Russell, Aaron Gibson, Jose Maytorena

Project sponsor: B/E Aerospace

Prize sponsor: Technical Documentation Consultants of Arizona

Voltaire Design Award • \$750

Robust shaft measurement technique

Design team: Jun Chai, Thomas Ireson, Adam Mullenbach, Eric Prewitt, Kai Yu

Project sponsor: Caterpillar Inc. Proving Grounds, Green Valley, Ariz.

Prize sponsor: Sargent Aerospace & Defense

Best Creative Solution • \$750

Development of very quick polymerase chain reaction (PCR) device

Design team: Ramon Muñoz, Franklin Garcia, Franklin Ventura

Project sponsor: UA Biosensors Lab, Jeong-Yeol Yoon’s Research Group

Prize sponsor: W.L. Gore & Associates

Best Physical Implementation of an Analytically Driven Design • \$500

AIAA: Fast Aerial Reconnaissance – Launch Vehicle (FAR-LV)

Design team: John Kidd, Kyle Pack, Scott Kendrick, William Roulo, Monem Al-Dhaif

Project sponsor: UA AIAA

Prize sponsor: Latitude Engineering

Best Electronic Design • \$500

SAMURAI: semi-autonomous mapping and urban rescue area inspection

Design team: Roger Anderson, Delbert Gallego, Sean Culbertson, Craig Cumblidge, Jarl Haggerty

Project sponsor: Tucson Embedded Systems

Prize sponsor: Ridgetop Group

Best Team Leadership 1 • \$250

Simulated aneurysm deployment model

Design team: German Castillo (winner), Ahmad Al Matouq, Aaron Gibson, Erin Lauterbach, Isaac Tineo, Heeje Yang

Project sponsor: W.L. Gore & Associates

Prize sponsor: Honeywell

Best Team Leadership 2 • \$250

AIAA: Fast Aerial Reconnaissance (FAR) UAV

Design team: Ryan Crompton (winner), Kevin Schwab, Lijun Shan, Chris Wellons, Alex Yang

Project sponsor: UA AIAA

Prize sponsor: Honeywell

Best Circuit Design • \$250

Fully-automated soil testing and control systems

Design team: Eric Campbell, Kyle Chong, Eric Herman, Adjete Wilson

Project sponsor: Texas Instruments

Prize sponsor: Prototron Circuits

Excellence in Aerospace Design • \$250

Aircraft thrust recovery valve

Design team: Ahmed Al Salman, Christopher Grusenmeyer, Patrick Joyce, Jeffrey Pyne, Bradley Warner, Jing Yang

Project sponsor: Honeywell Aerospace

Prize sponsor: Honeywell

Excellence in Aerospace Electronic Design • \$250

Ruggedized helicopter rotor health instrumentation

Design team: Alan Olsen, Daniel Carman, Danielle Theodore, Vladimir Medina

Project sponsor: Airtronics Inc.

Prize sponsor: Honeywell

Fish Out of Water, First Place • \$250

Ruggedized helicopter rotor health instrumentation

Design team: Daniel Carman (winner), Alan Olsen, Danielle Theodore, Vladimir Medina

Project sponsor: Airtronics Inc.

Prize sponsor: Kristy Pearson

Fish Out of Water, Second Place • \$150

ASME: human-powered vehicle

Design team: Giancarlo Guevara (winner), Michael Lesnewski, Justin Monson, Charles King, Abdulla Al-Hail

Project sponsor: UA student chapter of ASME

Prize sponsor: Kristy Pearson

Systems Engineering Innovator Recognized as 2012 da Vinci Fellow

An innovative and balanced research and education program has earned professor Young-Jun Son of the systems and industrial engineering department the prestigious recognition as da Vinci fellow for 2012.

Only one UA Engineering faculty member per year is selected for such acknowledgement.

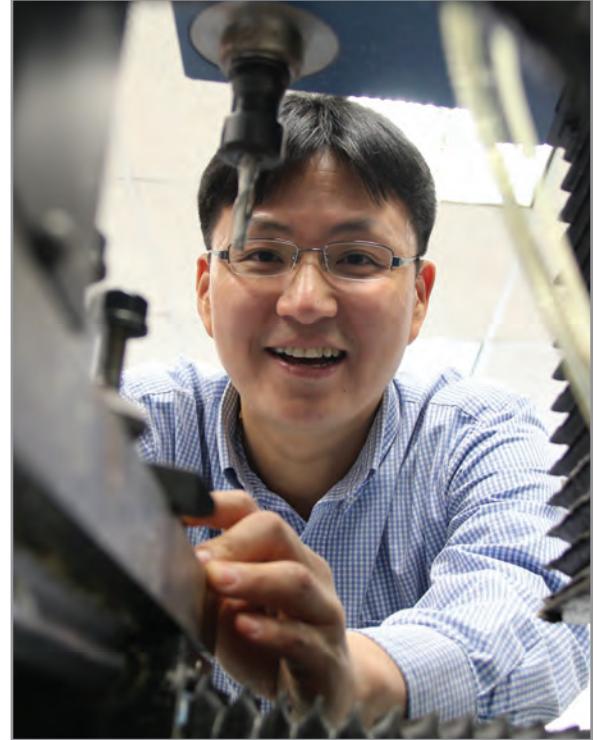
Son continues to inspire students, peers and colleagues as one of the most productive faculty members in the college of engineering, said head of the systems and industrial engineering department Larry Head in his nomination of Son. "His research projects span a broad range of topics,

from manufacturing systems, to systems design methodologies, to models of human decision making," Head said. "His education program is highly integrated with his research."

Professor Son is the director of the Advanced Integration of Manufacturing Systems and Technologies Center at the UA.

He also has an active role in renewable energy research at the University of Arizona through AzRISE, which has sponsored his multiscale simulation research along with Arizona Public Service.

Son's two core areas of instruction, simulation modeling and manufacturing, generate students highly sought by industry.



College of Engineering/Pete Brown

Manufacturing Excellence—UA Systems and Industrial Engineering Professor Young-Jun Son is the 2012 da Vinci Fellow.

Thank You!

These pages list the companies, organizations and individuals who have contributed to the College of Engineering during fiscal year July 1, 2010 to June 30, 2011.

Their support is vital in providing scholarships, funding programs and supporting research. Without this help, some students would not be able to complete their education.

Many other students would not have access to resources that give UA Engineering a margin of excellence for educating

tomorrow's engineering leaders.

We want to take this opportunity to say "thank you" from the students and faculty who have benefited so much from this generous support.

We have made every effort to list all those who contributed to the College and sincerely apologize if we have missed anyone.

If you donated to the College of Engineering during 2010-2011 and are not on this list, please let us know, and we will include your name in the next issue of *Arizona Engineer*.

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Da Vinci Circle Members Enjoy Private Peek at Pachyderm Pad

Members of the da Vinci Circle were treated recently to a look behind the scenes at the new elephant enclosure at Tucson's Reid Park Zoo, just before the new occupants arrived from San Diego.

The tour was led by UA Engineering alumnus Doug Humphreys (Civil Engineering, 1976), construction manager for the project and vice president at Ashton Company, the prime contractor for the exhibit. Recent UA Engineering graduate Alan Sylvester (Civil Engineering, 2011) also acted as tour guide.

"A few years ago, the San Diego Safari Park and the San Diego Zoo convinced the government of Swaziland to give them a herd

of eleven elephants which were going to be destroyed due to range management issues," Humphreys informed the tour group, referring to the elephants' origin.

Da Vinci Circle members toured the huge buildings that will be home to the new herd, including the barn, elephant "bedrooms," and the elephant restraint device, which has cage walls that close in on and restrain the elephant so it can be weighed and get health checks.

The barn's fence posts are rooted in cylindrical concrete bases 3 feet wide and 8 feet steep. "We do all kinds of construction, so this is just another job," Humphreys said. "But in my 35-year career this is one of the most interesting."



College of Engineering/Pete Brown

Zoo Builder—Ashton Company vice president Doug Humphreys shows da Vinci Circle members and guests around the new Reid Park Zoo elephant exhibit.

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Ray Haynes BS/AE 1967, MBA 1970

UA aerospace engineering alum Ray Haynes was the 2011 UA Bear Down awardee. He established the Los Hermanos/Northrop Grumman Engineering Scholarship, which provides funds to students from Cochise and Santa Cruz Counties who wish to study engineering at the University of Arizona.

Haynes retired from TRW/Northrop Grumman in 2009 after 36 years. He still consults for Northrop Grumman in Arizona and volunteers as the director of STEM integration at Da Vinci Charter Academy in Davis, Calif. He and his wife, Patricia, live in Carlsbad, Calif. *Arizona Engineer* had some questions:

How has your UA education benefitted you?

The University of Arizona provided a great foundation in engineering and business, plus excellent networking.

Do you have a favorite memory from your time at UA?

My best memory is walking completely around the campus on the stone wall during summer 1954 with my buddy Dean Aldinger.

How did you come to attend the UA?

I came to the UA after graduating Nogales High School to follow in my brother Don's footsteps (BS/ME 1955) and become an engineer.

Tell us about your hobbies and pastimes.

My hobbies are volunteer work, swimming, biking, running, plus tennis and golf. Life as a granddad is full also.

What are your hopes for the future of UA?

The UA and its new president have a bright future leveraging the great programs in business, engineering and optical sciences. I also hope that our Pac-12 football team gets back on track soon with a new coach.



Ray Haynes

Describe something remarkable or noteworthy you experienced here.

I attended a 10-week NSF program in physics as a high school junior in 1961 at the UA,

and never even considered another university for engineering studies after that.

What else would you'd like readers to know?

Helping develop the Northrop Grumman Innovation Campus in Sierra Vista with Buena High School, Cochise College, UA South, and the U.S. Army, with focus on UAS Center of Excellence, has been the highlight of 2011. Oh, and that I'm having fun as usual.

Edited for length. Read the full version online at: www.engineering.arizona.edu/news/alumni.php?id=77

2010–2011 Donor Honor Roll

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**Lalitha and Dhananjay Mahajan
MS/SIE 1993, MS/CS 1993**

The husband and wife program managers for Microsoft Corporation may live in Seattle but they still remember the opportunities and experiences while studying science and engineering at the UA. They answered some questions for readers of *Arizona Engineer*.

How has your UA education benefitted you?

Our UA education gave both of us a solid foundation for launching our careers in computing. The rigorous programs in engineering and the sciences put a lot of emphasis on practical knowledge, which helped prepare us for the industry.

While we studied in our respective departments, we also worked as research assistants in the Lunar and Planetary Laboratory, which gave us the required experience in applying our knowledge in a different field of science.

What are your reasons for supporting UA financially?

We strongly believe that education is the best gift that we can give to our future generations and society. The education and experience we acquired during our years at UA benefitted us tremendously in our professional success. It is a privilege to give back some of what we gained.

The UA Multicultural Engineering Program is especially important in facilitating engineering education to students from underrepresented groups. We hope such programs continue to provide infrastructure to raising academic standards of future engineering graduates.

What are your hopes for the future of UA?

In times of severe shortage of funding for education, we hope that UA continues to be one of the premier institutions of education for future engineers and scientists.



Lalitha and Dhananjay Mahajan

I hope Wildcats from UA are successful in their careers and share their success with the University and future students.

Edited for length. Read the full version online at: www.engineering.arizona.edu/news/alumni.php?id=79

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Clifford and Elizabeth Mansfield	Robert Mills	Del Pilcher	Bernard and Sandra Ruhl	Society Of Auto Engineers Inc.	Charles and Geraldine Waitman	
Masud and Annegret	William and Nancy Mitchell			David Soukup		

Tony Tornø MS/ME 1987, PhD/ME 1989

Boeing engineer and mechanical engineering alumnus Tony Tornø was named Asian American Engineer of the Year in March 2012 by the Chinese Institute of Engineers USA for his nationally recognized work in defense, space and security systems. Tornø, a Boeing Technical Fellow since 2008 who has worked for Boeing for 18 years, currently works as a networks and space systems engineer for the company's Defense, Space & Security unit in Huntington Beach, Calif. He talked to *Arizona Engineer*:

How has your UA education benefitted you?

The knowledge I gained during my studies at UA has served as the cornerstone of my career. In particular, I learned a lot from Professor Paul Wirsching. He taught me not only how to study technical areas but also how to

apply my studies so I could become a good engineer.

What are your favorite memories from your time at UA?

My time as a research associate for Professor Wirsching, especially when we worked together to solve a complex problem. It feels so good when you finally solve a problem and also learn a lot from the process.

How did you come about attending the UA?

I learned about UA from a reputable learning center in Taiwan. They told me UA was an excellent engineering school and that the school had a lot of opportunities to apply for teaching or research assistant opportunities. I think both factors attracted me to the school and I am very happy to confirm what they told me was true!

What are your hopes for the future of UA?

I hope UA will continue to grow as an



Tony Tornø

excellent school, especially in engineering. I hope every student who graduates from UA continues their support by donating money back to the school.

I think it is the least we can do as alums to support our school.

Describe something remarkable or noteworthy you experienced here.

I still remember when in 1988 UA's basketball team went into the Final Four. I followed the NBA careers of both Steve Kerr and Sean Elliot, and I got a signature from Elliot when I met him in the cafeteria. I knew he would become a superstar in the NBA and I was right!

Edited for length. Read the full version online at: www.engineering.arizona.edu/news/alumni.php?id=82

2010–2011 Alumni Donors by Class

Maiden names are in parentheses. An asterisk indicates five or more consecutive years of giving to the College of Engineering.

1940 Oscar T. Lyon	Warren D. Travis Thomas R. Edwards James S. Tolley	1956 Frances S. Walker (Sprawls) Jerome R. Koupal William J. Breed Howard V. Main
1942 Therese V. Berg (Velasco)*	Harry J. Valentine William T. Holderby Stanley Nelson N. Bruce Metteer Del L. Pilcher	1957 Blair B. Emory Claris L. Donelson Joseph A. Gervasio* George C. Freshwaters Jackson R. Markle Jake T. Doss* Ralph T. Richey
1944 Dan E. Mayers		1958 Richard R. Schroeder Ralph B. Miller Thomas L. Iles Salvador Espana Raymond S. Plock* Gary L. Cooper* John J. Kaminsky Billie D. Boone John W. Britton Paschel W. Young
1946 L. D. Osborne	1952 Patricia H. Tolley (Hill) Donald F. Hammer Jack Smith Maurice C. Stephan Dyer H. Campbell	1959 Mary G. Benson (Gonzalez) James E. Malmberg
1948 Calvin S. Bromfield Robert C. Mills		
1949 J. David Lowell Stephen M. Chalmers Robert C. Hall Norman F. Garrigus	1953 Paul W. Dickson Russell T. Gilbert Douglas C. Haag Hobart B. Bauhan Anthony G. Zaharis Kenneth J. Hartwein*	
1950 Rudy A. Jimenez Harry H. Haaverson Charles D. Gilson Larry D. Schmic	1954 Agnes R. Kanal (Cordis) Charles B. Leonard William F. Wolfson	
1951 S. Jack McDuff*	1955 Richard G. Guthrie*	

Kenneth J. Trout*
Kim M. Fox
Pieter H. Kreyns

1960
Marilyn A. Kent (McCrary)
Karl E. Elers
Irvin G. Kinnie
Ronald B. Hanson
Trinidad S. Valentin
James H. Deaderick
R. Bruce Scott
John P. Benson
Anthony Jones
George A. Glenday
John J. Marietti*
John V. Hemler
Arvin L. Kolz*
Richard A. Lapkin

1961
Richard E. Carr
John R. Edwards*
Jack S. Sykes
Fred A. Rubi
Wally H. Geniec
Edward A. Conway*
Theodore M. Polychronis
Gerald R. Smith
Narendra C. Shah

1962
Jay H. Lehr*
Thomas E. deShazo
Samuel Lee
Halliday
Kenneth R. Katsma*

Thomas A. McCormick
James C. DeVore
Bruce S. McLaren
James R. Elliott
John A. Ryberg

1963
Douglas F. Dowd
Henri W. Guyader
Wayne E. Dawson*
Ronald H. Fenelon
Wilson E. Cooper

1964
L. Rolf Peterson
Sallie S. Tofel (Siegelman)
David G. Areghini
Walter T. Higgins*
Kenneth Workman
Steven L. Tofel
Marino M. Fuentes*
John M. Christian
Jerome T. Uchiyama
Richard M. Potter
John R. Pass
John G. Linkswiler
David Brod

1965
Richard P. McClellan
Ka C. Fogg
Richard M. Liston
Ralph E. Porter
Thomas T. Teague
Peter F. Daly
Michael G. Herrick
Perry A. McCown

1966
Ray M. Haynes
William J. Whitty
Paul S. Pickard
Ronald L. Haxby
Nathan A. Free
Veda J. Thapa

1967
Elizabeth J. Blohm (Jenkins)
Douglas J. Sticht
James P. Marum
Eugene G. Zimmerman
Walter G. Love
Melvin L. Callabresi
Michael J. Kaiserman*
William L. Blohm
James R. Ramos
Edward L. Teger
McLellan Dixon

1968
Manuchehr M. Afari
James F. Bly*
Stephen E. Davis
Stanley M. Rice*
Franklin L. Broyles
Elmer A. Grubbs
Eugene M. Cliff
Charles S. Waitman
Michael H. Kleinrock*
Gary D. Wonacott
Jesse L. Saar*
Gary R. Frere*
Stanley J. Boehm
Forest P. Lyford*

1969
Sandra L. Setterstedt (Miller)
Harvey J. Mayerowitz
Paul F. Smith
William H. Clarke*
James P. Miletich
Zavis M. Zavodni
Donald S. Cooper
Alan H. Marshak*
Mark F. Durham
Jack M. Pollin
Roger E. Schoenherr

1970
Bernard L. Ruhl
Raymond E. Starsman
Richard P. Chagnon
Lang L. Lawrence
Richard E. Crowell*
Wai J. Chen
John R. Ward
John E. Flores

1971
Virginia H. Moore (Hazlehurst)
Nick R. Schott
Michael W. McCabe
Gregory A. Lorton*
Bruce M. Boyum
Zygmunt M. Cielak
William J. Mitchell
David T. Rabb*
Richard W. Mead
Michael E. Esparza
James A. Hathaway

Larry Milner
MS/CE 1989

Chicago resident Larry Milner, known as the “Dirt Doc” within environmental remediation circles in Illinois, is a recognized leader in the environmental industry who has won several awards related to the environmental clean-up industry. He is currently vice president and general manager of Burns & McDonnell’s Chicago region. *Arizona Engineer* quizzed him:

How has your UA education benefitted you?

It prepared me for the vagaries and challenges associated with the real world. I learned how to face problems head on, and to never stop thinking about innovative ways to solve challenging problems.

Where did you get that “Dirt Doc” moniker?

This affectionate title was given to me by a group of elementary school

children in central Illinois, where I performed environmental remediation and property restoration activities on their school grounds.

Tell us about your hobbies and pastimes.

Weight lifting and hiking. I recently returned from a canyoneering trip to the Subway of Zion Canyon.

What are your hopes for the future of UA?

I’m proud to have attended and graduated from the University of Arizona. I would love to see the UA continue to excel and be a top-rated university.

Describe something remarkable or noteworthy you have experienced since graduating.

All three of our older children have graduated from college. After hiking the Subway of Zion National Park, I would like to climb Kilimanjaro, but haven’t gotten around to it just yet.



Photo courtesy of Larry Milner

Riding the Subway—Larry Milner, center, canyoneering in Zion National Park in Utah.

What are your favorite memories from your time at UA?

Eating lunch on the mall, riding my bike to school every day (during the winter *and* summer), and the saguaro cactus.

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Michael J. McAnnis
Richard P. Ray*
Larry D. Sternaman
Thomas A. Bennett
John M. Hamm

1972

Barbara E. Mizdail (Neff)
Thomas J. O’Neil
Charles F. Lavarini
Daniel B. Reuben
Desmond Patrick Kearns
Michael J. Arnold
Barry M. Zilin
Honho Liu
Burke O. Buntz
Martin J. Brien
Clifford S. Mansfield
Gordon D. Peterson
Jerald L. Smith
Claud W. Seal
Manuel F. Rodriguez-Perazza
Douglass J. Sims

1973

Mary B. Moreton (Boice)
Salvatore E. Cavacalle
Stephen W. Hartz
Dean M. Shough
Floyd H. Dove
Gustave C. Stern
Andrew J. Gaudielle
Robert W. Simpson*
Stephen L. Bolduc
Herbert E. Welhener*
Philip M. Hodder

Thomas P. McGovern
Bruce D. Moreton
Ray J. Ballmer

1974

John M. Brabson
James D. Spinhirne
William H. Champion
Thomas C. Owen*
James A. Shackelford
Grady S. Nicholson
Gary C. Barras
Michael M. Henningsen
David V. Freeland
Robert J. Feugate
Jack A. Touseull
Robert L. Sogge
Ziaullah Yazdani
Arthur M. Charrow
Robert A. Schmall
William B. Ward
Anton R. Veirup

1975

Susan C. Kotchou (Brice)
Peter Fleming
Michael K. Porter
John J. Ward
Kenneth R. Perkins
Glenn R. Harbour
David R. Bolles
Kenneth E. Dobbs*

1976

Bruce L. Trumbo
Robert A. Cummings
William G. Hawkins

David J. Soukup
Stephen H. Williams
Nicolas Cocavessis
Steven C. Davis
Jeffrey P. Walser*
Richard A. Hightower
Dennis M. Bartlett
Daniel E. Confer
Nicholas W. Mak
Gerald W. Myers

1977

Jill E. Demchak (Carter)
Maura P. Mackowski (Phillips)
Michael J. Mackowski
Babajan Sarkis
Robert W. Best*
Jeffrey B. Glover*
Gregg W. St. Clair
John D. Brack
Gregory J. Neely
Craig A. Windrem
Daniel L. McBride*
John E. Hennessy
David H. Bullock
Paul J. Hom
Colin F. Campbell
George K. Schuler
Jeffrey M. Park

1978

Darlene C. Barlow (Crawford)
Kathleen M. Borhauer (Johnson)
Mary J. Obee (Nugent)
David A. Buchhauser

James B. Ditsworth
Kurt R. Neubauer
Robert W. Hammerstein
John R. Geyer
David A. Walters
Michael J. Bunch
William G. Smith
Donald J. Ditter
James J. Komadina*
Paul Y. Sako
Brian L. Hastings
William T. Pate
Raul F. Pina
Keith A. Hungate
Dennis J. Neumann
Emmett G. Yee

1979

Cherie E. Hallin (Ledbetter)
Patricia S. Wormington (Peery)
Diana R. Miles (Reckart)
Deborah T. Miller (Tate)
Mark W. Woodson
Brian J. Kelly
Robert A. Davis
ChenHuei J. Chiang
Leonel P. Campoy
Mark R. Reinhold
Jeffrey L. Mervin
Tina M. Sisley
Hugh D. Murphy
William S. Moore
Larry C. Owsowitz
Warren A. Folkerts
John D. Wade*
David A. Clapp

1980

Tracy J. Barclay (Lancaster)
Aida L. Harvison (Schmidt)
Rinaldo DiCenzo
David J. Burgess
Peter J. Wheel
John K. Barberii
Joanne A. Hilton
Roy S. Knight
Jesus R. Velazquez
Michael E. Cease
Shane D. Shovestull
Raymond E. Hierling
Raul Krivoy
Charles J. Lynch*
Vern W. Stoneback

1981

Lori B. Lindahl (Barron)
Jennifer H. Horner (Havens)
Catherine L. Freeman (Levinson)
Victor D. Silecky
J. Michael Sherer
David E. Hornby
Soronnadi Nnaji
Daniel E. Bailie
Karl Allmendinger
James G. Hansen
Ross S. Harvison
Eduardo Palazuelos
David I. McDonnell
Paul W. Reese
Brian F. Dolan
Jonathan P. Olson
Christopher Riordan

1982

Martha A. Marek (Daugherty)
Colleen K. Vance (Kelly)
Lynn K. Heidenreich (King)
Chris J. Leverenz
Timothy D. Klement
Theodore J. Gelber*
Coleman C. Miller
William J. Elowitz
Robert A. Kuhn
Marcus W. Partlow
Nicholas R. Webb
Ned B. Larson
Denise D. Doctor
James G. Davis
Joanne G. Palmer
Charles H. Smith

1983

Dorothy R. Chavez-Dolan (Chavez)
Jeannine C. Leverenz (Critchley)
Charlotte L. Ort (Gunrod)*
Lynette J. Moughton (KenKnight)
Cynthia L. Lingg (Lockwood)
Greta L. Cummings (Mattson)
Jo Ann M. Gronberg (Murashige)
Grant R. Cummings
James E. Lonergan
Paul A. Hsieh*
Kenneth L. Head
Marc J. Scancarello

Martin L. Gronberg
Kenneth E. Mangham
Mark D. Fleming
Peter J. McNellis
Thomas F. Gerard
James R. Davidson
David A. Martinez
Stephen C. Schulz
Stephen P. Masser
Steven R. Pageau*
Laura B. Jacobsen
Douglas E. Speck
John M. Linert

1984

Anne M. Bingham (Moses)
Stephanie I. Witkowski (Sierka)
Alireza B. Gholiekhamseh
Wellington R. Meier*
Henry Y. Yu
Mark A. Shill
Ann T. Wilkey*
David M. Dummeyer
Walter R. Witkowski*
Dwayne Elliott
Antonio B. Gonzales
Stanley W. Stachowiak
Pamela A. Lemme
Steven H. Cook
Steven C. Warren
Daniel R. McCarville
Todd W. Schrauf
Robert C. Cavin
Amir M. Motamedi
Douglas E. Gapp*

continued on page 20

Vahan Garboushian BS/EE 1966

Garboushian is considered a pioneer in concentrated photovoltaic systems and was the UA College of Engineering 2011 Alumnus of the Year. He is the founder, chief technology officer and chairman of the board of directors of Amonix Inc., a California-based designer and manufacturer of concentrated photovoltaic solar power systems, the oldest such company in the U.S.

Arizona Engineer talked to Garboushian before he accepted his alumnus award.

How has your UA education benefitted you?

The UA made me quickly learn to be self-sufficient and independent. It really taught me survival along with my education. Since I had no money, I took large course loads to finish quickly. An independent, entrepreneurial career path stemmed as a result.



Vahan Garboushian

What is a favorite memory from your time at UA?

I had no money and had to survive. I lived with a host family that suggested I sell Hershey bars at the upcoming

football game to make money. Being the entrepreneurial spirit that I am, I decided to make more money by telling customers that if we won the football game, I would give away 20 bars to ten people if they bought from me, as opposed to the competition. I sold over 1,000 candy bars and made enough profit to cover two months of rent and food.

Tell us something about yourself that people might be surprised to learn.

Even during my busiest trips, I carve out time to shop. I love to buy clothes.

How did you come about attending the UA?

I was accepted at several other schools including UCLA and the University of San Jose. I flew from Armenia to the United States and only had \$100 total. I arrived at JFK late for a connecting flight to the West Coast. Tucson was \$19 cheaper than going to LAX and based on the fact that I only had \$100, I decided to go to UA.

Describe something remarkable or noteworthy you have experienced since graduating.

I started two companies, including the leading CPV company to date. When I started Amonix, my goal was to help humanity and produce low-cost solar for the masses. It's remarkable that we are achieving that right now, including one of North America's largest CPV plants, right here at the University of Arizona Science and Technology Park.

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2010–2011 Alumni Donors by Class

continued from page 19

Joseph A. Cannavino
David B. Travis
Christopher J. Brady
Scott R. Rudin*
Ramchander R. Nagulpally
Donald M. Tharp

1985

Christine C. Raasch (Coffer)
Laura F. Bennett (Fulton)
Beth L. Gottschall
Ingrid C. Story (Holm)
Diana B. Wright (King)
Aida M. Samuel (Rodriguez)
Anne N. Nelsen (Schmidt)
Paul G. Lomayesva
Timothy V. Kalthoff
Richard A. Peters
Sukhendu L. Barua
Gordon C. Zaft
David A. Randall
Kristofer E. Tvedt
Gregory D. Zeihen
Barbara J. Wasson
Jess A. Trias
Bruce L. Roth
Michael D. Reader
Philip J. Golden
Robert A. Prescott
David F. Rhoades
Richard S. Dobes*
Frank H. Burstrom
Allen P. Sehloff*

Jilanne F. Hoffman
David R. Blackburn
David B. Montgomery
Richard R. Ramsey

1986

Mary G. Turner (Finneran)
Dennece L. McKelvy-Daly
Brian P. Beddo
Lindsey Philpott
Susan F. Zevin
Jonathan G. Baker
Jawji Chen
Khayyun A. Rahi
James R. Harrison
Robert B. Haines
Christopher M. Warner
Jesus P. Arrizon
Jeffery N. Wallace
Hal D. Hudson
Ricardo R. Arenas
Mark F. Rhyner

1987

Catherine A. Hutchens (Anaya)
Diane F. Manlove (Frazier)
Clarissa J. Schreeder (Jacinto)
Ruth G. Pullen-Soklow
Antoinette Theriault-Faucette
William M. Hazlehurst
Elizabeth D. Behl
James E. Cannon

Kathleen Cleere
Kent R. Johnjack
Stefan L. Myslicki
Stephen J. English
Douglas G. Blanchard
James J. Horn
James K. Barnett
Donald V. Penners
Lourdes De la Trinidad
Gordon A. Phillips
Tanya S. Donohue
Keith V. Kotchou
Thomas W. Whitehead
Joseph E. Alfieri Garcia
Shohei Yoneda
Joseph R. Johnson

1988

Catherine D. Warren (Oder)
Cynthia L. Klingberg (Tang)
Brian D. Goble
David S. Cooper*
Michael A. Sandford
Manbir S. Sodhi
Andrew J. Binder
Richard A. Cotter
Timothy J. L'heureux
Scott L. Chapman
Andrew P. Cole
Thomas R. Messenger
Brent A. Mattson
Randall R. Fink
Kevin B. Campbell
Thomas J. Phielix
David J. Paredes
Brian C. Catts
Ying-Ming Liu

Anthony C. Mulligan
Thomas L. Cole
Keith C. Manlove
Stanley D. Miller

1989

Jennifer K. Klein (Kares)
Dominique W. Mitchell
Christopher J. Brooks
Ted W. Buell
Ronald R. Semel
Thomas A. Runyon
Rao M. Shoaib
Michael E. Jenkins
Thomas R. Rohrer
Ronald D. Burch
Richard P. Ellis
Alexander R. Gibbs
Abid Rustaey
Anthony R. Schaeffer
David K. Crowe
Michael F. Campillo
Mark R. Hansen
Ramon O. Valadez
Gerald J. Jalkanen

1990

Branda B. Wilhoite (Baker)
Marie S. Shepherd*
Anthony S. Pittner
James D. Crammond
Timothy D. Wodrich
Terry W. Meier*
Charles L. Norman
Thusitha S. Jayawardena
Thai H. Tran

Charles E. Schinner
Susan M. Hoines

1991

Susan A. Nativi (Couillard)
Erin E. Hutton (Garner)
Kathryn L. Mills (Hendricks)
Jeanine S. Hill (Stitt)
Kevin A. Greer
Tony L. Werner*
Qiping P. Dong*
Michel A. Prior
Kenton J. Aikens
Joe M. Fulton
Paul J. Mureiko
Steven A. Thompson
Mitchell R. Smith
Navid Kharrazi

1992

Joanne C. Rafidi (Chandos)
Lynn M. Wile (Johnson)
Rhoda J. Winder (Tso)
Harold D. Smith
Winston W. Clendennen
Scott W. Borland
Ramon L. Hopkins
Dominic Collier
Jimmy L. Archer
Christopher B. Rod
Stephen J. Betzhold
Mark L. Levine
Gregory J. Strimbu
Manuel F. Ortiz
Christopher W. Whitehead
Shane M. Gesbeck
Charles C. Massieon*

1993

Maureen A. Douglas
Angela M. Balliet (Kreitzer)
Sara C. McCoy* (Meinert)
Winifred Begay
Lloyd L. Pollard
Timothy M. Zamora
Sherry X. Qin
Christopher D. Lund
Brian J. Tuohy
Kristen M. Curry
Srikanth Nagarajan
Daniel S. Copley
Joe M. Fulton
Freddie L. Myloyde
Michael N. Patterson
Victor L. Gasho
Rudolpho R. Aguilar
Edward B. Bukoski
Daniel T. Klingberg
Henry R. Knoepfle

1994

Janice P. Dalager (Plado)
Michael A. Jones
Gabriel M. Abraham
Brett A. Scroggins
Gary J. Degeronimo*
Matthew D. Monesmith
Jeffrey R. Berg
David J. Maher
Craig S. Dunning
Kurt D. Sauers
Joseph Trinh
Nabil G. Shafike
Derek M. Lewis
Andrew J. Paulo

Michael P. Mebes
Bei Hong
Javier I. Suarez
Nirav C. Merchant
Matthew D. Ploor
Susan A. Schima
Steven R. Anderson
Ragunath R. Chilkunda

1995

Lea D. Devine (Lemley)
Chiahung J. Stoxen (Lin)
Iftexhar Ahmed
Laura B. Dinitz
Teng-I J. Wang
Matthew R. Danner
Francisco X. Leyva
Zhaowen Yang
Kiran B. Nanisetti
Michael S. Roberts
Guy B. Potucek
Michael C. Basgall
David O. McGuire
Francis D. Rochford
Rockwell A. King

1996

Jami E. Chaloupka (Erickson)
Dawn A. Graffam (Gladish)
Toni L. Rogero (Johnson)*
Guangshun Chen*
Michael B. Deutsch
Patrick A. Hernandez
Joseph T. Woodward
Kris Akre

David W. Pershing PhD/ChE 1977

UA chemical engineering alumnus David W. Pershing was named President of the University of Utah in January 2012. With more than 31,000 students to manage, not to mention a research expenditure approaching \$400 million, Dave Pershing found some time to talk about times past and present with *Arizona Engineer*, and to answer a few questions.

"I graduated with my PhD in chemical engineering under the direction of Professor Jost Wendt in 1977," Pershing said "After one year as a visiting assistant professor at the U of A, I moved to the University of Utah to take a tenure track faculty position there, also in chemical engineering." At Utah he has served as associate dean of the Graduate School, dean of engineering, senior vice president of academic affairs, and now president.

How has your UA education benefitted you?

My UA degree was the key that allowed me the opportunity to become a professor and then ultimately an administrator. Without a graduate degree, I would never have had any of the opportunities for teaching or consulting.

What are your favorite memories from your time at UA?

Hiking on Mount Lemmon and in Sedona in the summer time, buying Christmas presents in my shirtsleeves, lunch in the Union with friends.

Tell us something about yourself that people might be surprised to learn.

I began wearing cowboy boots when I moved to Arizona from North Carolina, and I have never stopped.

Tell us about your hobbies and pastimes.

I enjoy international travel with my wife and with my oldest daughter, Nicole, plus snow skiing and hiking,



Dave Pershing

and 4-wheeling in the desert. Describe something remarkable or noteworthy you have experienced since graduating. Having the opportunity to mentor young students and see them thrive professionally and personally. Former students of mine are now department chairs and deans – that is truly remarkable to me.

What else would I like the readers to know?

Even though neither of my parents had college degrees they recognized that a good education was critically important. My father worked two jobs so that he would have enough money to send me to school to become an engineer.

Edited for length. Read the full version online at: www.engineering.arizona.edu/news/alumni.php?id=81

Raymond C. Lau
Sasko Kurciski
Adam R. Bliven
Peter A. Richardson

1997

Rachel A. Streiff (Tuominen)
Huy P. Nguyen
Joshua F. Orosco
Michael S. Massaro
Scott D. Lookingbill
Xiaodong Zhang
Jinhan Choi
Chris S. Gaido
Ryan V. Pine
Andrea S. Ursillo
Mary P. Garrity
Jose O. Urcaez
Thomas K. Harward

1998

Janet M. Brelin-Fornari
Stacy M. Gottesman
Todd R. Ellermann
Bryn A. Enright
Jason C. Antonino
Carter L. Romero
Thomas J. Brown
Dennis T. Mooney

1999

Patricia A. Molina (Lopez)
Arunrach M. Sawetprawichkul
Bwalya Malama
Dexin Wang

Rhett A. Donald
Ryan B. Goebel
Luke J. Nelson
Cesar M. Cheng-Guajardo
Marc C. Greenberg
Alexandra L. Clark
Tao Wu
Paul C. Seppala
Benjamin E. Maakestad
Kelly B. Bunker

2000

Zhiming Lu
John A. Aldecoa
Bryan W. Reed
Samer A. Hamdan
Jason V. Poland
Michael R. Turner
Jason S. Contapay
Barret T. Hartman
John D. Struble
Michael A. Schwager
Laura V. Lohner*

2001

Jingquan Li
Yanqing Gao
Christopher J. Cox
Jonathan L. Silverthorn
Sara B. Seuberling
Kevin R. Pope
Ken I. Pholphiboun
Adam O. Wade
Keith W. Oakley
Laszlo J. Braun
Linda A. Cote*

2002

Natasha J. Schnaitmann (Checkovich)
Danielle K. Roberts (Ketker)
Derya Sumer (Yalcin)
Jason A. Carlaftes
Johnny S. Issa
Lihua Yu
Gary W. Newson
Keith M. Galinet
Jeremy A. Cohn
Anthony R. Delaney
Francisco Rojas
Wenbin Wang
William T. Dvorak
Kathleen L. Finkelstein
Daniel W. Wilson

2003

Sandra B. Kukurba (Bueno)
Yan Wang
Carlos I. Martinez
William P. Miller
Nathan J. Palmer
Jennifer L. Gain
Rina S. Fulcher
Joseph D. Rinkowski
Rick Huang
Joshua D. Martin
Justin S. Wheeler
Sarvesh Bhardwaj
Kyle B. Goss
Francisco J. Contreras
Antonio Torrez
Edward N. Janecki

2004

Lauretia J. Baum (Begay)
Bethany L. Johnson (Davin)
Andrew M. Osbrink*
Muzaffar M. Eusuff
Christian Valera
Amrita Rajagopal
Michael J. Bernhardt
Evan B. Lytle
Thuan H. Phan
Joseph M. Torrano
Michael D. Kiefer
Brian J. McMorrow

2005

John C. Condon
Luis A. Portillo
Erik C. Rupp
Gregory R. Dion
Steven L. Carman
Joseph G. Augustine
Rolenna J. Beecher
Kevin A. Opalka
Jayesh K. Patel
Kristy D. Pearson

2006

Donald P. Davis
Jun Yan
Andy K. Chan
Joshua M. Sims
Mark R. Squires
Prashanth R. Gurram
Daniel J. Ojinaga
Jaime F. Herrera
David C. Klawon

Brian P. Blackadar
Jacques Nguz Tshisens

2007

Karletta H. Chief
Shannon M. Green (Hoblitzell)
Nicholas T. Yamashita
Rene Wozidlo
Joseph E. Fico
Theodore S. Burhans
Scott D. Nielsen
Bryan L. Sears
Enrique Ramirez
Dominic M. Leone
Alexis M. Milliken
Benjamin J. Manahan
Nadia C. Sabeh
Ravi Balasubramanian
Ashley D. Mcphee
Matthew P. Zerull
Alastair G. Rasquinha
David M. Neyer
Janelle Villone
Jason L. Katterhenry
Jonathan D. Cherry
William J. Salus
Sarah A. Mckenney
David J. Kraemer
Bonnie C. Romero
Daniel Sanchez Soria
Jeffrey A. Branscum

2008

Oscar F. Campas

Justin D. Almeleh
Ian A. Tilford
Greg E. Cameron
Monica X. Troch
Christopher L. Monti
Hamdawah Sulemana
Yasa A. Sampurno
Andrea M. Gains-Germain
Huihong Kuang
Rohit C. Philip
James G. Bohlman
Jeffrey P. Hunt
Avinash Ayyalamosayajula
Edwin A. Gutierrez Palma
Kelly R. Stewart
Sean C. Tunell
Nick M. Labriola
Angelica C. Abril
Donald P. Bruyere

2009

Manuel A. Robles
Lon M. Huber
Regina P. Reed
Rocio Araiza
James R. Donovan
Anvesh Cherukupally
Edward A. DeHoog
Cassi M. Cucuel
Ravneet S. Chadha
Ifeyinwa F. Amene
Brandon A. Ng
Brian T. Parish
Jeffrey A. Egan
Robert V. Morgan
Casey T. Tambe-bot
Jesus Garcia

and 4-wheeling in the desert.

Describe something remarkable or noteworthy you have experienced since graduating.

Having the opportunity to mentor young students and see them thrive professionally and personally. Former students of mine are now department chairs and deans – that is truly remarkable to me.

Edited for length. Read the full version online at: www.engineering.arizona.edu/news/alumni.php?id=81

Raymond C. Lau
Sasko Kurciski
Adam R. Bliven
Peter A. Richardson

1997

Rachel A. Streiff (Tuominen)
Huy P. Nguyen
Joshua F. Orosco
Michael S. Massaro
Scott D. Lookingbill
Xiaodong Zhang
Jinhan Choi
Chris S. Gaido
Ryan V. Pine
Andrea S. Ursillo
Mary P. Garrity
Jose O. Urcaez
Thomas K. Harward

1998

Janet M. Brelin-Fornari
Stacy M. Gottesman
Todd R. Ellermann
Bryn A. Enright
Jason C. Antonino
Carter L. Romero
Thomas J. Brown
Dennis T. Mooney

1999

Patricia A. Molina (Lopez)
Arunrach M. Sawetprawichkul
Bwalya Malama
Dexin Wang

Rhett A. Donald
Ryan B. Goebel
Luke J. Nelson
Cesar M. Cheng-Guajardo
Marc C. Greenberg
Alexandra L. Clark
Tao Wu
Paul C. Seppala
Benjamin E. Maakestad
Kelly B. Bunker

2000

Zhiming Lu
John A. Aldecoa
Bryan W. Reed
Samer A. Hamdan
Jason V. Poland
Michael R. Turner
Jason S. Contapay
Barret T. Hartman
John D. Struble
Michael A. Schwager
Laura V. Lohner*

2001

Jingquan Li
Yanqing Gao
Christopher J. Cox
Jonathan L. Silverthorn
Sara B. Seuberling
Kevin R. Pope
Ken I. Pholphiboun
Adam O. Wade
Keith W. Oakley
Laszlo J. Braun
Linda A. Cote*

2002

Natasha J. Schnaitmann (Checkovich)
Danielle K. Roberts (Ketker)
Derya Sumer (Yalcin)
Jason A. Carlaftes
Johnny S. Issa
Lihua Yu
Gary W. Newson
Keith M. Galinet
Jeremy A. Cohn
Anthony R. Delaney
Francisco Rojas
Wenbin Wang
William T. Dvorak
Kathleen L. Finkelstein
Daniel W. Wilson

2003

Sandra B. Kukurba (Bueno)
Yan Wang
Carlos I. Martinez
William P. Miller
Nathan J. Palmer
Jennifer L. Gain
Rina S. Fulcher
Joseph D. Rinkowski
Rick Huang
Joshua D. Martin
Justin S. Wheeler
Sarvesh Bhardwaj
Kyle B. Goss
Francisco J. Contreras
Antonio Torrez
Edward N. Janecki

2004

Lauretia J. Baum (Begay)
Bethany L. Johnson (Davin)
Andrew M. Osbrink*
Muzaffar M. Eusuff
Christian Valera
Amrita Rajagopal
Michael J. Bernhardt
Evan B. Lytle
Thuan H. Phan
Joseph M. Torrano
Michael D. Kiefer
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Kelly R. Stewart
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Rocio Araiza
James R. Donovan
Anvesh Cherukupally
Edward A. DeHoog
Cassi M. Cucuel
Ravneet S. Chadha
Ifeyinwa F. Amene
Brandon A. Ng
Brian T. Parish
Jeffrey A. Egan
Robert V. Morgan
Casey T. Tambe-bot
Jesus Garcia

David Y. Burbank
Arvin Parco
Tyler J. Ebbitt

2010

Robert G. Culver
Oscar Pulgarin
Laura-Ann S. Chin
Wayne D. Chin-Duncan

2011

Josh T. Spivey
Jamie L. Logan
Sean A. Phillips
Jared J. Lujan
Rauli I. Lehtinen
Ryan T. Tatro
Ryan J. Vaughn
Tristan A. Luce
Suzannah C. Bloom
Katherine T. Palazzo
Ondrej Dvorak
Richard S. Ely
Danielle R. Craig
Justin G. Brown
Mona Eskandari
Daniel R. Pecilunas
Justin K. Jean
Patrick M. Durkin
Dimitri J. Ververelli
Christian E. Schultz
Paul Gastreich
Joshua D. Harrison
Stuart A. Hamblin
Peter A. Kozak
Joshua L. Kaliszewski



MarathonFoto

Life Cycle—The Todsen family at El Tour de Tucson, from left to right: Jim, Joseph, Jessica, and Ae.

Alum Gives Wife Unusual Anniversary Gift

When couples approach their 20th wedding anniversary, guys can spend a lot of time searching for that special gift, tracking down the perfect pearl necklace or dramatic diamond bracelet. For Jim Todsen, it wasn't that difficult. He just gave his wife, Ae, one of his kidneys.

Todsen, who graduated from UA in 1992 with a master's in electrical engineering, had hoped the transplant operation could be scheduled for their anniversary on June 1 because "I thought I could get out of shopping for a gift," he joked.

After graduating in 1992, Ae went to work in the city attorney's office and Jim started with Burr-Brown, which was acquired later by Texas Instruments. He's now the director of advanced development for the company's precision data converter unit.

Their lives were running smoothly until late in 2008 when Ae was diagnosed with multiple myeloma. Her cancer cancer treatment was successful, but the disease damaged her kidneys. She went on dialysis, and started on the path to a transplant. Jim was tested and found compatible.

"The day of the surgery, I got to see her at night, and it was just like a switch had flipped," Jim said. "Her color had come back. The turnaround was instantaneous." The next step was to regain the active lifestyle that had slipped away during 2½ years of illness. "So as we were recovering ... we decided to set a goal of riding the 42-mile part of El Tour," Jim said, referring to El Tour de Tucson, an annual bicycle charity event that attracts more than 9,000 cyclists.

On the day of the tour, all four crossed the finish line together – after five flat tires along the way. Jim blamed himself for not replacing the worn rear tire on his daughter's bike before the event. But with the help of friends and race volunteers, they made it.



Cemal Basaran
PhD/CEEM 1994

After getting his doctorate, Basaran (above) moved to the State University of New York at Buffalo, where he has been director of the Electronic Packaging Lab since 1995. In 2011, he received the Excellence in Mechanics Award for outstanding contributions in the area of engineering mechanics applications to the field of electronic and photonic packaging. The award was made by the Electronic Photonic Packaging Division of the American Society of Mechanical Engineers.

Allen W. Hatheway
MS/GE 1966, PhD/GE 1971

CRC Press has published Hatheway's book, *Remediation of Former Manufactured Gas Plants & Other Coal-Tar Sites*. "At 23 years of research and 12 years of authorship," Allen said, "the book has 1,400 pages and will never be equaled." Allen is a retired professor of geological engineering at the University of Missouri.

Robert M. Jones
BS/ME 1958, PhD 1992

After 13 years of active duty, including a tour in Vietnam, and 8 years of reserve duty, Robert Jones retired as a major from the U.S. Air Force Reserve in 1982. He was then plant engineer and principal vibration analyst at TVA until 1990, when he joined SKF Reliability Systems, retiring there in 2001. Last year he published *A Guide to the Interpretation of Vibration Frequency and Time Spectrums*. He's been married for 52 years to the former Anna Kaye Martin of Bainbridge, Ga. "We have three children, seven grandchildren and, soon to be, six great-grandchildren," Jones said. "They add up fast when adopted in bunches!" He's currently living in Las Vegas and, he said, enjoying the library, golf courses and travel to cooler places in the summer. The photo below of Jones and his wife was taken in the redwood forest north of San Francisco.





Courtesy of Sarah Abraham

Wildcat Generations—Pictured left to right are Sarah and Tony Abraham with their son Fredric (back), daughter and son-in-law Marianne and Will Goble, and son Peter, with grandson Antony, age 3.

Antony A. Abraham BS/ME 1962

Tony Abraham retired in 2011 as engineering manager at the National Optical Astronomy Observatory after 42 years. After graduating from UA he worked for 7 years in the armament division of Douglas Aircraft in Long Beach, Calif. In 1969 he started at Kitt Peak National Observatory and moved his family back home to Tucson. Abraham was instrumental in the design and construction of Kitt Peak's 4-meter telescope and its sister telescope at Cerro Tololo

Inter-American Observatory in Chile. "His interest in all things mechanical will ensure his happy retirement," said his wife, Sarah, also a UA graduate (Home Economics 1962). "Classic cars, machines, and travel will keep him busy and active for many years to come," she said. The Abrahams have three children, all of them UA graduates: sons Peter (BS/CE 1994) and Fredric (Computer Technology 2003), and daughter Marianne (BS/ME 2003), who is married to Will Goble (BS/ME 2001), who also works at NOAO.

Greg Barry BS/ME 2008

After graduating, Greg Barry was commissioned in the Air Force and reported to his first unit at Shaw Air Force Base in Sumter, S.C. He deployed to Iraq in 2009 as part of an expeditionary civil engineer squadron with a mission to sustain and repair an airfield with more than 15 linear miles of reinforced pavements. "While deployed I managed projects such as taxiway repair, the construction of an instrument landing system, a brand new 7-story air traffic control tower, and many other sustainment activities," Barry said. He then transferred to the U.S. Army Infantry and reported to Fort Benning, Ga., upon his return home. "Over the course of 12 months I completed the infantry officer basic course and the ranger, airborne and pathfinder schools," Barry said. Army training complete, he reported to Fort Lewis, Wash., in fall 2011. In November he became a Stryker Platoon leader in the 1st Battalion, 17th Infantry



Courtesy of Greg Barry

Combat Engineer—Greg Barry deployed in Iraq.

Regiment (a member of the 2nd Brigade, 2nd Infantry Division). He is scheduled to deploy to Afghanistan in 2012. "My engineering degree from the University of Arizona has been invaluable in both my early career as a military engineer, and in my recent activities as a combat leader," Barry said. "Critical thinking, analytical skills, and practical experience in the formation of goal-oriented teams are all results of a high-quality education provided at the U of A."

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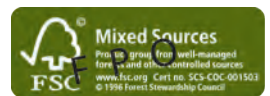
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