UC DAVIS ENGINEERING ALUMS HAVE PLENTY OF ‘CURIOSITY’
AGGIE ENGINEERS CONTRIBUTE TO MARS MISSION

By Derrick Bang

SPACE EXPLORATION enthusiasts had great reason to celebrate this summer’s landing of the Curiosity rover on Mars. Several graduates of the UC Davis College of Engineering had even greater cause for joy—Adam Steltzner ’90 directed the mission’s Entry, Descent and Landing (EDL) System team; José Santos ’04 helped develop the Curiosity’s landing system; and Jessica Samuels ’99 served as a prominent member of the engineering operations team handling the robotic rover’s surface operations.

ADAM STELTZNER, frequently seen in media interviews after his EDL team’s “Sky Crane” successfully deposited Curiosity on Martian soil, unabashedly acknowledges that his teenage self couldn’t have anticipated such a career. Steltzner’s ambitions went no further than playing bass and drums in New Wave bands with “totally 1980s” names such as Stick Figures, Frank X and The Difference, and Exit.

Then, returning home from a gig one night in 1984, Steltzner was inspired by the constellation Orion to pursue a greater understanding of the universe. Overcoming a previous aversion to academia, Steltzner enrolled at the College of Marin in Kentfield. Eventually he gained admittance to UC Davis, where he completed his undergraduate work with distinction, and gave the valedictory address for the College of Engineering.

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‘CURIOSITY’ continued from page 1

Then he attended Southern California’s Caltech, where he earned his master’s degree in applied mechanics in June 1991. He secured a position at the nearby Jet Propulsion Laboratory (JPL), starting in the Spacecraft Structures and Dynamics Group, and soon transitioned to the Applied Mechanics Division. He later took an educational leave, in order to earn a doctorate in engineering physics in 1999 at the University of Wisconsin-Madison.

Returning to California and JPL’s full-time graces, Steltzner soon embraced the twin Mars Exploration Rover missions, Spirit and Opportunity. “Once that job started to spool up, they wanted me to lead the mechanical engineering of the EDL systems.”

While Steltzner was absorbed by Spirit and Opportunity, a different NASA team was trying to solve the problem of a very large rover landing. “In the fall of 2003, about a dozen of us put together a workshop to try to figure out different alternatives,” he recalls. “We threw everything back into the mix: legged landers, air bag landers, the whole thing. During three warm September days, in Room 201 of Building 158, with the air conditioning slightly faltering, we went through a fantastic, collaborative, brainstorming session.”

The eventual result, now known to every space geek who avidly followed Curiosity’s progress, was Sky Crane: a crazy-quilt landing system that Rube Goldberg would have rejected as too far-fetched. Even Steltzner admits as much, in NASA’s Seven Minutes of Terror, a short video that has become a YouTube sensation, with more than two million views: “It looks crazy. Sometimes when we look at it, it looks crazy.”

Curiosity’s way-outside-the-box lander had to handle a rover that weighs roughly one ton, about five times as heavy as Spirit or Opportunity. Air bags wouldn’t work in the thin Martian atmosphere, so Steltzner and his team—at one point, almost 2,000 people—devised a rocket-powered “platform” that hovered over the planet’s surface and lowered Curiosity down on a cable. To the tremendous delight of the entire EDL team, Sky Crane worked as planned, enabling the Curiosity surface mission on Mars.

Steltzner’s next challenge? “I’d like to see a Mars Sample Return mission, or a lander on the surface of Europa, Jupiter’s sixth moon. I’d like to float a boat on a methane lake on Titan, Saturn’s largest moon. We need to understand and appreciate the power that comes to the nation, and to the people, when we dream big and invest ‘all in.’”

On Aug. 10, with Curiosity safely on the ground and beginning its diagnostics, NASA issued its first “Mars Curiosity Rover Report.” The two-minute video opens on the poised features of UC Davis graduate JESSICA SAMUELS, the mission’s Engineering Operations team manager, filmed within the large expanse of the mission operations center.

“Since the nail-biting entry, descent and landing event,” she begins, with obvious pride, “we’re happy to report that Curiosity is healthy and clicking off all the activities that we asked her to perform for the first few days on the surface.”

Once the rover had landed, Samuels’ work with Curiosity had just begun. “Every day, our team looks at the telemetry from the spacecraft, and evaluates whether it performed all the activities successfully, and makes sure that Curiosity is running appropriately, and that everything is within the ranges that we expect to see from all the systems. We then provide inputs to the science team, regarding whether it’s OK to do things or not, based on how the vehicle is performing.”

This will remain Samuels’ routine for quite some time to come. “Two years!” she explains. “It’s a two-Earth-year mission ... one Martian year, which is 687 Earth days.”

Pretty heady stuff, for somebody who remembers spending time in the garage with her father when she was a child, taking things apart and putting them back together. “My father was in the Canadian Air Force for awhile; so was my grandfather and all my uncles,” she recalls. “That definitely piqued my interest, and I also was fascinated with space: what was out there, and wanting to learn more about that.”

Samuels entered UC Davis in 1994, in what was then the Department of Mechanical and Aeronautical Engineering. She spent her summers interning at Honeywell in Phoenix, Ariz.; and Rocketdyne, which was owned by Boeing at the time, in Canoga Park. “My summer with Rocketdyne, I worked on the Delta II launch vehicle main engine. That internship set me up for my first job, after I graduated in 1999, which was working on the Delta IV rocket engine.”

Samuels remained with Rocketdyne for two years, at which point she learned that JPL was gearing up for the Mars Spirit and Opportunity rover programs, and was seeking development and test engineers. With so much rocket engine design and test work under her belt, Samuels was a perfect fit; she joined JPL in June 2001.

“I started right away on the Mars Exploration Rover program, doing integration and test for quite awhile, and then I joined the System Engineering team, and then I became a flight director for operations.

Jessica Samuels, Engineering team lead for Surface Operations of Mars Science Laboratory California, explains the mission to California Gov. Jerry Brown, left, during a visit to the Jet Propulsion Laboratory in Pasadena.
for Spirit and Opportunity, for the surface missions. That wasn't too different from what I’m doing now, for Curiosity’s Mars science laboratory.”

Then Curiosity came calling.

“I started dabbling with Curiosity in the fall of 2005, and got really engaged about a year later, and started building the laboratory that we’d be doing all our testing in. We essentially started to build the spacecraft on a table; that’s what our ‘test beds’ are all about. Then we began to gather the sensors, the instruments and all the other components, in order to ‘grow’ that test bed.”

When Curiosity’s planned 2009 launch was delayed until 2011, Samuels was shifted to System Engineering, as lead engineer for the remote science component of the rover. “That systems engineering position took me right up to launch, and then I became the Engineering Operations Team manager, ensuring that the team knew how to assess the health of the vehicle, and operate the rover once it landed.

“I’ve been very fortunate, to see so many different aspects of the development and operations phases. Being part of the operations team on the Mars Exploration Rover missions—Spirit and Opportunity—prepared me for how to work with managing and leading the team on the Curiosity mission.”

Now, of course, new information—fresh discoveries—arrive every day, as Curiosity sends information back to Earth.

“Sometimes I can’t even wait until I get into the office,” she laughs. “I know that the data will come down at a certain time, say 2 a.m. So I’ll log in from home, to find out what happened. I’m never away from it!”

José A. Santos had a vision of his eventual career path while still quite young. “It was a dream, when I was little, to work for NASA. I remember standing in the yard and watching planes fly overhead. That’s when I got interested in aeronautics, and started watching NASA stuff on TV.”

Today, Santos lives that dream. He’s employed by Sierra Lobo Inc. as a mechanical engineer, working alongside civil servant employees at NASA’s Ames Research Center at Moffet Field. Santos’ piece of Curiosity concerns the MEDLI (MSL Entry, Descent and Landing Instrumentation) Suite: an instrumentation payload, carried in the entry vehicle’s heat shield, which included an intricate array of sophisticated engineering sensors designed to measure heat, pressure and other conditions affecting the head shield during atmospheric entry and descent. Having done this job, the shield is jettisoned prior to landing.

Born and raised in Sacramento, Santos enrolled in the UC Davis College of Engineering after high school. His life-defining experience at UC Davis came with his senior project, under the guidance of Sanjay S. Joshi, an associate professor in the Department of Mechanical and Aerospace Engineering. “We didn’t design a product, like a car or an airplane,” Santos recalls. “The project was systems-related, and I think it was the first of its kind: Our group determined what it would take to send astronauts to Mars.”

Santos graduated from UC Davis with a double major in mechanical and aeronautical engineering in 2004; he also earned a department
citation for outstanding academic achievement. He plunged right into postgraduate work at Stanford University; then, three weeks after earning his master’s degree in March 2006, he began work at Sierra Lobo. “I was hired as a test engineer for the Ames Arc Jet Complex, a laboratory that simulates the environment that a spacecraft experiences when it enters an atmosphere. I later learned about the labs that were building spaceflight hardware. I asked to transition there, and that’s how I began working on Curiosity.”

Shortly after he began work on the MEDLI instrumentation suite, his team had to adapt to a major design shift. “The heat shield materials were switched from the ‘heritage choice’ of SLA—Super Lightweight Ablator—to what wound up being used, which was called PICA: Phenolic Impregnated Carbon Ablator. We had to redesign the whole heat shield; we had to work extra hours and long days, but we maintained the schedule.”

Fast-forward to August 2012, when Santos was one of the many NASA employees gnawing lips and chewing fingernails, during Curiosity’s final descent to Mars. “I was on site at JPL in Pasadena,” Santos recalls. “I’ll remember that night for a very long time. This was a $2 billion project, and it relied on this heat shield material to survive the atmosphere. Our hearts were racing. Then, once they announced that the heat shield was ejected, we breathed a big sigh of relief, because our job was done. Now it was up to Sky Crane.”

Steltzner’s Sky Crane performed admirably, of course, and the good news kept on coming. “We got preliminary data from MEDLI two days after the landing, and the full data set soon after that. Based on what we’ve seen so far, the predictions we made with our computational tools weren’t that far off.”

Aside from post-landing details, Santos’ involvement with Curiosity is essentially over. “What we learn from the MEDLI data will be implemented into the heat shield design for all future missions.”

Santos now has shifted his focus to NASA’s Orion project. “Orion is similar, in that we’re instrumenting the heat shield, but this is an Earth spacecraft. Orion is the vehicle that will replace the space shuttle; eventually, it will carry astronauts from Earth to low orbit.”

AN ANONYMOUS DONOR has honored retired professor and author RONALD SOOHOO with a gift of $100,000 to create the Soohoo–Lee Endowed Fellowship as a tribute to him and as an inspiration to future Asian American leaders.

Soohoo joined the UC Davis faculty in 1964 and became the first chair of the Department of Electrical Engineering, leading the department in its formative years. Hailed as one of “America’s Outstanding Innovators” by Science Digest, Soohoo is well known for his pioneering work with high-density magnetic disks.

Soohoo is also a published author. His 2004 memoir, Chinese Roots and My American Dream, recounts his early years in China and solo arrival in San Francisco as a teenage immigrant in 1941.

Over the course of his stellar career in academia and industry, Soohoo became concerned about the lack of diversity among industry executives in the United States. The Soohoo–Lee Endowed Fellowship encourages Chinese Americans studying electrical and computer engineering, who also aspire to be industry leaders.

A tribute or memorial gift helps perpetuate the values and ideals that guided someone’s life or career. In addition to honoring a significant person, such as Ronald Soohoo, tributes or memorial gifts assure a superior educational experience for generations to come at the College of Engineering.
JOHN OWENS: REDEFINING PROCESSING

By Derrick Bang

JOHN OWENS, a professor in the Department of Electrical and Computer Engineering, finds particular interest in parallel computing and graphics hardware/GPGPU computing (general-purpose computing on graphics processing units). Parallel computing is distinctly different from the way most home computers function.

“We all use computers that contain a processor,” he explains. “Generally, the CPU is the main processor, and it does just about everything that we care about. It’s optimized to do one thing at a time, really fast; it therefore has lots and lots of hardware structures that will help it run one task as quickly as it can.”

Owens’ research takes a different approach: “Rather than try to make one thing run really fast, we try to make many things run efficiently. We’re therefore not as interested in the latency of a single task; instead, we’re interested in the throughput of all tasks. And we’re willing to trade off one task running a little bit slower, if it means that lots of tasks will run much faster.

“Seymour Cray, the American super-computer designer—the best of all time—would ask, ‘Would you rather plow a field with two strong oxen, or 1,024 chickens?’ He was very much on the oxen side, preferring a few very powerful processors. But it’s a lot of fun to be on the side of the chickens. The goal, then, is to persuade 1,024 individually weak chickens to do something meaningful together ... and really fast.”

This work dovetails with the trending push toward “greener” technology.

Owens uses an alternative approach to address the issue of streamlining a CPU. “We can measure performance, or how good our computing is, in a number of ways; historically, that has focused on processor speed. But other things also are important, and what’s most important—increasingly—is power. So here’s the thing: We could build much faster processors today than we ever could power up. They’d simply melt. As a result, what’s more interesting now is performance per watt.”

With the constraints of materials available for processors, Owens decided to use “the chicken approach: they’re simple processors, and more power-efficient. They won’t melt; they can run cooler. In terms of performance per square millimeter, cost-wise, the chicken approach is substantially better. You can throw a lot more arithmetic onto a chip when building these simple processors, instead of relying on very few powerful ones.

“Some of the world’s largest super-computers, for reasons of cost, performance and energy, are increasingly using GPU-like technologies. And when you look at Green 500 lists, GPU-based machines do very well.”

In the spring of 2012, Owens received special recognition for his efforts when technology company Nvidia named him a CUDA (Compute Unified Device Architecture) Fellow. He joined an elite group of only 12 CUDA fellows—each fellow demonstrating the benefits of GPU computing to advance their respective fields of research; each instrumental in introducing GPU computing to their peers.

“Nvidia is a wonderful research partner, for many reasons. Most of all, they’re dedicated to helping us solve interesting problems. They give us the resources to do this, and they’re open to collaboration.” Nvidia also provides support for travel, allowing Owens to evangelize for GPU computing.

In fall 2012, Owens’ mind was on entirely different matters, during a sabbatical spent at Twitter, the microblogging site based in San Francisco. His work at the firm focused on novel concepts. “I’m humbled by how much I don’t know. I’m learning new stuff about cloud-based computing, very large-scale computing, real-times issues, the Web itself and functional programming ... things at scale.”

The challenges at Twitter invigorated Owens, “They have more than 140 million monthly active users, who generate hundreds of millions of tweets per day; that’s a really big model. Their problems are real-time problems. If I search for soccer on Google, I’ll hit a Wikipedia page. When I search for soccer on Twitter, I want what happened 30 seconds ago, in a particular match. That’s a huge, hard problem, in the sense of being able to do those things quickly.”

Of the numerous firms Owens could have selected, some might wonder why he picked one whose function simply allows users to post, at most, 140 characters at a time. Owens chose the San Francisco firm because “Twitter has a set of values and a positive business ethos, in terms of empowering the users, and promoting their voices, and not censoring ... like when they tried to keep communication open during the Iranian student protests. When I went there, I told them that I could have gone anywhere in the world, but Twitter was where I wanted to be.”

Owens counts himself as a lucky man. “My job here at UC Davis is like that, too. I get to work with really smart people. I’m as happy now as when I first got here, when the department chair who hired me said, ‘Do fad science. Be right on that wave. Be solving the neatest problems that exist at any given time.’”
MORE THAN 220 GUESTS gathered at the Olympic Club Lakeside in San Francisco on Oct. 13, 2012, to celebrate five decades of innovation and excellence at the College of Engineering at UC Davis. The gala event—part of a yearlong Golden 50th Anniversary celebration—included a formal dinner, silent auction and awards presented to faculty, alumni and supporters. The event raised funds to support student scholarships at the UC Davis College of Engineering.

The college recognized five of its outstanding alumni with Distinguished Engineering Alumni Medals. Diane Bryant (Intel), Richard Chuang (Dreamworks/PDI and Cloudpic Global) and Ron McGehee (McGehee Development LLC) received DEAM awards for achievement in business; Brian Maroney (California DOT) received a DEAM award for achievement in public service; and Michael Ward (CSU Chico) received a DEAM award for achievement in academia.

The college awarded Distinguished Service Medals to Tim and Mary Louise Bucher, Jeff and Dianne Child, Mike and Renee Child, Richard and Joy Dorf, Pamela Fair and Glen Sullivan, John Maroney and Sarah Bryan Maroney, Jerry and Helen Suran, and Bruce and Marie West. This is the highest honor bestowed by the College of Engineering to individuals or organizations that demonstrate exceptional academic or business achievement involving engineering and technology; or exceptional philanthropic or other support of engineering.

The College of Engineering also honored four faculty members with awards. Ricardo Castro, an assistant professor in the Department of Chemical Engineering and Materials Science, received an Outstanding Junior Research Faculty Award. M. Saif Islam, professor and vice chair of the Department of Electrical and Computer Engineering, received an Outstanding Midcareer Research Award. Katherine Ferrara, a professor in the Department of Biomedical Engineering, received an Outstanding Senior Research Award. James Shackelford, a professor in the Department of Chemical Engineering and Materials Science, received the Outstanding Faculty Teaching Award.
SUSTAINABILITY CONFERENCE
OFFERS ENGINEERING SOLUTIONS TO 21ST CENTURY CHALLENGES

A FAR-REACHING symposium titled “Sustainable Development for the 21st Century: The Role of the Modern University” took place Sept. 26, 2012, at the UC Davis Conference Center. The conference, one of the many high-profile events designed to celebrate the UC Davis College of Engineering’s 50th anniversary, attracted roughly 120 attendees from academia and industry.

“Sustainable development is the greatest challenge we face as a society,” observed College of Engineering Dean Enrique Lavernia, in his introductory remarks. “A child born today in an industrialized country will pollute and consume more, over a lifetime, than up to 50 children born in developing countries. Clearly, this is not sustainable.”

Diran Apelian—an Alcoa-Howmet Professor of Engineering, and director of the Metal Processing Institute at Massachusetts’ Worcester Polytechnic Institute—introduced the varied guest speakers. They included Bruce German, a UC Davis professor of food science and technology, and director of the Foods for Health Institute; Claire Pomeroy, vice chancellor and dean of the UC Davis Health System and its many academic, research and clinical programs; Tom Anklam, who leads LIFE (Laser Inertial Fusion Energy) systems engineering and analysis at the Lawrence Livermore National Laboratory; David Sedlak, a professor in the UC Berkeley Department of Civil and Environmental Engineering; and Nicole Woolsey Biggart, Chevron Chair in Energy Efficiency at the UC Davis Graduate School of Management.

Additional topics were covered by Mark Caffarey, of Umicore USA; Dan Sperling, founding director of the UC Davis Institute of Transportation Studies; Stephen Lee, head of Carnegie Mellon University’s School of Architecture; Martin Burt, founder and CEO of Fundación Paraguaya; Anil K. Sachdev, group manager of the General Motors Chemical and Materials System Lab; and Sheri Sheppard, co-director of Stanford University’s Center for Design Research.

“It’s necessary to pay careful attention to the nature of the systems involved,” observed UC Davis Chancellor Linda P.B. Katehi. “Holistic solutions require the equation to be balanced. That’s why sustainability challenges are so appropriate for universities: as a topic of education, and of research, and also as a culture and a quality of life. We can bring many possible solutions to the table.”

— Derrick Bang
SIMON CHERRY RECEIVES IEEE’S HOFFMAN AWARD

SIMON CHERRY received the IEEE Edward J Hoffman Medical Imaging Scientist Award, given by the Nuclear and Plasma Science Society of IEEE to an individual in recognition of outstanding contributions to the field of medical imaging science. The primary factor for consideration is the impact and innovative quality of a nominee’s research. Other factors include a nominee’s research contributions over a career, and his/her influence on medical imaging science through education.

Cherry, a professor in the Department of Biomedical Engineering, focuses his research on molecular imaging development. He works at the Center for Molecular and Genomic Imaging, where he has a particular interest in developing new technologies and techniques for in vivo molecular imaging. He continues to develop the rapidly growing field of molecular imaging with work from his own laboratory.

The Institute of Electrical and Electronics Engineers (IEEE) is the world’s largest professional association dedicated to advancing technological innovation for the benefit of humanity. The Hoffman award is given annually to an individual, in recognition of outstanding contributions to the field.

FOUR HP LABS INNOVATION RESEARCH AWARDS FOR UC DAVIS ENGINEERING

HP Labs, the exploratory and advanced research group for Hewlett-Packard, selected four UC Davis faculty members for 2012 Innovation Research Awards. Based on an open, competitive call for proposals, the Innovation Research Program (IRP) is designed to create opportunities for researchers around the world to engage in groundbreaking collaborative research with HP. In 2012, the IRP attracted more than 500 proposals from 441 researchers, at 257 universities in more than 30 countries. After careful review by HP Labs scientists and technologists, 61 professors at 46 institutions from 11 countries, were selected to receive a 2012 HP Labs Innovation Research Award. With its four Innovation Research Awards, UC Davis topped all institutions; the University of Illinois at Urbana-Champaign, Carnegie Mellon University, and Purdue University garnered three awards each.

UC Davis faculty PRASANT MOHAPATRA, CHEN-NEE CHUAH, KWAN-LIU MA and BISWANATH MUKHERJEE received HP Labs Innovation Research Awards for groundbreaking collaborative research projects with HP in 2012. Mohapatra, professor and chair of the Department of Computer Science, will collaborate with HP on “location based communication services.” Chuah received her award for the project “programmable measurement framework for uncovering global events in dynamic network environment.” Ma, received an award for “visual presentation and rating of information for recommendations.” Mukherjee will work on “cloud-based enterprise service architecture for users with heterogeneous devices.”

MICHAEL J. DELWICHE NAMED ASABE FELLOW

MICHAEL J. DELWICHE was named a Fellow of the American Society of Agricultural and Biological Engineers (ASABE) at the organization’s annual international meeting held in Dallas, Texas in July 2012. A professor in the Department of Biological and Agricultural Engineering, Delwiche was honored for his contributions to biological engineering as a teacher and researcher, especially in the development of sensors and the instrumentation for measurement and control.
STUDENTS CREATE BEDS FOR PAJAMARINO

One of the best times to experience Aggie Pride is during Homecoming Weekend. The 2012 Homecoming on October 6 also marked the 100th anniversary of Pajamarino. The annual tradition originated when pajama-clad students sneaked out of their dormitories to greet alumni as they arrived by train for homecoming. Most alumni do not return to Davis by train anymore, but the Pajamarino tradition lives on. This year’s event featured a pair of custom-made beds, fabricated by students in the Engineering Fabrication Lab. The decorated beds were featured in a procession from Central Park in Davis to the Amtrak station, accompanied by an alumni band and several hundred pajama-clad UC Davis students. A new tradition is born.

SUBHASH MAHAJAN RECEIVES IISC 2012 DISTINGUISHED ALUMNUS AWARD

SUBHASH MAHAJAN, a distinguished professor in the UC Davis Department of Chemical Engineering and Materials Science, and special adviser to the chancellor, received one of two Indian Institute of Science Alumni Association (IIScAA) Distinguished Alumnus Awards for 2012.

This honor recognizes Mahajan for his many contributions to the development of Indian engineering and technology, notably his term as consultant to Delhi’s Solid State Physics Laboratory; his work as a United Nations Development Program consultant to the Central Electronics Engineering Research Institute (CEERI), in Pilani, Rajasthan, India; and his collaborations with Indian Institute of Science faculty and students.

Mahajan ranked at the top of his class at the Indian Institute of Science, Bangalore, where he graduated with highest honors in 1961; he then earned a doctorate in materials science and engineering at UC Berkeley.

MONT HUBBARD ELECTED ISEA FELLOW

The International Sports Engineering Association (ISEA) has elected Mont Hubbard as one of the organization’s two inaugural Fellows. The ISEA has spent the last two decades establishing sports engineering as a distinct discipline within engineering. This honor recognizes Hubbard’s exceptional achievements in the field. A professor in the Department of Mechanical and Aerospace Engineering, Hubbard serves as the director of the Sports Biomechanics Laboratory at UC Davis.
HYUNDAI, UC DAVIS SIGN PARTNERSHIP

THE HYUNDAI MOTOR GROUP, South Korea’s biggest automaker, will establish Centers of Excellence at UC Davis and UC Berkeley. Hyundai and university officials signed a memorandum of understanding Friday, Aug. 31, at a ceremony at the Claremont Hotel in Berkeley.

The centers are part of Hyundai’s new R&D Global Frontier program, intended to strengthen the company’s research and development through partnerships with leading universities and industry.

“The center we’re establishing between Hyundai Motor Company and UC Davis is an outstanding model for industry-university partnership,” said Enrique J. Lavernia, Dean of the College of Engineering. “This is a fantastic opportunity for our campus to further develop our research leadership in the transportation field, as demonstrated by the achievements of our notable faculty.”

The UC Davis center, to be called the Hyundai Center of Excellence in Vehicle Dynamic Systems and Control, initially will be led by Professors Emeritus Don Margolis and Dean Karnopp, both of the Department of Mechanical and Aerospace Engineering.

“Collaboration with the world’s top-tier partners will accelerate our technology development, to go beyond the level of global premium carmakers,” said Vice Chairman Woongchul Yang, head of Hyundai Motor Group’s R&D Division. “Based on such advanced technologies, we will develop world-class vehicles that convey Hyundai’s own philosophy, as well as its distinctive emotions.”

The center will enable joint research projects and teaching opportunities between UC Davis faculty and Hyundai engineers.

SANJAY JOSHI RECEIVES NSF GRANT

SANJAY JOSHI, associate professor in the Department of Mechanical and Aerospace Engineering, and his collaborators at Columbia University received an NSF grant in the amount of $1.21 million for the effort: “Assistive Robotics for Grasping and Manipulation using Novel Brain Computer Interfaces.”

The project focuses on the development of systems that allow advanced robotic manipulators to be controlled by the human nervous system, in order to assist individuals who are paralyzed or otherwise immobilized. Under the NSF collaborative research grant mechanism, UC Davis will receive a direct grant for $430,000 of the total funds.

JULIE SCHOENUNG RECEIVES CHIME BELLS AWARD

UC Davis professor JULIE M. SCHOENUNG received a Chime Bells Award for her contributions to Hubei Province, China. Schoenung was honored for collaborative platforms based on thermal and physical deposition techniques of ceramics coatings between UC Davis and Wuhan University of Technology. The award recognizes her efforts to instruct and recommend Chinese scholars for high quality publications in international journals.

A professor in the Department of Chemical Engineering & Materials Science, Schoenung received her undergraduate degree from the University of Illinois at Urbana-Champaign before attending MIT for her master’s and doctorate. Her research interests include nanostructured/ultrafine grained materials and green engineering design. Schoenung is a Max Planck fellow and an AT&T industrial ecology faculty fellow.

Hubei Province, in the central part of the People’s Republic of China, began the Chime Bells Award in 1994 to honor foreign experts who work with the province. Schoenung is the only woman among this year’s 12 recipients.
UC DAVIS RESEARCHERS AWARDED NORMAN MEDAL FROM ASCE

The American Society of Civil Engineers (ASCE) awarded its 2012 Norman Medal to a team of UC Davis researchers led by professors YANNIS DAFALIAS and SASHI KUNNATH. The prestigious award recognizes a paper demonstrating significant contributions to engineering science. This year, ASCE chose the team’s paper “SANISTEEL: Simple Anisotropic Steel Plasticity Model,” published in the February 2011 issue of the Journal of Structural Engineering. The other researchers on the team were UC Davis Ph.D. students Mark Mahan, Mahdi Taiebat and YeongAe Heo.

Dafalias holds a joint appointment as professor of structural mechanics and geo-mechanics in the Department of Civil and Environmental Engineering at UC Davis, and as professor of mechanics at the Department of Mechanics of the School of Applied Mathematical and Physical Sciences of the National Technical University of Athens. Kunnath serves as chair of the Department of Civil and Environmental Engineering, and as a professor of structural engineering.

MAKE AN ONLINE GIFT TO THE COLLEGE OF ENGINEERING

Your gift will impact every aspect of the student experience at the UC Davis College of Engineering.

Your gift will provide engineering students:

- vital scholarship support to attend UC Davis’ top-ranked engineering school;
- access to innovative coursework in critical areas, such as sustainability, healthcare and Internet security;
- opportunities to participate in national competitions, gaining hands-on experience while developing real-world projects.

Contribute to student scholarships, ensuring that promising young minds will have the best opportunities to excel in the world.

KATHERINE FERRARA RECEIVES THE IEEE-UFFCS AWARD

KATHERINE FERRARA, professor in the Department of Biomedical Engineering, received the IEEE-UFFCS Achievement Award on October 8 at the IEEE-UFFCS (Ultrasonic Ferroelectric and Frequency Control Society) annual meeting in Dresden, Germany. The Achievement Award is the highest society-wide award presented to a member in special recognition of outstanding contributions.

The IEEE-UFFCS Achievement Award recognizes Ferrara’s career contributions to the development of image-guided drug delivery, combining nanovehicles, imaging techniques and methods to enhance delivery.

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UC DAVIS RESEARCHERS AWARDED NORMAN MEDAL FROM ASCE

The American Society of Civil Engineers (ASCE) awarded its 2012 Norman Medal to a team of UC Davis researchers led by professors YANNIS DAFALIAS and SASHI KUNNATH. The prestigious award recognizes a paper demonstrating significant contributions to engineering science. This year, ASCE chose the team’s paper “SANISTEEL: Simple Anisotropic Steel Plasticity Model,” published in the February 2011 issue of the Journal of Structural Engineering. The other researchers on the team were UC Davis Ph.D. students Mark Mahan, Mahdi Taiebat and YeongAe Heo.

Dafalias holds a joint appointment as professor of structural mechanics and geo-mechanics in the Department of Civil and Environmental Engineering at UC Davis, and as professor of mechanics at the Department of Mechanics of the School of Applied Mathematical and Physical Sciences of the National Technical University of Athens. Kunnath serves as chair of the Department of Civil and Environmental Engineering, and as a professor of structural engineering.

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KATHERINE FERRARA RECEIVES THE IEEE-UFFCS AWARD

KATHERINE FERRARA, professor in the Department of Biomedical Engineering, received the IEEE-UFFCS Achievement Award on October 8 at the IEEE-UFFCS (Ultrasonic Ferroelectric and Frequency Control Society) annual meeting in Dresden, Germany. The Achievement Award is the highest society-wide award presented to a member in special recognition of outstanding contributions.

The IEEE-UFFCS Achievement Award recognizes Ferrara’s career contributions to the development of image-guided drug delivery, combining nanovehicles, imaging techniques and methods to enhance delivery.
WILLIAM H. “BILL” KIND is living proof that chance truly favors the prepared mind.

The savvy electrical engineer—who earned his master’s degree at UC Davis in 1985, and subsequently rose to corporate prominence in Silicon Valley tech companies such as Ascend Communications and Siara Systems—grew up in San Francisco as a kid who fooled around with “wires, lights, batteries and stuff.”

After obtaining his undergraduate degree from San José State University, Kind joined the electrical engineering team at Hewlett-Packard; during the mid-’80s, he divided his time between industry work—rising through various management positions at HP—and completing his master’s degree at UC Davis. He would later serve as a director of engineering at Cisco, and later move to Ascend and Siara.

Today, Kind is a man with a new mission: gender parity in the engineering field. “Engineers make a huge difference in the world; a lot of corporations are run by engineers. Women are 51 percent of the U.S. population, and they have a different set of problem-solving skills; they bring new things to the table. In countries such as China, 50 percent of the college-level engineering students are women; if the United States doesn’t catch up, that’ll be a problem."

The Kind Family Scholarship supports undergraduate women at the UC Davis College of Engineering, based on ability and need. Rather than grant a free ride to a single individual, the scholarship’s assets are spread among several worthy students.

His philanthropic activities aside, Kind remains officially retired ... but hardly inactive. He has embraced mountaineering—rock and ice climbing—with the passion he once displayed for electrical engineering. “It’s like chess,” he enthuses. “You have to think seven moves in the future. You’re up at 13,000 feet, doing big stuff.

“It’s challenging and exciting ... and very healthy.”

— Derrick Bang