

SCRUGHAM MEDAL REVIEW

The evening of October 17, 2008 marked the third presentation of the Scrugham Medal award to outstanding alumni. The College of Engineering initiated this prestigious award for our outstanding alumni in 2006. The James Graves Scrugham Medal was designed to commemorate one of the key figures in the history of the College of Engineering and the state of Nevada. Alumni who have become nationally recognized because of their professional achievements are being honored with this award. James Graves Scrugham was a distinguished Nevadan who was the first Dean of the College of Engineering, a State Engineer, Governor of Nevada, a U.S. Representative in Congress and a U.S. Senator.

The third class of inductees was honored during a wonderful evening at Circus Circus. Nearly 75 attendees enjoyed a lively cocktail hour followed by dinner, a college update by Interim Dean, Dr. Manos Maragakis, along with insight into the college's collaboration with the College of Business. Dean Greg Mosier from the College of Business spoke about the need for collaboration and potential programs that will incorporate post-graduate engineering programs with business courses. After dinner the focus of the evening turned to the distinguished guests: Jeff Ceccarelli (CE '76), Bernard Kwok (EE '81, MBA '84) and Gene Testolin (CE '71).



JEFF CECCARELLI, CE '76



Jeff Ceccarelli started with Sierra Pacific Power as a student engineer while he was studying at the University in 1972. In the next 36 years, he held positions as

Supervisor in Transmission Design, Manager of Gas and Water Design and Planning, Director of Engineering Operations for the Water Division, Director of Customer Operations, and Vice President of Distribution Services.

In 2000 Jeff was named President of Sierra Pacific Power Company and in 2004, he was named Senior Vice President, Service Delivery & Operations for Sierra Pacific Resources. He currently holds the title of President of NV Energy, formerly Sierra Pacific Power Company.

Jeff Ceccarelli is a fourth generation Nevadan who had an affinity for math and science. He was attracted to the hands-on approach to engineering education at the University of Nevada, Reno. Always an achiever and a student athlete, Jeff went to Nevada on a basketball scholarship. He credits his success to hard work, the camaraderie of his classmates and colleagues, and especially to his family. His wife, Rhonda – also a Nevada alum – is his high school sweetheart and the person who has daily supported his career and their daughters Jessica and Angela.

BERNARD KWOK, EE'81, MBA '84



Bernard Kwok is Symantec's Senior Vice President of the Asia Pacific and Japan (APJ) region. Symantec's sales and business development spans more than 17 countries. Bernard

is credited with masterfully managing the company's operations in China, Hong Kong and Taiwan where he served as president of the Greater China Region. Symantec merged with Bernard's previous employer, Veritas Software. At Veritas Software, he was president for the Greater China Region and was responsible for expanding market share of Veritas' utility computing solutions. Bernard also developed the company's core strength of storage management software in China's market. Before this, Bernard held positions as President and CEO of Fujitsu China, as President at EMC Corporation – Greater China; and as senior management at 3Com Asia Ltd, Northern Telecom (Nortel Networks) China Ltd and other multinationals.

This is an interesting professional journey for the young man who put himself through the engineering program – working a number of different jobs including work as a bus boy and then waiter at the Nugget. Bernard Kwok values all his family. He came to live in Reno because of his eldest brother. He met his wife of 26 years while attending high school in Hong Kong, and they have two daughters.

GENE TESTOLIN, CE '71



Gene Testolin got his degree in civil engineering and proceeded to acquire career achievements with Morrison-Knudsen, the Nevada Highway Department, the Dravo Corporation

and especially with Fluor—a major global company—where he is the Vice President of Construction.

Gene has worked at Fluor since 1977 doing projects that have used his engineering and management skills. His most current project is a \$3.2 billion refinery expansion for Marathon GME in Garyville, La. Other projects include the \$2.36 billion project for Shell in Alberta, Canada, a \$1.2 billion Nickel-Cobalt Project in SW Australia for Murrin Murrin, a \$260 million iron ore palletizing plant in Brazil and a \$500 million refinery project in the Philippines. The Brazil project achieved 1.7 million man hours without incident and the refinery in the Philippines earned recognition for safety.

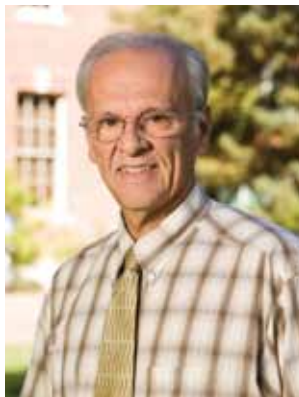
Some could have predicted this since he was the President of the ASCE Student Chapter at the University. Gene said, "I wanted to be a builder and I always wanted to travel". Clearly, his intelligence, skill, and hard work allowed him to do both – along with his University degree in civil engineering.

Maintaining our vision

Dear Friends of Engineering,

Periods of hardship are often perfect moments to decide the future. Certainly, the economic downturn that has gripped Nevada and the nation has given us all reason to pause, and to wonder what the future holds.

For the College of Engineering at the University of Nevada, Reno, the challenge in the coming months will not be budgetary or financial



Maragakis

– although these are critically important issues that will require a great amount of planning, creativity and fortitude to offset their impact.

The greatest challenge that we have, I believe, is ensuring that in difficult times we can maintain our strategic vision and position ourselves to achieve it within our strategic timeframe. During the past few months, I have been heartened by what our college has accomplished during difficult times.

It excites me to think about what the future holds for us.

As we finish the fall semester and head into the spring, I have, in collaboration with the rest of our college's leadership, set several goals for our college. Many of these goals are not attainable in the coming weeks or even months. Yet, it is important that we work toward these goals. They will help amplify the ways we hope to serve our students, our University, our state and our nation in the future.

Here are some of the goals the College of Engineering is striving to attain, along with points of strength that we will continue to build:

THE VALUE OF FIRST-CLASS FACULTY: Our faculty is our foundation and our essence. Unlike many other universities, where undergraduate exposure to the best faculty happens only fleetingly, the College of Engineering has a long tradition of ensuring undergraduates see our faculty early and often during their academic careers. Our professors are expected to excel in many categories of the academic spectrum, including excellence in teaching, cutting-edge research and a wide variety of regional, national and international public service activities. But, first and foremost, they are expected to offer our students a first-class learning experience that will prepare them for the challenges of the future. Our goal is to build on the many strengths of our current faculty and find innovative ways, under the current hard financial conditions, to expand in new strategically selected areas that will further enhance the position of our college and help us meet the challenges of tomorrow.

THE VALUE OF UNDERGRADUATE AND GRADUATE EDUCATION:

Our college takes great pride in offering fully accredited high-quality undergraduate degrees. We are continuously trying to maintain and improve the quality and competitiveness of these degrees. At the same time, we have set the goal of introducing, within our current resources, a few new strategically selected degrees to enhance the opportunities for our students. More degrees are planned for the future as our resources grow. In addition, establishment of a strong, first-class graduate education, based on nationally or internationally recognized competitive research, is another top strategic priority. The college already has several strong research areas. Our Civil and Environmental Engineering Department has achieved high national rankings in U.S. News & World Report, and our Mechanical Engineering Department has been highly ranked for its research productivity in a recent survey. We believe strong research capabilities and graduate programs actually significantly help the success of our undergraduate students. They contribute to the enhanced reputation of the College of Engineering, and, as a consequence, make our undergraduate degrees more competitive. They enhance the knowledge and experience of our faculty, who can bring new ideas and novel approaches into their classrooms.

THE VALUE OF GREAT STUDENTS AND A GREAT STUDENT EXPERIENCE:

The fall semester has seen our numbers in the college continue to increase. We have seen record enrollments in our civil and environmental engineering program and our mechanical engineering program. We have great potential in a number of other areas. But this is not enough. Part of the multi-faceted strategy that we have implemented in recent months is to focus on a well-planned and executed high school recruitment effort. To that end, our faculty has proven exceptionally helpful, working with well qualified college personnel with several K-12 outreach efforts that have gotten us into the schools earlier, for much greater impact. We must also encourage a four-year path to graduation for our students through an increased emphasis on college-level advising during our students' sophomore and junior years, and through thoughtful advisement and mentorship at the departmental level during their junior and senior years. We will also be taking steps to increase our student retention and help our students with internships.

THE VALUE OF PARTNERING WITH INDUSTRY AND OTHER COLLEGES:

During our latest meeting with the College of Engineering's Advisory Board, I reaffirmed our college's commitment to building lasting and productive partnerships with local and state industry. Greater interaction with industry will help us, and our state: we will be contributing to the diversification of the local and statewide

Continues on page 2

Maragakis named interim dean for Engineering

Manos Maragakis, a longtime department chair and internationally known professor and researcher in the area of seismic response of large-scale structures, assumed his appointment as interim dean of the College of Engineering on July 1, following the announcement that Dean Ted Batchman would be stepping down and would be returning to the college's faculty following 13 years as dean.

"Manos is uniquely qualified for this position, both as a professor in the college, and as well, as an administrator," Interim Provost Jannet Vreeland said in making the announcement in May. "He has played an important role in the college's growth over the past 24 years, including the last 14 as a department chairperson. He has proven himself in a variety of roles during his service to the university, and I have every confidence he will provide good leadership over the next year."

Maragakis, a Foundation Professor, joined the University in 1984. He gained full professorship in 1994, assuming the chair position for the Department of Civil Engineering (now the Department of Civil and Environmental Engineering) that same year.

From page 1

economy – critical elements in hastening our economic recovery. In the very near future, it is my hope that the University will move toward forming a collaborative on sustainability that will help us all establish new undergraduate programs, pursue new competitive research and partner with several industries in the area. Our college will play a significant role in this collaborative through its renewable energy expertise and by working closely with other colleges within the University. In this way, resources such as the Redfield Campus can be fully leveraged for research and teaching.

The sustainability collaborative represents a first in a series of cooperative

"I believe the college is in good shape right now," Maragakis said. "We need to continue to work with our central administration about determining the needs for the college at this particular time, and this includes an assessment of our strengths and weaknesses. I believe very firmly that we are central to the University's land-grant mission."

Maragakis praised Batchman's work for the college, noting, "Dean Batchman has been a very conscientious and hard-working dean. He has always worked well with all of the chairs of the college, and I have always appreciated the open door policy that he has maintained for everyone in the college."

Maragakis has established a strong reputation in national and international research circles in the area of earthquake response of buildings and bridges. His department's Center for Civil Engineering Earthquake Research received recognition from around the world. The multimillion dollar state-of-the-art laboratory has developed unparalleled capacities in the field of bridge engineering.

efforts that I hope will be undertaken, and will lead in enhanced productivity not only for our college but for our University as a whole.

I believe we are at a moment in the history of our college where we must continue to strive, where we must compel ourselves to change and improve. Certainly, the times we live in are challenging. Yet even in the middle of hard times, I am optimistic that we can find it within ourselves to take full advantage of our college's vast strategic opportunities.

Sincerely,

Manos Maragakis
Interim Dean, College of Engineering

Batchman receives prestigious fellowship

Former College of Engineering Dean Ted Batchman has received numerous awards during his more than 40 years as a professor and administrator.

In April, Batchman received word that his lengthy record of distinction would have



Batchman

to be modified yet again – the American Society for Engineering Education (ASEE) informed Batchman he was named a Fellow Member in recognition of his outstanding contributions to the society.

Batchman, along with 11 others from institutions throughout the country, was formally inducted during the ASEE's annual awards banquet on June 25 in Pittsburgh, Pa.

This is the second time that Batchman has become a Fellow in a major professional organization. In 2002, he was elected a Fellow of the Institute of Electrical and Electronic Engineers (IEEE).

"Being elected Fellow to your professional society is quite a distinguished honor, and I'm quite humbled by this," Batchman said. "It indicates a level of recognition throughout your society, that you've contributed significantly above the norm."

Batchman's work with the ASEE has been substantial. He has chaired the steering committee for the organization's Frontiers in Education conference, which in 2001 was held in Reno.

He was also instrumental in the formation of two of the newer divisions in ASEE, the K-12 division and the Entrepreneurship division.

Batchman embarked on a new phase of his career at Nevada after June 30, when he stepped down as dean to become Founding Director of the University's Renewable Energy Center at the Redfield Campus.

College of Engineering

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ENGR/PSC 110

Introduction to Renewable Energy: But will it be on the final exam?

By Ted Batchman

A year ago we proposed and received approval from the University for the interdisciplinary Renewable Energy minor. Dr. Chris Simon in the Department of Political Science and I team taught the first offering of the course to about 40 students during the spring 2008 semester and we taught it again in the fall to a like number of students.

As any university faculty member will tell you, when the semester draws to a close, the students always want to know, "Will it be on the final exam?" We always dread this question because the underlying meaning is, if it is not going to be on the final exam, it must not be important, so I can forget it! How can I tell them that everything is important in this survey course on renewable energy technology, economics and policy and expect them to believe me when history tells us no one has taken renewable energy seriously in the past?

Just before writing this article, I was in Austin, Texas, filling my rental car with gas at \$1.84 a gallon and remembering paying close to \$4 a gallon a few months ago. Many of you may remember the lines at gas stations over 30 years ago and the concern about our dependence on foreign oil. Well, it must not have been on the final exam because we promptly forgot about it and did not develop a comprehensive energy policy when the supply increased. We stopped worrying about it! So how much interest should we expect this generation of college students to have in renewable energy when all they have experienced is high gasoline prices and a threat of global warming? Dr. Simon and I were pleased with the number enrolled each semester but will this continue with gasoline prices dropping and the major concern shifting to the economy? How quickly will we forget?

I don't believe we will be able to forget because the supply of oil is quickly drying up. Both the state and federal governments have pressed for high mileage requirements and lower emissions on automobiles. Many states are now requiring a percentage of renew-



Photo by Jean Dixon

With fossil fuel sources becoming less viable across the world, efforts in renewable energy such as geothermal, shown here, are ongoing at the University's Renewable Energy Center.

able energy as part of our electrical generation standards. But the question remains, will student and public interest continue in this area?

We have structured the minor program so that all students are required to take this introductory course. The minor is open to all university disciplines and we have students taking the course from engineering, political science, biological sciences, education, business and other areas. A follow-up course EE 240 – Fundamentals and Economics of Renewable Energy – will be offered in spring 2009.

Students electing to receive the minor as part of their degree have a choice of two tracks. Track I was designed for students majoring in engineering and sciences who seek additional specialization in the interdisciplinary studies of alternative energy. Track II is designed for students in any major offered by the university. All students must take a minimum of 18 credits including the introductory ENGR/PSC 110 course. The list of courses from which the student may choose the remaining 15 credits include geology, electrical engineering, resource economics, chemical engineering, physics, political science, mechanical engineering and civil engineering.

We started the Renewable Energy Minor after NV Energy (formerly Sierra Pacific) approached us with a concern that they were not able to hire graduates with a technical and policy background in renewable energy. Through a generous grant of \$500,000 we were able to hire two new faculty members in renewable energy and initiated the new minor. We were all surprised at our enrollment the first semester and we are elated at the continued enrollment the second time we offered the introductory course. Now we must encourage the students to complete the minor and not forget what is important and why they are studying renewable energy.

(Note: Ted Batchman is a faculty member of the electrical and biomedical engineering department and director of the Renewable Energy Center.)

A busy year for Engineering K-12 activities

Between Aug. 2007 and May 2008, College of Engineering faculty participated in many local events

FUTURE CITIES COMPETITION

Future Cities is a national program held each January when local students present their vision of a future city. Thirty-six seventh and eighth graders displayed and explained their models. Nine teams competed, assisted by 12 mentors and middle-school teachers. We provided display rooms and instructor guided activities.

MATH COUNTS

Math Counts is a national program that encourages the development of strong math skills for middle-school age students through ongoing school programs and regional, state, and national competitions in March of each year. We provided judges, promotional support and University giveaways to 50 students, representing eight local schools.

ENGINEER'S DAY

Engineer's Day is a national program, supported by our college each April. More than 500 local middle and high school students visited our college. We involved engineering students and instructors, who gave tours and demonstrations of engineering technology.

TUNE INTO KIDS

We staffed an interactive booth for this family event at Idlewild Park in Reno. Eight of our engineering students encouraged students to understand and test our "Lemon Battery." Approximately 5,000 people attended this event. Approximately 400 people visited with our students at our booth. Approximately 200 children enjoyed our hands-on activities.



Photo by Jean Dixon

It was another productive year of outreach for the College of Engineering, which saw numerous visits to K-12 settings.

WOW! THAT'S ENGINEERING?

Members from our college participated in a panel discussion for 37 middle and high school students on behalf of the Professional Society of Women Engineers (SWE).

MERIDIAN GOLD'S RUN FOR EDUCATION

We staged the ME2L box truck at the event. More than 5,600 people attended, primarily K-12 students, teachers and parents. Engineering students promoted our outreach programs from our University-College of Engineering booth.

OUTREACH COORDINATION

Debbie DeLauer, our part-time K-12 Outreach Coordinator, rejuvenated the Mobile Engineering and Education Lab Program (ME2L) along with promoting and

organizing six Engineering Summer Camps. Coordinating ME2L involves continuous communication (primarily through email) to principals and teachers; promoting the lessons we have developed, and scheduling presentations in classrooms. We promote our summer camps within the middle and high schools, to previous campers, at the Regional Science Fair, and through advertising. For the camps, we recruit COEN instructors and guest speakers, develop content activities, and organize campus tours and field trips in the spring of each year.

MOBILE ENGINEERING AND EDUCATION LAB (ME2L)

We hired two engineering students who worked six to eight hours each per week. They developed hands-on engineering activities and presented lessons to students in K-8 classrooms. We made presentations

to 2,335 students in 65 classrooms within 22 local schools. All lessons are fun and hands-on; we also share information about careers in engineering and our college's programs.

SUMMER ENGINEERING

We held six camps: one in Carson City, five at the University. A total of 84 students attended the camps (average 15 per camp). Campers enjoyed lab tours, experiments, hands-on activities, tours of our college and campus, along with weekly field trips. Sixteen engineering instructors and guest speakers facilitated the lessons. Scholarships and financial assistance were offered to children if parents indicated a need.

INTRO TO ENGINEERING IN CARSON CITY

Ten students attended. Instructor was Lisa Stocke, Carson Middle School technology teacher. Activities included designing, constructing and operating robots, as well as building bridges with marshmallows and spaghetti and comparing strength and shapes. NDOT helped with roadway design, bridges and hydraulics demonstrations. Students also designed, built and launched bottle rockets. There was also an egg crash test cars competition. Resource Concepts, Inc., showed a demonstration of CAD, and a lesson on using survey equipment.

FIELD TRIP TO THE UNIVERSITY

The field trip consisted of a large-scale structures laboratory tour; Mackay School of Earth Sciences and Engineering tour; tour of campus and dorms.

INTRO TO ENGINEERING

Thirty-six students attended, with participating instructors Dr. Zong Tian, Civil Engineering; Dr. Eric Marchand, Environmental Engineering; Dr. Dwight Egbert, Computer Science; Dr. Bobby Bryant, Computer Science; Dr. Eelke Folmer, Computer Science. Volunteers and guest speakers included Chad Little, Civil Engineering graduate student;

Rachel Dolbier, director, Keck Museum; HDR engineers, bridge building activity; Dr. William Mehm, Biology professor, Dennis Dolbies, licensed magician; NDOT engineers and employees. Activities: design, build and blast bottle rockets; tour of our structures lab; design, build and test bridges; "Visual Allusions Designed to Deceive" presentation; digital gaming lessons, learn to design a video game; guided tour and activities - Keck Museum & Seismology Lab; tour NDOT departments and the new Galena Bridge

ENVIRONMENTAL ENGINEERING

Fifteen students attended. Instructor was Dr. Eric Marchand, Civil Engineering. Activities: collecting water samples from the Truckee River; testing and analyzing water quality, water flow in ditches; computer research, how

to work with data; design and build bottle rockets - water based projectiles; design and construct boats for a flume race; reverse engineering using a Brita Filter and coffee maker; hydraulic jumps. Field trips were taken to the Tracy Power Plant - power generation from water and the Truckee Meadows Water Authority's hydraulic power plant in Verdi.

ELECTRICAL ENGINEERING

Thirteen students attended. Instructor was Dr. Mehdi Etezadi. Guest Speakers and volunteers: Al Lee, engineering alumnus; Dr. John Kleppe; Darrel Upson; Dana McPherson; Dr. Bruce Johnson; Dr. Moncef Tayahi. Activities: learning about the digital divide; creating video and sound transmission using fiber optics and computers; control experiments, learn to solder, build a radio transceiver; how to succeed after becoming an engineer. Field Trips to: Truckee Meadows Water Authority's hydraulic power plant in Verdi; NV Energy - learning about alternate power sources; University's Emergency Operations Center.

EARTHQUAKE ENGINEERING

Sixteen students attended. Instructor: Dr. Sherif Elfass, Civil Engineering instructor. Guest Speakers: Rita Johnson; Dr. Ian Buckle; Dr. David Sanders. Activities: learning about faults; earthquake preparedness; building safe structures and bridges - testing; bridge builder - software demo; soil liquefaction; build a shake table; tour of Mackay's underground base isolation pillars.

GEOTECHNICAL ENGINEERING

Twenty students attended. Instructor: Dr. Gary Norris, Civil Engineering instructor. Guest speaker: Dr. Sherif Elfass. Activities: soil reinforcement; friction tables; liquefaction; physical modeling. Field Trips to: Mt. Rose Highway, identifying fault lines; Nevada Department of Transportation - roadway design, materials testing; review aerial photos and mapping processes; local housing construction site.



Photo by Jean Dixon

CAMP BY THE NUMBERS

84 campers attended the six camps

56 received scholarships

\$9,650 total amount of scholarship dollars granted

72 males

12 females

35 Caucasian

9 Asian

6 Hispanic

1 African-American

2 Native American*

* Remaining did not indicate race

Materials Science earns \$2.7 million from DOE to study recycling of spent nuclear waste

By Manoranjan Misra

We recycle plastics, paper, and garbage – why not spent nuclear waste? The science and technology is there to recycle spent nuclear fuels in a safe, economical manner, and it has the potential to provide non-proliferation benefits. The nuclear wastes are scattered across the country and are stored at different sites. We have almost 45,000 tons of spent fuels (160,000 assemblies) which are stored at different sites across the nation.

The U.S. alone generates about 8,000 spent fuel assemblies each year. Over the past several decades the spent fuel has been stored at the nuclear power plants until it can be stored in the proposed Yucca Mountain repository site in southern Nevada. The Yucca Mountain repository is designed to hold 77,000 tons of nuclear waste for thousands of years. However, by the time this repository is ready, the volume of nuclear waste generated by nuclear power plants will exceed the proposed capacity. Nuclear power is a sustainable source of energy. In the near future, more than 100 nuclear power plants in the U.S. are planned to be opened. Before we can proceed to open new nuclear power plants, however, it is important that a waste management solution for the old and newly generated spent fuels is found.

Other countries such as France, the United Kingdom, Japan, and India are recycling nuclear fuels using aqueous hydrometallurgical processing. These processes have some limitations and only recycle 15-20 percent of the uranium present in the spent fuel and produce significant mixed wastes. A typical spent fuel contains almost 95 percent uranium and other toxic fission products along with ~ 1 percent plutonium. Nearly all of the toxic products have a short half-life but some radio active materials such as plutonium 239 have a long half-life of 24,000 years. With the recycling of uranium, plutonium and



Photo by Jean Dixon

Dr. Mano Misra is heading the research effort to find innovative ways to recycle spent nuclear fuel assemblies.

other fissionable components we can decrease the storage volume. This will reduce the storage life of the waste by collecting the toxic products separately. The residual toxic fission products can be encapsulated in a small volume and then be stored in a safe manner for a small amount of time rather than hundreds of thousands of years. The molten salt electro separation technique can be used at the site or in a central place in a compact manner. This approach not only recycles uranium, it will eliminate bulk transportation and storage of

high volume nuclear wastes. A molten salt electrolysis process similar to other metallurgical electro refining has been proposed to recover almost all of the uranium back to the nuclear reactor in a metallic form.

With the news that we had been awarded \$2.7 million from the Department of Energy, these funds will be used to develop basic information to make the molten salt electro separation process more efficient, and design a better and larger recycling unit. The nuclear materials laboratory built at the University will be used to process “simulated nuclear waste” in a controlled atmosphere glove box which is instrumented with high tech electrochemical equipment.

In addition to the experimental evaluation, a high powered mathematical simulation approach will be used to assess the performance of nuclear fuels. We hope in a few years that it will be possible to recycle uranium from nuclear fuels. This will reduce the need for additional high capacity nuclear waste repositories, and it will save 30-40 percent of all natural uranium which has scarce availability in the United States.

(Note: Manoranjan Misra is a professor of chemical and materials engineering in the College of Engineering.)

The nuclear materials laboratory built at the University will be used to process “simulated nuclear waste” in a controlled atmosphere glove box which is instrumented with high tech electrochemical equipment.

Senior Capstone Design Class excels in Governor's Cup

Three teams from the Senior Capstone Design class of Materials Science Engineering entered the 2008 Donald W. Reynolds Governor's Cup.

The Bio-Grounds team, which turned spent coffee grounds into biofuels, consisted of Jason Strull, Case Egan, Gabriel George Rojas and Rao Kondamudi.

The Power Development Technologies team, which used innovative technology to provide renewable energy, consisted of Palkin Zed, William Groesbeck, Tanner Ruf and Annie Vranizan.

The West Helios team, which generated hydrogen from water using sunlight, consisted of Hailey Murdock, Mathew Savage, Kurtis Clark, Brandon Williams, and Lindsay Vacek.

All three teams did excellent work, and the Bio-Grounds design team won the Lt. Governor's Award. Also, Palkin Zed entered the Smart Materials Design Contest sponsored by the American Textile Association. She received first prize for her project on "High Energy Capacitor Design."



Dr. Maurice C. Fuerstenau, professor emeritus and interim chair, Department of Chemical and Materials Engineering, has been elected Honorary Member of the American Institute of Mining, Metallurgical and Petroleum Engineers. Professor Fuerstenau has been a faculty member at Nevada for 20 years. He is a member of the National Academy of Engineering and was national president of the Society for Mining, Metallurgy and Exploration in 1982. He is the recipient of numerous national and university awards.



Photo by Jean Dixon

Members of the Senior Capstone Design Class were honored with breakthrough projects in the Governor's Cup.

Senior design project features newest of 'new' emerging technologies

By Alan Fuchs

This year's Chemical Engineering senior design projects are based on new newly emerging technologies and are a continuation of ongoing projects with world class companies and organizations.

This is the fourth year that we are collaborating with Genentech Corp. of South San Francisco, Calif., on the design of a monoclonal antibody process. The molecule which is synthesized is used as a cure for macular degeneration of the eye. The students will design a full-scale process to make 10,000 liters of a product called Lucentis. They will also do experimental work on two of the processes, chromatographic and membrane separations.

A full-scale process will be designed for the synthesis of single wall carbon nanotubes (SWCNT) with NASA Ames in Mountain View, Calif. This is the third year of this collaboration. Last year a bench

scale fluidized bed reactor process was designed and built in the laboratory for the synthesis of the SWCNTs and they were characterized using scanning electron microscopy. During the summer, one of our graduates, York Smith, wrote a paper on this educational experience and submitted it to the journal, Chemical Engineering Education.

This year we will be building a bench scale brewery to make a New Zealand or Asian style hops beer. This project is in collaboration with Sierra Nevada Brewery in Chico, Calif. Last year the students proposed a full scale brewery to make a wheat beer, and this project was a finalist in the Governor's Cup. This year, the students will be design a bench scale brewery to study a variety of variables in the brewing process.

(Note: Alan Fuchs is an associate professor of chemical and materials engineering.)



Members of the University's national championship concrete canoe team proudly pose with their championship canoe.

Nevada wins national concrete canoe competition

For the first time in its history, the University of Nevada, Reno took first place at the American Society of Civil Engineers' (ASCE) 21st annual National Concrete Canoe Competition June 21 in Montreal. The team's canoe, *Argentum*, topped a wide field of canoes from 21 other schools, ending the University of Wisconsin-Madison's five-year winning streak.

"It's just so hard to contain yourself," said Robert Coomes, team paddler and president of the University's ASCE student chapter. "We knew we'd done well, but as they did the reverse count of the top five teams at the awards dinner, we were just holding our breath until they announced second place and it still wasn't Nevada."

The event was held in Montreal's Olympic Basin, the site of the 1976 Summer Games. And despite heavy rain during the first two days of the competition, the team found perfect conditions on the water for the races. The University of California-Berkeley team placed second to Nevada, and Wisconsin was sixth.

Each year the society invites thousands of engineering students from around the world to design, build, and paddle canoes made from concrete. The student-built boats are judged in four categories: overall appearance, technical design paper, oral presentation and paddling. The top three teams at the national competition win \$5,000, \$2,500 and \$1,500 scholarships for first, second and third place, respectively.

"I was incredibly blessed to be in Montreal to see it happen," said David Sanders, Nevada civil and environmental engineering professor and the team's adviser. "Our students were absolutely fantastic, and their sportsmanship as great ambassadors for the University was un-



believable. They (scored) high in all categories and this is a huge win, not just for the College of Engineering, but for the entire University."

Argentum – which is Latin for silver – had zero deductions out of 100 in the design category, placed third in the oral presentations, and for the first time in Nevada history, placed above fifth in all of the races. Races include the women's and men's endurance, sprint and a co-ed race.

When the competition finally ended, Coomes said most of the nearly 40 team members took to the water for a swim, whether they wanted to or not.

"I think we threw in the design team and the presentation team," he said, "and then we exchanged boats with some of the other schools so we could all see what they felt like in the water. Florida's boat was very similar to ours, and Wisconsin's was wicked fast — we just couldn't steer it around the turns."

Sanders and the team are thrilled that many undergraduates stepped forward this year to join the crew, because it takes a lot of time to design and build the boat. It also took 48 hours and 12 minutes to drive the canoe the 2,800 miles from Reno to Montreal. To celebrate the unprecedented win, the team did a little sightseeing on the way back.

"We saw Niagara Falls last night and took a lot of pictures," Coomes said immediately following the competition. "We plan to see a little of Chicago and St. Louis, too, on the way back, just to celebrate and be grateful for what this win means. But we're already thinking about how we can improve for the competition next year."

Civil and Environmental Engineering News

Two College of Engineering graduates – Simon Wong and Claudia Pulido – were recently honored for their work with concrete bridges during the award ceremony for the American Concrete Institute Fall Meeting’s Eleventh Biennial Bridge Awards Competition. This awards were presented by the Portland Cement Association.

The Agua Hedionda Lagoon Railroad Bridge Replacement in Carlsbad, Calif., was one of the winners. It was designed by Simon Wong Engineering. Another winner was the Selmon Expressway Expansion in Tampa, Fla. It was designed by Figg Bridge Engineers. One of the lead designers and the person accepting the award was Claudia Pulido. Here is a synopsis of both projects.

AGUA HEDIONDA LAGOON RAILROAD BRIDGE REPLACEMENT

To enable passenger trains to run at full speed, the North County Transit District in Carlsbad, Calif., needed to replace a timber trestle bridge. Engineers recommended replacing the current 14-span wood bridge with a new three-span precast concrete bridge to cover the priority wetland section of Agua Hedionda Lagoon. The use of 99-foot long, 7-foot deep precast bulb-tee concrete girders allowed the main span to clear the mouth of the channel, thereby expediting the environmental review process. The use of a cast-in-place concrete deck and ballast retainers built over the girders made it possible to open the bridge just four months after the girders were placed.

PROJECT PRINCIPALS

North Country Transit District, owner; Simon Wong Engineering, engineer; FCI Constructors, contractor; Hanson Aggregates concrete supplier; and Concrete Constructors, precast concrete.

JURY COMMENTS

The use of precast bulb-tees sections to support this railroad crossing allowed for the rapid replacement of an aging trestle while avoiding steam impacts. It provides a bridge with low maintenance costs for the future and demonstrates the strength of prestressed beams.

SELMON EXPRESSWAY EXPANSION

Precast concrete segmental bridge construction was used to achieve the owner’s project goals for this Tampa, Fla., overpass. The five-mile long elevated expressway needed to be built without interfering with at-grade traffic, its aesthetics had to satisfy nearby residents and business owners, and construction cost had to be within the budget. Using the span-by-span method of segmental construction, the 59-foot wide deck was constructed on single 6-foot diameter column bents located in the grassed 46-foot wide median between the adjacent lanes of traffic. Simultaneous fabrication of the 3,032 segments, while the foundations and piers were under construction, shortened the construction time significantly. Full width segments were lifted by the gantry crane or moved to the placement location over the completed spans. The new bridge met all the owner’s goals and after one year toll revenue was 25 percent more than estimates.

PROJECT PRINCIPALS

Tampa Hillsborough Expressway Authority, owner; FIGG Bridge Engineers, engineer; PCL Civil Constructors, Inc., contractor and precast concrete; and CEMEX concrete supplier.

JURY COMMENTS

The designers are to be congratulated on building this difficult, but beautiful serpentine viaduct into the existing roadway section without disruption of traffic.

Childress new chair CEE Department

The College of Engineering was pleased to announce the appointment of Dr. Amy Childress as the



Childress

new chair of the Department of Civil and Environmental Engineering (CEE), effective July 1.

Childress joined the CEE Department

in July 1997 and was promoted to full professor in July 2008. Childress is currently the President of the Association of Environmental Engineering and Science Professors (AEESP). Childress has led research projects funded by NSF, NASA, ONR, NREL, DOE, USBR, CA DWR, CA Energy Commission, and local organizations focused on membrane processes for water treatment and wastewater reclamation. She is recognized for her early research in the surface characterization and interfacial aspects of pressure-driven membrane processes and her more recent research in membrane contactor processes. In 2004, she was a visiting professor at the University of New South Wales, Sydney, Australia and in June 2008, she was a visiting professor with the studies abroad program in Puntarenas, Costa Rica.

WANG HONORED BY ITE

Xuan Wang, a Ph.D. student in the Transportation Program won the 2008 Daniel B. Fambro Best Student Paper Award from the Institute of Transportation Engineers (ITE). This is considered very prestigious award for a student. ITE is a major organization for transportation/traffic engineers.

Program 'mixes' for success

PAVEMENTS/MATERIALS PROGRAM HELPS CONSERVE ENERGY

Asphalt pavements make up 95 percent of the paved roads in the United States. The production and construction of asphalt mixtures are conducted at extremely elevated temperatures which consumes a significant amount of fuel and generates high dust and emissions. Typical asphalt mixtures are produced by heating the aggregates and asphalt binders at 325 degrees Fahrenheit and laying the mix down on the road at 300 degrees. This process is known as the Hot Mix Asphalt (HMA). The Pavements/Materials Program in the Department of Civil and Environmental Engineering is a member of a national group that is working to develop a technology by which asphalt mixtures can be produced and constructed at lower temperatures. This process is called Warm Mix Asphalt (WMA). The WMA technology is expected to reduce the production temperature to around 250 degrees and the construction temperature to around 200 degrees. These reductions in temperatures are expected to reduce CO₂, CO, and NO_x emissions by some 35 percent, reduce dust generation by 90 percent, and reduce fuel usage by around 35 percent.

GEOTECHNICAL UNDERTAKES CALTRANS LAB SCALE TESTS

The geotechnical group of the Civil and Environmental Engineering Department has undertaken lab scale tests for Caltrans of the benefit of post grouting the tip of a drilled shaft foundation. Bridges and other structures are supported by deep foundations such as piles and drilled shafts when near surface soils are inadequate for the task. However, due to the very large movement required to develop resistance to load arising from the tip or point of a drilled shaft or pile, many agencies do not consider any such end bearing support and rely only on shaft resistance which develops along the side of the shaft or pile at relatively small deflection. The prospect of pushing grout out of grout tubes beyond the end

of a concreted and hardened drilled shaft allows for the soil from which end bearing is derived to be preloaded, thus eliminating a significant amount of plastic deformation in the soil mass from which such end resistance derives. It has been shown from lab tests of grouted vs. un-grouted drilled shafts that end bearing can be seven times that of the value allowed by AASHTO (at relatively small deflection). Such end bearing can equal the side or shaft resistance which means that shafts could be designed at half the length they are designed for currently.

SIDDHARTHAN CREATES CATALOGUE

During the excavation of a soundwall footing at the I-515/Flamingo Road interchange in Las Vegas, Nevada Department of Transportation officials uncovered significantly corroded barmats of a mechanically stabilized earth (MSE) wall. These ungalvanized steel barmats have corroded beyond anticipated levels for the 20-year-old wall. Based on an estimated design life of 50 years, the loss of steel was estimated to have occurred at 2.5 times the anticipated corrosion rate of the design. Subsequently, one of the walls was retrofitted with a cast-in-place tie-back wall in order to bring the level of serviceability of the wall to acceptable levels. Recently, Dr. Raj Siddharthan of the College of Engineering and Dr. Barbara Luke of University of Nevada, Las Vegas initiated a NDOT-funded study to develop a catalog of similar MSE walls controlled by NDOT and to determine which of the walls need further investigation. A predictive model, based on the understanding of soil resistivity and soluble salts (specifically chlorides and soluble sulfates), is being developed to assist in the selection of MSE walls that need further investigation.

STUDENTS MAKE IMPACT INTERNATIONALLY

A group of CEE students and professional engineers from the University's Chapter of Engineers Without Borders (EWB) is planning to return to Itpatrica, Brazil in

January 2009 to begin implementation of a wastewater collection and treatment system for a small community that currently has no system for wastewater collection, treatment, or disposal. Based on a site assessment performed in August 2008, the group has designed a sewer system that will deliver wastewater to a series of treatment lagoons followed by a constructed wetland system. The assistance of professional engineers at ECO:LOGIC who reviewed the proposed design of the system is gratefully acknowledged. *For more information about UNR EWB, please contact Quinn Dufurrena at reggaesunsplash2001@yahoo.com or Keith Dennett at kdennett@unr.edu or (775) 784-4056.*

BRANT JOINS FACULTY AT WYOMING

Jonathan Brant, Ph.D., joined the faculty of the Department of Civil and Architectural Engineering at the University of Wyoming in the fall of 2008. Dr. Brant comes to Wyoming after working as a consultant with HDR Engineering, Inc., in Seattle, Wash., where his engineering and applied research work focused on the design and optimization of membrane processes for desalination and water reuse systems. Dr. Brant received B.S. degree in civil engineering from the Virginia Military Institute and his M.S. and Ph.D. in civil engineering, with an environmental engineering focus, from the University of Nevada, Reno (UNR) under the guidance of Professor Amy Childress.



Brant

STUDENTS IMPROVE WASTE WATER

A group of CEE students from the University and members of the Sparks Sunrise Centennial Rotary Club traveled to Zacapa, Guatemala, in March and July 2008. The group assisted with improvements at the local water treatment facility that increased

treatment capacity by 50 percent. The group also designed and installed equipment at another water intake structure in the mountains to minimize the quantity of sand entering the piping system. The group also helped with the installation of a solar powered well pump in a community that has no electric power service. Another group of CEE students is currently preparing a detailed design of a wastewater treatment system for the town of Zacapa (population 75,000). The town currently has no wastewater treatment and raw sewage discharges directly into the river. The next scheduled trip is in March 2009. *For more information about these projects, contact Keith Dennett at kdennett@unr.edu or (775) 784-4056.*

CEE MAKES NATIONAL HEADLINES

The CEE Department continues its pursuit of excellence in the areas of research, teaching, and service. The undergraduate

program, which is experiencing record-high enrollments with over 400 undergraduate students, offers two ABET accredited degrees: one in civil engineering and the other in environmental engineering. The graduate program was recently ranked among the top 50 graduate programs in the nation according to U.S. News & World Report 2008 rankings. The department currently has funded research exceeding \$15 million with expenditures approaching \$5 million annually.

STUDENTS HOST REGIONAL CONFERENCE

The student chapter of CEE is playing host to the Mid-Pacific Regional Conference in April 2009. The competition has three parts: Steel Bridge, Concrete Canoe, and Water Treatment. This competition is a regional competition involving schools from Northern California and Northern Nevada. The winners of the Steel Bridge

and Concrete Canoe Competitions will advance to national competitions (held in separate locations) to compete against the top schools in the U.S. The regional competitions will be mainly held at the University of Nevada, Reno campus this year. The concrete canoe races will be held at the Spark Marina. The competition website is still under construction but the address is www.midpac2009.com. The website for the Nevada Concrete Canoe Team is www.nevadacanoe.com. You can find all kinds of links and information about the team and the competition there. The college will be hosting Midpac April 17-18. Friday, April 17, we will have our steel bridge competition and canoe displays at Lawlor Events Center. Also, Friday Morning concrete canoe and "Mead paper" presentations will be in the Joe Crowley Student Union theater. The concrete canoe races will be held on April 18 at the Sparks Marina.

COLLEGE NEWS

Civil engineering makes top 50 in national rankings

For the first time, U.S. News & World Report magazine ranked three University of Nevada, Reno graduate programs in the top 50 of public institutions nationally in its recent 2008 report. Civil and Environmental Engineering made the rankings for the second time in three years and came in at the 44th spot.

"The fact that three of our graduate programs ranked in the top 100 for all colleges and universities, both public and private, and in the top 50 ranking of public institutions speaks to the overall quality of graduate education at the University of Nevada, Reno," said Marsha Read, associate vice president for research and associate dean of the Graduate School.

Also, a recent Texas A&M study confirmed Nevada's mechanical engineering program's top standing. Mechanical engineering was ranked number 42 out of 164 U.S. graduate programs "for research expenditure per tenured/tenure track faculty."

HERE'S A CUP OF JAVA TO SAVE THE WORLD

It all started because Manoranjan Misra loves coffee.

Whenever you see Misra, a professor of chemical and materials engineering, walking on campus, he inevitably will have a cup of coffee in his hand. One morning, at home, Misra made a discovery—one that could have profound implications for the development of a more environmentally friendly form of biodiesel.

"I had left my coffee out one night, and the next morning, I noticed that there was a kind of oil around the edge of the cup," he said. "Every cup of coffee has it. I decided to do some tests on the oil." He discovered that the triglyceride-rich oil could be easily converted to biodiesel. "The oil still smells like coffee," he said. "It doesn't change a lot during the process." Since that morning, Misra has developed a novel process—believed to be the first of its kind in the country—that extracts high-quality biodiesel from spent coffee grounds. What sets his work apart from other biodiesel efforts is the high quality of the oil extracted from the grounds. The process also utilizes an inexpensive waste product, reducing overall cost. "We have found that biodiesel created from spent coffee grounds is stable over a longer period of time than other forms of biodiesel that have been created from feed stocks such as soy and corn," Misra said. "Biodiesel from spent coffee grounds is a low-cost 'green' form of fuel that shows a significant reduction of carbon dioxide emission. It's an excellent source for biodiesel." Misra's patented process involves two simple steps: the extraction of oil from the spent coffee grounds, and then the conversion of the oil to biodiesel. The oil is a triglyceride, which is the chemical form in which most fat exists in food. It easily lends itself to biodiesel conversion, and serves as an agent to reduce carbon dioxide emissions when burned as fuel. Worldwide, the potential for the new "coffee" biodiesel is great, Misra said.

New and efficient solutions

Computer Science and Engineering collaborates with local industry

In 2008 several funded projects and joint initiatives, including scientific forums, have strengthened the collaboration of the Department of Computer Science and Engineering with industry in the Reno area.

One of the projects that expanded this collaboration was "Exploration of Research Directions in Software Quality Assurance," funded by Bally Technologies of Reno and the Nevada System of Higher Education (NSHE) Applied Research Initiative (in total \$112,900). The project involved applied research exploratory work by a team of Computer Science and Engineering faculty members (Dr. Sergiu Dascalu P.I., with co-P.I.'s Dr. Dwight Egbert, Dr. Eelke Folmer, and Dr. Bobby D. Bryant) in collaboration with industry professionals from Bally Technologies. The project was aimed at identifying appropriate ways of providing new and efficient solutions for improving quality assurance in the gaming industry. It has also led to the familiarization of University faculty with the current quality assurance activities and practices in this industry and has helped identify and prioritize areas of possible improvement. Moreover, it has outlined specific research directions to be pursued further in collaboration with our partners from Bally Technologies. In spring 2008 a joint Bally Technologies-Department of Computer Science and Engineering Research workshop concluded this initial research collaboration which is expected to continue and grow in the future.

Along the same lines, a number of collaboration projects with industry partners from the Reno/Tahoe area have taken the shape of sponsored senior projects in Computer Science and Engineering. The purpose of such collaborations is to have our senior undergraduate students involved in real-world, industry-strength applications and support them as they develop high quality group projects in capstone courses CS425, CS426, and CPE426. They also allow our industry partners hire well-qualified computer science and engineering students after their graduation as well as extend the knowledge of the project partners about each others' capabilities, strengths and resources. Over the last academic year PC Doctor, Inc., of Reno, has sponsored two such projects involving seven undergraduate students by providing professional advisement as well as stipends for students (about \$17,000). For 2008-2009 we have not only PC Doctor, Inc., committed to advise and sponsor another senior project group but also Bally Technologies (\$12,300 expected funding) and General Electric, of Minden, Nev. (\$8,000 expected sponsorship). Current



Photo by John Byrne

Dr. Eelke Folmer of Computer Science and Engineering has had a productive year in research, and has helped fortify the College of Engineering's connections with local and statewide industry.

senior projects are being supervised by Dr. Sergiu Dascalu, with contributions from faculty members Dr. Eelke Folmer, Dr. Murat Yuksel, Dr. Fred Harris, and Dr. Kostas Bekris. Such joint projects with the local industry will provide the basis for larger scope collaborative endeavors, including some joint proposals to national departments and agencies such as the Department of Defense, Department of Energy, NASA and the National Science Foundation, and will help streamline the transfer of technology and workforce from our college and university to the industry.

As part of its continued collaboration with local industry, the Department of Computer Science and Engineering organized two research forums in spring 2008 in partnership with Reno-based companies. The workshop titled "Transcending Gaming Technology" took place in March 2008, and concluded an initial collaborative research project between Bally Technologies and the Department of Computer Science and Engineering. The purpose of the workshop was to explore research and development challenges that not only are faced by gaming technology but also transcend local and specific endeavors and rise to the level of national and general interests. The workshop enjoyed an attendance of more than 70 people and featured several presentations by experts from industry and academia, including Mr. Jim Hunt from Bally Technologies and Dr. Eelke Folmer from the Department of Computer Science and Engineering. The workshop culminated with talks by Mr. Gavin Isaacs, chief operating officer of Bally Technologies, and by Dr. Alan Hevner, NSF program director, who was a special guest at this event.

Also in 2008, the department's traditional collaboration with International Gaming Technology (IGT) of Reno, included the joint organization of the 3rd Annual Spring Symposium IGT-CSE/UNR. The symposium, held in May 2008, focused on major development challenges for the gaming industry, and featured three well-received talks by experts in areas important to the industry. Dr. Dinesh Varma from the Stevens Institute of Technology discussed aspects of synthesis, analysis, and evaluation involved in systems engineering and architecting, Dr. Jan Bosch from Intuit delivered a talk on the variability, integration, and organization of software product lines, and Dr. Eelke Folmer surveyed challenges and issues encountered in current game development. More than 100 people from IGT and the University attended this symposium that has become a fixture in our annual calendar of research events.

Computer Science and Engineering faculty part of NSF EPSCoR research infrastructure grant

In September 2008 the National Science Foundation (NSF) awarded to a multi-institution, inter-disciplinary group of Nevada faculty and researchers a \$15 million grant for the project titled “Nevada Infrastructure for Climate Change Science, Education, and Outreach.” The state of Nevada has additionally committed about \$6.7 million to this five-year project whose lead P.I. is Dr. Gayle Dana from the Desert Research Institute. The main goal of the project is to enhance research infrastructure in the state of Nevada for studying the effects of regional climate change on ecosystem resources. The major inter-disciplinary research questions of this funded proposal are: how will climate change affect water resources and linked ecosystem services and human systems; and how will climate change affect disturbance regimes (e.g., wild-land fires, insect outbreaks, severe storms, droughts) and linked systems?

The project has six components (groups), focused respectively on climate modeling, ecological change, water resources, cyberinfrastructure, education, and policy, decision making and outreach. The cyberinfrastructure group consists of six faculty members, five of them from the Computer Science and Engineering Department at the University: Dr. Sergiu Dascalu (component lead and institution co-P.I.), Dr. Fred Harris (who also represents DRI), Dr. Yaakov Varol,

Dr. Shushil Louis, and Dr. Monica Nicolescu. Also part of this project component is Dr. Shahram Latifi from UNLV. The cyberinfrastructure component is a key constituent of the project, as it connects with and supports all Nevada Climate Change groups.

The total funding for the cyberinfrastructure component is about \$2.4 million, of which about \$1.9 million will be used by the Department of Computer Science and Engineering and the College of Engineering. This represents a substantial involvement in the project and a significant presence from the University, whose total project budget is about \$4.1 million. The grant will be used by the cyberinfrastructure group to focus on designing and developing a Nevada Climate Change data portal as well as on researching and building software frameworks aimed at facilitating interdisciplinary scientific collaboration via smooth integration of heterogeneous tools and data.

Besides the data portal and the software frameworks other major infrastructure building capabilities for this group include high performance computing resources for climate modeling, advanced data visualization facilities, and new personnel that will be hired, including a database system administrator, a software developer, and several graduate research assistants.

CSE contributes to research effort on Internet problems

Dr. Murat Yuksel of the Computer Science and Engineering Department recently won an National Science Foundation (NSF) grant as part of a collaborative project including Nirmala Shenoy and Victor



Yuksel

Perotti of the Rochester Institute of Technology as well as Aparna Gupta and Koushik Kar of Rensselaer Polytechnic Institute. The research project explores a future Internet solution based on a well-proven hierarchical switching architecture, which is untested at global levels. The proposed architecture is hierarchical and with adequate redundancy at different levels, results in a robust structure that is also scalable. The solution distributes the “switching decisions,” which replaces “routing information handling” to several levels in the hierarchy, thereby making the switching decisions more robust and stable with a potential for future growth.

The architecture employs a scalable and flexible hierarchical addressing scheme, where key network functions are relegated to different levels in the hierarchy, providing better management and control. The radical change to the Internet architecture would be potentially transformative from a socioeconomic and business perspective. The scientific problems being addressed are hence multidisciplinary. The technical and socioeconomic feasibility for the new network architec-

ture, as well as the likely patterns of adoption for such a radical change are also being investigated by the group. The project will continue two years and is funded under NSF’s new initiative called Future Internet Design (FIND), which brings together the nation’s top institutions and researchers to design a clean-slate design for the Internet.

On another project, Dr. Yuksel is working with researchers from AT&T Labs of Florham Park, N.J., to make the backbone protocols more robust to failures at the Internet backbone. The research is about broadcasting TV distribution over an IP network. This is an attractive goal and considered to be one of the current killer-applications for economically suffering ISPs. Streaming content in IPTV is typically delivered to the distribution points on the IP backbone using protocols such as multicast. As the available capacity is typically larger than the required for IPTV traffic streaming, the main challenge left to achieving these QoS objectives is how to design the network to respond to and restore from “network failures.” The research group working with Dr. Yuksel includes leading researchers from AT&T Labs. The group’s recent work titled “Cross-Layer Failure Restoration Techniques for a Robust IPTV Service” received the Best Paper Award at the IEEE International Workshop on Local and Metropolitan Area Networks (LANMAN), Cluj-Napoca, Romania, in September 2008. The research effort is being funded through AT&T Labs’ Virtual University Research Initiative (VURI) which involves the nation’s top universities.



Digital Interactive Games minor continues growth; thriving research agenda characterizes CSE faculty

Students in the College of Engineering have had the opportunity to explore a minor in Digital Interactive Games, which was approved in January 2008. Drs. Sushil Louis, Eelke Folmer, Dwight Egbert and Bobby Bryant are active in teaching courses related to the minor and conducting research in the area of games. The CS281 introduction to game development class taught by Dr. Folmer is the entry class to the minor, and has seen full attendance almost every semester it has been taught. An equipment upgrade to the Game Laboratory used in some of the courses of the minor was made possible by a grant of \$26,500 Bobby Bryant received from the 2008 Student Technology Fee competition. The award was supplemented by \$5,000 each from the College of Engineering and the Department of Computer Science and Engineering. The laboratory is used for courses created to support the new interdisciplinary minor in Digital Interactive Games, as well as for investigations into artificial intelligence and human-computer interaction using games as a research platform. The laboratory is currently located in SEM 203, and is open to all students enrolled in the university. The first batch of students with a minor degree in Digital Interactive Games should graduate in the 2008/2009 academic year.

In August 2007 Dr. Folmer received an NSF grant for exploratory research to investigate how Second Life (a popular virtual world) could be made accessible to users with disabilities. He recently



Computer Science and Engineering faculty are making full use of the wonders of visual communication and digital interactivity through academic offerings such as those pictured above.

completed the development of two prototypes. A one-switch version of the Second Life viewers allows the severely motor impaired who are unable to use a mouse to control their avatar using a one-switch input. Text SL is an interface on top of Second Life that can be accessed with a screen reader (an application that can turn text into synthetic speech) which allows users to explore Second Life and interact with other avatars using text input. A beta version of TextSL is expected to be released to the blind community and the code

for the one switch interaction will be submitted to be included in the source code of the regular Second Life viewer code.

The Office of Naval Research has been funding research and development work of faculty members in the department in the area of serious games and in particular for the development of the Lagoon Naval Simulator. Recently, Sushil Louis and Bobby Bryant, together with Ramona Houmanfar (Department of Psychology) and Jennifer Mahon (College of Education) received a DEPSCoR grant "Co-Evolving Tactics and Strategies for Anti-Terrorism / Force Protection Training and Decision Support," sponsored by the Department of the Navy. The grant funds research into the use of machine intelligence for discovering novel strategies and tactics in response to an adaptive enemy, plus a formal evaluation of the effectiveness of the use of intelligent simulators in training. The grant is for \$746,787, including state matching funds.

A high-speed nanopositioning professor joins ME

Dr. Kam K. Leang recently joined the Mechanical Engineering Department at the University of Nevada, Reno, in July 2008. Before coming to the University, he taught for nearly three years in the Mechanical Engineering Department at Virginia Commonwealth University in Richmond, Va. He received the Ph.D. in Mechanical Engineering from the University of Washington in December 2004. During his studies, he was a National Science Foundation GK-12 Teaching Fellow from 2001 to 2004.



Leang

Professor Leang's expertise is modeling and designing control and mechatronic systems based on active materials for applications in micro and nanotechnology. Mechatronics is a cross-disciplinary combination of mechanical, electrical and computer engineering. One of his current research focuses is developing high-speed, high-precision nano positioning systems using piezoactuators for atomic force microscopes (AFM). The AFM is a key tool for controlling, interrogating, and manipulating matter at the nanoscale. Professor Leang and his colleague from the University of Newcastle, Australia, have recently developed a high-speed two-axis nano positioning platform for AFM which will enable video-rate nanoscale imaging. With this system, the dynamics of DNA, live cells, and other fast processes at the nanoscale can be studied under the AFM.

To complement his work on nanopositioning, Professor Leang

and a colleague from the University of Florida are developing a novel microcantilever for AFM that will provide multifunctional capability. The object is to use a thermally-activated cantilever with quick-changing modular tool tips to image, fabricate, and manipulate nanoscale objects. Such an automated system is targeted for nano-rapid prototyping and desktop nanofactories. This research is funded by the National Science Foundation's NanoManufacturing Program.

Dr. Leang also integrates his research into the undergraduate mechanical engineering curriculum. In particular, he has a National Science Foundation grant to develop a curriculum involving active materials for the teaching of mechatronics in engineering departments across the country.

Dr. Leang's research work is published in leading ASME and IEEE journals on modeling and control of micro- and nano-scale systems. He is an active member of ASME, IEEE, and SPIE.

A prototype two-axis, high-speed nanopositioning system developed by Dr. Leang and his research team (also in collaboration with Dr. Fleming at the University of Newcastle, Australia), is controlled by ultra-stiff piezoelectric actuators. The small square platform (5 mm x 5 mm) is designed to hold organic and inorganic specimens for micro and nanoscale investigations under an atomic force microscope (AFM). The positioning stage moves the sample relative to a small AFM microfabricated probe at very high rates, over one thousand times per second. The fast motion enables quick, real-time investigation of surface properties under the AFM.

Davidson Academy students spend time in CSE labs

Students Andy Wei and Erik Jensen from the Davidson Academy are spending 2008-2009 as interns in the Neuroevolution and Behavior Laboratory of the Department of Computer Science and Engineering, studying applications of machine learning to the control of autonomous intelligent agents. They are two of the first participants in a new program created by Bobby Bryant to introduce Davidson Academy students to the research side of professions in the field of computer science and engineering. Andy and Erik are studying neuro-visual control, wherein an artificial neural network controls the behavior of autonomous agents on the basis of low-resolution visual inputs. They are being mentored by graduate student Matt Parker, as well as by Dr.



The Davidson Academy at the University of Nevada, Reno.

Photo by Jean Dixon

Bryant. The work uses the free open-source Quake II game engine as a simulation environment for the research.

A third Davidson Academy student, Robby Fuchs, completed a summer internship with Dr. Eelke Folmer from the Computer Science and Engineering Department. Robby helped develop a real-time strategy game that can be played with a one switch input, allowing severely motor impaired

gamers to play this previously inaccessible game genre. He is doing a one-semester internship during the fall semester where he is developing a game that teaches American Sign Language to deaf children. This is a collaborative project between Dr. Folmer and Dr. Lori Bass from the University's Department of Speech Pathology.



Photo by Jean Dixon

Human Powered Vehicle teams stayed well ahead of the pack in competitions during 2008.

Mechanical Engineering students excel in competitive arena

The Human Powered Vehicle team had an outstanding year, finishing with third place finishes in Utility Design, Utility Endurance and Utility Overall during the annual Human Powered Vehicle Competition.

The team included: Austin Thibault, Blanca Miller, Colleen Yeskovic, Damon Demetropolis, Jake Mestre, Jason Ross, Jim Ross, Mike Chilton, Nathan Labrosse, Nicholas Morikawa, Tara Lewis, Tom Kerr, Scott Waters and Kathelin Buxton

Faculty advisor was Kwang Kim and faculty member Candice Bauer was instrumental in a number of ways to this event which was again hosted by the University's student chapter of the American Society of

Mechanical Engineers (ASME).

Also, during the ASME's 2008 Student Professional Development Conference, Tara Lewis took third place in the Old Guard Speech Contest and Austin Thibault took third place in the Old Guard Web Contest.

In the 2008 Regional Student Design Contest, the Robotic Window Cleaner Thios took first place – the college's third consecutive win! Team members were Karl Schulz, Nathan Labrosse, Farhad Ahmadzai and AJ Frabbiele.

In the Doc Harris Speaking Competition, Tara Lewis took first place, Jason Ross finished in second place and Colleen Yeskovich took third place.

KIM, JIANG EARN AMERICAN SOCIETY OF MECHANICAL ENGINEERS FELLOWSHIPS



Kim



Jiang

Drs. Kwang Kim and Yanyao Jiang have been elected as Fellows of the American Society of Mechanical Engineers. This is a prestigious national award and we are very pleased that two of our faculty were elected in the same year. It speaks to the strength of their credentials as professionals.

BAUER NABS TWO HONORS

Candice Bauer was acknowledged twice this academic year by the American Society of Mechanical Engineers. She received the ASME Old Guard Early Career Award. This is for outstanding service, leadership, and accomplishment in the profession of academics and teaching, in addition to the community. In July 2007, Candice took office as the ASME Vice President as the youngest vice president of the Center for Professional Development, Practice, and Ethics in the organization's history.

University Rover Team has eyes on the big red prize in 2009

The University Rover Competition is sponsored by the Mars Society. Student teams develop a remotely operated robotic rover that must complete a series of engineering and scientific tasks, which vary from year to year. The engineering tasks typically involve navigating to a remote site and performing a task that might be expected of an astronaut (i.e., turning a bolt or setting up an antenna). The scientific task typically involves performing a site characterization to determine as much information as possible about both the site geology and biology.

In 2007, the University's team earned first place and in 2008, the University, under the supervision of Jeff LaCombe, Eric Wang and

Wendy Calvin, earned second place. In 2009, University students aim to re-take the title.

Mechanical Engineering students involved in 2008 were Travis Fields, Blake Poe, Tommy On, Gregory Kraus, Chris Reede, David Welge and David Anderson. Other University students on the team were Brad Towle and Austin Stanhope from Computer Science and Engineering; Tracey Van Gundy and Jill Pocock from Geophysics; Kurtis Clark and Matt Savage from Materials Science and Engineering; Matt Weller from Geological Engineering and high school students Daniel Heywood, Harrison Edwards and Alyssa Carothers.

2008 DONALD W. REYNOLDS GOVERNOR'S CUP WINNERS

■ 1ST PLACE - \$20,000 — Waste

Alternatives Transformation Technologies (WATTs), UNLV • Waste-Alternative Transformation Technologies, LLC (WATTs) was developed to provide a holistic approach to the waste management and energy issues facing modern urban communities. By utilizing a multi-faceted approach that maximizes usable products extracted from municipal, commercial and industrial waste, WATTs will reduce the ecological burden on traditional landfills while producing clean, sustainable energy and energy products that do not rely upon fossil fuel sources. **Team Members:** Keeton Little, Economics; Josh Beilin, Hotel; Kyle George, Chemistry. Faculty advisor: Dr. Janet Runge.

■ 2nd Place - \$10,000 — Wolfpack

Works, University of Nevada, Reno • Wolfpack Works grew from a desire of Nevada students to utilize their engineering education to develop an innovative commercial product that would directly improve the quality of life for individuals with communication disorders a comprehensive augmentative and alternative communication (AAC) device. **Team Members:** Nhan Diep, Computer & Information Engineering; Del Jackson, Biochemistry / Computer Science; Scotty Jones, Computer & Information Engineering; Tyler Kayser, Computer Science. Faculty advisors: Dr. Sergiu Dascalu, Dr. Leah Skladany, Dr. Gary Valiere.

■ 3rd Place - \$5,000 — **KG BioSolutions, Sierra Nevada College** • KG BioSolutions is a company offering a self-sufficient co-gen product marketed towards restaurants. The fully automated system will process crude vegetable oil at the push of a button and then burn the processed biodiesel in an industrial generator providing supplemental electricity to the restaurant on location. **Team members:** Aaron Kerson, Entrepreneurship; Seth Gunsauls, Business Management & Entrepreneurship. Faculty advisor: Mr. Richard Normington.

GOVERNOR'S CUP GRADUATE WINNERS

■ 1st Place - \$20,000 — Mobile

Business Solutions - UNLV • Transform how all paper based mobile businesses do business by using cellular technology and a website to make all transactions that were previously duplicated by both field staff and office staff instantaneous and error free. Started with the Locksmith industry because of connections on our team. **Team members:** Lucien Paet, MBA-New Venture Management; Amanda French; David Schnell-Davis, MBA, Ekaterina Tchompalova. Faculty advisor: Dr. Janet Runge.

■ 2nd Place - \$10,000 - Go Green

Outdoors - University of Nevada, Reno • Go Green Outdoors, LLC connects people to green culture, green businesses and a green way of life. We are an online resource for green culture news, information and conversation. We provide daily updates of environmental and outdoor recreation news as well as a guide to green products and services. We also feature a social media platform that allows users to stay in touch with their friends. **Team members:** Allan Warren, Journalism; Kamila Pawlik, Journalism; Ann Marie Vollstedt, Engineering; Colby Stott, Business. Faculty advisor: Dr. Michael Edward Lenert and Mary Jurkonis.

■ 3rd Place - \$5,000 — More Water

Company - University of Nevada, Reno • More Water Company uses Atmospheric Water Generation technology to produce drinking water from the air. The company will produce water regionally to sell into local markets diminishing the reduction of natural resources such as lakes and streams and reducing pollutants caused by transportation. **Team members:** Bernie Leas, MBA; Kelsey Azcarate, MBA; Gina Distaso, MBA; Ben Larson. Faculty advisor: Dr. Gary Valiere.

NCET FACULTY AWARD WINNERS

Dr. Janet Runge - UNLV
Dr. Gary Valiere - University of Nevada, Reno

LT. GOVERNOR'S AWARD WINNERS

■ Undergraduate Winner - \$5,000 —

KG BioSolutions, Sierra Nevada College • KG BioSolutions is a company offering a self-sufficient co-gen product marketed towards restaurants. The fully automated system will process crude vegetable oil at the push of a button and then burn the processed biodiesel in an industrial generator providing supplemental electricity to the restaurant on location. **Team members:** Aaron Kerson, Entrepreneurship; Seth Gunsauls, Business Management & Entrepreneurship. Faculty advisor: Mr. Richard Normington.

■ Graduate Winner - \$5,000 — Bio-

Grounds LLC, University of Nevada, Reno • Bio-grounds LLC is turning waste streams to profit streams. Our company uses spent coffee grounds to produce high quality eco-friendly and low cost biodiesel. **Team members:** Jason Strull, MSE; Case Egan; Gabriel George Rojas, MSE; Narasimharao Kondamundi, MSE. Faculty advisor: Dr. Mano Misra.

NCED COMMISSIONERS' AWARD WINNER

■ \$2,500 — Waste Alternatives

Transformation Technologies (WATTs), UNLV • Waste-Alternative Transformation Technologies, LLC (WATTs) was developed to provide a holistic approach to the waste management and energy issues facing modern urban communities. By utilizing a multi-faceted approach that maximizes usable products extracted from municipal, commercial and industrial waste, WATTs will reduce the ecological burden on traditional landfills while producing clean, sustainable energy and energy products that do not rely upon fossil fuel sources. **Team members:** Keeton Little, Economics; Josh Beilin, Hotel; Kyle George, Chemistry; Faculty advisor: Dr. Janet Runge.

CIVIL & ENVIRONMENTAL ENGINEERING

Institute of Transportation Engineers Intermountain Section

- **Xuan Wang**, Graduate Student - Ellis Mathes Scholarship
- **Ozlem Ozmen**, Graduate Student – 1st Place Best Student Paper
- **Xuan Wang**, Graduate Student – 2nd Place Best Student Paper

COMPUTER SCIENCE & ENGINEERING

The Nevada Programming Competition was sponsored by GE Energy. Faculty advisor for this competition was Bobby Bryant.

- | | |
|---------------------------------|------------------------------------|
| Upper Division winners: | Lower Division winners |
| 1st Place • Shane Warren | 1st Place • Joel Croteau |
| 2nd Place • Casey Howard | 2nd Place • Michael Galaspy |
| 3rd Place • Bilal Gonen | |

ELECTRICAL & BIOMEDICAL ENGINEERING

IEEE Design Competition – Region 6 Conference. IEEE students participated at the IEEE Region 6 Central Area Meeting design competition at San Jose State University on May 3, 2008.

State Agricultural Defense System won first place in presentation and third place in the design competition. The team was composed of the following members: **Andy Rybold, Katcha Taylor, Chris Wood, Dale Hughes,** and **Scott Garrison.**

JET Boards Co. won second place in the design competition. The team was composed of the following members: **Jason Andersen, Daniel Dower, Keith Dickson, Jeremy Hinman,** and **Alex Farkas.**

2008 Spring Celebration

This year the Spring Celebration was held on May 6 at Circus Circus and featured awards for both faculty and staff.

SPECIAL ACHIEVEMENT AWARDS

Schinthia Islam, Chemical Engineering – Donald F. Othmer Sophomore Academic Excellence Award. **Rashi Tiwari**, Mechanical Engineering – Regents Scholar Award. **Matt Henry**, Mechanical Engineering – Senior Scholar Fall 2007 (Mentor: Dr. Cahit Evrensel). **John Bernardy**, Chemical & Materials Engineering – Senior Scholar Spring 2008 (Mentor: Dr. Charles Coronella).

OUTSTANDING SENIOR AND OUTSTANDING SERVICE AWARDS

Trisha Wesner, Chemical Engineering – Outstanding Senior. **Jason Hastings**, Chemical Engineering – Outstanding Service. **Jack Brooks**, Materials Engineering – Outstanding Senior. **Hailey Murdoch**, Materials Engineering – Outstanding Service. **Nathan Harrison**, Civil & Environmental Engineering – Outstanding Senior. **Robert Coomes**, Civil & Environmental Engineering – Outstanding Service. **Joseph D. Mahsman**, Computer Science & Engineering – Outstanding



Photo by Jean Dixon

College of Engineering graduates always don the appropriate hardware in advance of the University's annual commencement activities.

Senior. **Jennifer L. Knowles**, Computer Science & Engineering – Outstanding Service. **Mike Schreiber**, Electrical & Biomedical Engineering – Outstanding Senior. **Jason Andersen**, Electrical & Biomedical Engineering – Outstanding Service. **Travis Pyne**, Mechanical Engineering – Outstanding Senior. **Scott Waters**, Mechanical Engineering – Outstanding Service.

OUTSTANDING COLLEGE SERVICE

Anthony J. Frabielle, 2007 Graduate, Civil Engineering.

The faculty recipients of awards were: **Dr. Miles Greiner**, Mechanical Engineering – Lemelson Award. **Dr. Ahmad Itani**, Civil & Environmental Engineering – F. Donald Tibbits Distinguished Teacher of the Year Award; 2nd Place. **Dr. Ahmad Itani**, Civil & Environmental Engineering – Ralph E. & Rose A. Hooper Excellence in Teaching & Advisement Award. **Ann-Marie Vollstedt**, Mechanical Engineering – Science Technology Engineering & Math Outstanding STEM Teaching Assistant in STEM Award.

World War II vet finishes degree 65 years later

What's a few years' wait for a diploma worth? To 86-year-old **Robert Baird Jr.**, of Selma, Calif., patience is golden. A decorated World War II veteran and Nevada student in the 1940s, Baird deferred his dreams of becoming a college graduate for service in the U.S. Navy. He was one of the Navy's famous "frogmen," and removed land mines from beaches during the 1944 invasion of Saipan and Guam. Baird received the Silver Star for his bravery, but never returned to college. After writing to the Board of Regents in 1945 to explain the situation, Baird said he was granted a waiver to the University residency requirement. He's lost track of the letter, explaining he was about 20 credits shy of completing the civil engineering degree program. Baird's friend Robert Kirchner of Sanger, Calif., brought the matter to the campus administration's attention, and the wartime hero received his bachelor's degree in a March 28 ceremony at the Sanger Rotary Club.



Photo by Jean Dixon

Paul Neill, director of the University's core curriculum and Bob Baird Jr.

GOETZ'S CAREER STEMS FROM A NEVADA EDUCATION

Jack Goetz '43 (electrical engineering) will argue that there is nothing glamorous about engineering, but if his life has lacked



Goetz

anything it is ennui. Goetz has seen many things change. When he graduated at the end of 1942 with a bachelor's degree in electrical engineering, there were only 856 students at the University. Today

there are close to 17,000. Now he participates in volunteer work with the University engineering program and, even though he is turning 90 in December, he is still an active member of the Nevada Alumni Association. Following his graduation, he was recruited by the NACA Ames Aeronautical Laboratory at Moffett Field, Calif., where he worked for several years as an assistant electrical engineer with free flight and wind tunnel programs meant to qualify military aircraft for handling properties prior to acceptance for service use. "After a few years of that, I moved back East to get into the electronics industry," Goetz says. In 1949, Goetz accepted an offer to

work with the IBM Electronics Laboratory at Poughkeepsie, N.Y., where his experience with electron tube development and manufacture fitted in with that firm's interest at the time in developing large scale electronic computers. Goetz became a senior electrical engineer and manager with IBM and had continued involvement in the procurement of computer reliable components and devices able to operate in various environments, including space. In this latter capacity he participated in several NASA programs, including Gemini and Apollo computer applications. During this period, Goetz was able to meet with several prominent figures in the NASA space programs such as Wernher von Braun and other rocket physicists and astronautics engineers. "That's the interesting thing about engineering," Goetz says. "You never know who you will meet around the next corner." During his work at IBM, Goetz and his wife, Dorothy, had four children. They also have five grandchildren. He finally retired from "Big Blue" after 30 years, and spent five more working for the IEEE (Institute of Electrical and Electronics Engineers) Standards organization in Manhattan, before again retiring. Goetz had remained in contact with the University over the years, and he was interested in helping students, especially those in engineering

studies, from his experience. He has also remained active in University Club and Alumni Association scholarship endeavors. When not participating in these events, he still finds the time for a hobby he has had for almost a lifetime: ham radio.

ENGINEERS, NURSES BENEFIT FROM WALLACES' GENEROSITY

Wilbur Wallace is a Nevada graduate of the class of 1950. Born in Auburn, Calif., "Wally" graduated from Placer High School in 1939 and entered the U.S. Army Air Corps in 1942, where he was commissioned second lieutenant as a B-29 flight engineer. He met and later married Mary Gilmore. Mary continued her education at Mt. Zion School of nursing in San Francisco, Calif. where she graduated as a registered nurse. Wally went on to get his bachelor's in electrical engineering from Nevada, and after graduation started his career at Pacific Gas & electric Co. in Stockton, Calif. Wally was active for many years in the Civil Air Patrol (U.S.A.F. Auxiliary), and was active in the U.S. Air Force reserve until retiring in 1971 with the rank of major. His career with PG&E spanned 34 years as an electric rate analyst and electric distribution engineer. Mary was a registered nurse for four decades, holding



Photo by Jean Dixon

The new Knowledge Center is home to the William F. & Nadine M. Pillsbury Reading Room. Bill Pillsbury '50 (engineering), who died in January at age 82, was a tireless volunteer leader for the University.

Dedicated couple provide for Nevada students

Nadine and **Bill Pillsbury '50** (civil engineering) have always valued the education Bill received at Nevada. The couple has supported a variety of programs at Nevada, including the College of Engineering, Pack Educational Fund and Silver & Blue Society.



Pillsbury

They thought it would be fitting to pay homage to Bill's talent for engineering, Nadine's talent for art, and their shared love of books through a gift to the University. They recently established a planned gift through their family

trust, which will eventually establish a scholarship for civil and environmental engineering students, and an endowment for engineering and Western art collections for the Mathewson-IGT Knowledge Center. The couple also recently gave a generous gift for the construction of the Mathewson-IGT Knowledge Center; the Tower Room was named in their honor. Sadly, Bill passed away in January after a brief battle with cancer. Bill served as a second lieutenant and navigator in the Army Air Corps during World War II. On Nov. 25, 1944, he married his high school sweetheart, Nadine McKinney, and the couple began their life together in Sacramento. Bill graduated from Nevada in 1950 with a degree in civil engineering.

professional licenses in both California and Nevada. She was founder of the Parkinson's Disease Support Group in Stockton. Together Wally and Mary enjoyed flying throughout the Western United States, Canada and

Alaska and both held private pilot's licenses. The couple had been married for almost 60 years at the time of Mary's passing in January 2005. To honor his beloved wife, Wally created an endowed memorial scholarship

in her name to benefit nursing students at Nevada. In 2007, Wally created additional permanent funds including the Wilbur R. and Mary A. Wallace engineering Dean's Fund, the Wilbur R. Wallace electrical engineering Scholarship endowment, the Wilbur R. and Mary A. Wallace Scholarship endowments for environmental engineering and one to honor his graduation class of 1950. The couple was recognized and honored in the University's Honor Court in 2007.

HOEPER PROFESSORSHIP BENEFITS ENGINEERING AT NV

All the world's great universities have one thing in common—a great faculty. A great faculty attracts outstanding students; in turn, superb students challenge and inspire the best faculty. Great faculty members are leaders in their fields, creating great works of art, conducting breakthrough research, writing great books, teaching inspired classes. Endowed professorships help Nevada bring the very best scholars and teachers to the colleges and programs, and they help us to keep them here—to teach, to write, to research, to create new knowledge and technology, and to contribute to the community beyond the University. In 2007, the College of Engineering received a gift from friend **Rose Hoepfer** to establish the first such professorship in honor of her late husband, **Ralph Hoepfer '51** (electrical engineering). The Hoepfers' generosity has enhanced the College of Engineering over the last few years. This gift is unique in that the Hoepfer Professorship can rotate among the many disciplines to best meet



Rose and Ralph Hoepfer

the college's needs. "This professorship will act as a catalyst for the college's, and in turn, the University's continued evolution into an internationally recognized institution," Ted Batchman said when the professorship was announced.

BATCHMAN IS HONORED WITH ENDOWMENT

Simon Wong '79/'84MS (civil engineering) recently established the Dr. Ted E. Batchman Scholarship Endowment for National Merit Scholars with a generous gift as a challenge grant. Simon Wong is a senior active member of the College of Engineering Advisory Board. He challenged members to match his \$20,000 gift for the scholarship in the dean's name. The challenge was promptly met. "Dean Batchman has truly elevated the College of Engineering's excellence and prominence during his tenure," Wong says. "We have been fortunate to have him as our dean." Wong is founder and president of Simon Wong Engineering, a successful engineering firm in San Diego, Calif. He was recognized with the Outstanding Professional Achievement Award by the Nevada Alumni Association in 1997, and in 2006 was named one of the inaugural recipients of the James G. Scrugham Medal by the College of Engineering. Batchman has stepped down as dean of the College of Engineering to pursue his new role as director of the Renewable Energy Program. Wong acknowledges Batchman's leadership and the role he played in the evolution of engineering education during his tenure, including building a supportive atmosphere for research and working with the engineering industry to establish new programs.

OTHER ALUMNI NEWS

Brett Amesbury, a civil engineering student, won the grand prize for naming the automated retrieval system in the Mathewson-IGT Knowledge Center. His name, MARS—for Mathewson Automated Retrieval System—was selected from over 180 entries.

Bernard Kwok '81 (electrical engineering), '84MBA is Symantec's senior vice president of the Asia Pacific and Japan geography, responsible for driving the company's sales and business development across more than 17 countries. Bernard serves as the senior leader for the overall Symantec business in Asia Pacific and Japan. Most recently, Bernard served as president of the Greater China Region, where he was responsible for managing the company's operations in China, Hong Kong and Taiwan. Bernard joined Symantec following the merger of the company with Veritas Software.

Sheila (Genio) Looney '92 (accounting/computer information systems) and **Mark Looney '94** (electrical engineering), '95M.S. (electrical engineering) would like to announce the birth of their son, Cayden Daniel, on Dec. 14, 2007. Cayden joins big sister, Gabrielle, 10, and brother, Brandon, 7.

Jason Forga '94 (civil engineering) was promoted to senior civil engineer in November 2007. He has worked in the Landfill Management Division of San Diego County since 2004.

Anthony Lorenzi '95 (civil engineering), '97MS (civil engineering) has joined PBS&J, an engineering consultation firm, as project manager. Anthony will lead project teams for various clients, overseeing design, budget and client development. Anthony has more than nine years of comprehensive experience in civil engineering and pavement management.

Monette (Romero) Greer '97 (chemical engineering) and **Brian Greer '97** (mechanical engineering), '99M.S. (mechanical engineering) are pleased to announce the birth of Jordan Pierce on March 31. He is also welcomed by big brother, Tyler.

Ryan Dixon '98 (civil engineering), '02M.S. (civil engineering) and **Yvonne (Lum) Dixon**

'96 (speech pathology), '98M.S. (speech pathology) are proud to announce the birth of their fourth child, Alyssa Yvonne, on Feb. 16.

Carlos Ledon '01 (chemical engineering) and **Sarah (Warner) Ledon '00** (elementary/special education) announce the birth of their daughter, Michaela Maria Ledon on Jan. 9, 2008. She joins older sister, Calista, and big brother, William.

Kent Choma '01M.S. (electrical engineering) has accepted the position of director of facilities management at Saint Mary's Hospital in Reno. Kent has more than 18 years of engineering, technical instruction and project and personnel management experience.

Brian Fitzgerald '06 (civil engineering), a PBS&J employee, has passed the professional engineer exam and will apply for licensing in 2011. Brian is responsible for services for numerous clients, including the Reno-Tahoe International Airport, Truckee Airport, and Carson City Airport. Brian is an associate member of the American Society of Civil Engineers, and avid supporter of the Nevada Concrete Canoe Team.

Kara Bymers '07 (civil engineering) has passed the professional engineer exam. Kara



is employed by PBS&J, an architecture-engineering-construction services and program management consulting firm, where she assists with planning, design, bidding, and construction services. Kara is a member liaison for the University of Nevada, Reno Society of Women Engineers and a member of the Truckee-Meadows Branch of the American Society of Civil Engineers.

2008 *The University's year in review*

As the third state in the nation to hold its presidential caucuses in January, Nevada expected to see an increase of political activity in 2008. What it didn't expect was a similar increase in seismic activity to add to the excitement of a milestone year for the University of Nevada, Reno. Add to that the opening of the impressive Mathewson-IGT Knowledge Center and the centennial anniversary of the Mackay School of Earth Sciences and Engineering, and 2008 will certainly go down in University annals as a year to remember.



Mackay Celebrates Centennial

The Mackay School of Earth Sciences and Engineering, born on June 10, 1908, celebrated its centennial during the spring semester. Numerous special events were held, including a gala. "When I think of our school, I think not only of the great quality of our graduates and faculty throughout the years, but also of the great family 100 years of history has created," said James Taranik, director of the Mackay School and longtime faculty member.

PRESIDENTIAL ELECTION

Obama visits campus three times

Presidential candidate Sen. Barack Obama and his wife, Michelle, held a rally Jan. 18 in the Virginia Street Gym to drum up support going into the state's January caucuses. The freshman senator from Illinois told the crowd of about 2,000 that he sought advice from Nevada's student body president, Sarah Ragsdale, on getting elected to a top office. "I went to Sarah for tips on how to become elected president. . . I can't tell you what she told me, but that it was very helpful," Obama said.

President Milton Glick said that both presidential candidates from the Republican and Democratic parties were more than welcome to hold campaign events on campus.

Obama returned to campus Sept. 30 to speak to a crowd estimated at 12,000 on the Quad. Aired live on CNN, Obama told the gathered group, which included many Nevada students, "For this next generation, it's a defining moment." Obama made a third visit to campus less than a month later, on Oct. 25, to Peccole Park. The event drew an estimated 11,000 spectators.



Photo by Jean Dixon



Knowledge Center opens—High tech meets high touch

Nevada's most ambitious building project, the Mathewson-IGT Knowledge Center, came to fruition in August. When the Knowledge Center opened for business to the public Aug. 11, the University, according to President Glick, truly became a place where technology and the written word came together in one place.

"I think the critical word here is convergence," Glick said. "What we are seeing is a convergence of the historic library, the printed page and technology. In a very

real sense, the new Knowledge Center is the physical manifestation of this convergence." Not long after its opening, it was clear the new building was already having a profound and positive impact on the campus. Said Melissa Walton, a 20-year-old English and political science major: "I feel like it's a big improvement over what used to be available. It's very centralized. Everything that you need is in this building. It has a lot of different appeal for different people."

Earthquakes rattle northern Nevada

After a seismically tame 2007, northern Nevadans found themselves on unstable ground in 2008. Starting in February, hundreds of tremors rocked northwest Reno, with four greater than 4.0 magnitude.

"Nobody is able to predict earthquakes in the short-term," said John Anderson (pictured at right), director of the Nevada Seismological Laboratory. "But with all of these earthquakes in the news of late, it's a good time for everybody to be prepared."

"The earthquake sequence in west Reno is not a scientific surprise, and a large earthquake there would not be a scientific surprise. People need to be prepared," Anderson said on April 29. By early summer, much of the earthquake activity had subsided, though Nevada seismologists counseled the people of Nevada to remain vigilant.



COLLEGE OF ENGINEERING

Senior Scholar 2008

Each morning, Gregory Kraus would awake to words that helped fuel his notable academic career at Nevada. A poster with words from the martial arts film king Bruce Lee was above his bed: "Knowing is not enough, we must apply. Willing is not enough, we must do." So it was for Kraus. He said he excelled in his studies "not by being more intelligent than other people, but rather by being more determined to succeed – the Willing." Kraus went a step further, though – the Applying – by pursuing what he called "a practical sense of engineering" through the University Mars Rover Challenge. Nevada has fielded consistently strong teams in the international event, and Kraus found designing a four-wheel drive,



Senior Scholar (right): **Gregory Kraus**

Faculty Mentor: **Eric Wang**, associate professor of mechanical engineering

four-wheel steering robot that took second place in the international contest to be one of the most rewarding experiences of his time at Nevada. He found further inspiration from his

faculty mentor, Eric Wang: "The passion he exhibits for his work is truly inspiring, and he has instilled within me the realization of just how much fun engineering can be."

Ned Westover '38 (electrical engineering) died in Otis, Ore. Nov. 27, 2007, at the age of 90. In his will, the accomplished photographer and Nevada alumnus left his complete collection of photographs, slides, and equipment to the University Libraries Special Collections Department. Over the years, Ned had already given over 800 large-format photos to Special Collections that he had printed and framed himself. Because of these gifts, many people in the library and elsewhere on campus have felt the presence of Ned Westover, who graduated from Nevada in 1938. He was an engineering student and a photographer for the Sagebrush and Artemisia. After graduation, Ned became a real estate project developer. During his long and fruitful retirement, he photographed many people and places around the world. Some of his best photos were taken in India.

Kenneth R. Olinghouse '51 (mechanical engineering) died Nov. 22, 2007. Kenneth was born August 2, 1923 in Pioche, Nev. to Alice and Ralph Olinghouse. He married Josephine Marisquirena on August 14, 1949 in Elko Catholic Church and shortly after, moved to Orem, Utah to work for U.S. Steel at Geneva. Kenneth served in World War II from 1942-1946 as a seaman in the Coast Guard. After World War II, he entered the University graduating in 1951. Kenneth retired from U.S. Steel spending his retirement consulting for Geneva and enjoying his small fruit farm in Orem. He was active in the Elks, and served as board member for Orem Water Board. He was an avid hunter and an accomplished horseman, including establishing the horse program at Trefoil Girl Scout Camp in Provo Canyon.

Peter Ashton Krenkel was born on January 3, 1930 in San Francisco, Calif. He passed away at the age of 78, at home on Sunday, June 1, 2008. He attended local schools in California and he served in the U.S. Army from 1953-1955. He received his

B.S. degree, his M.S. degree and his Ph.D. degree all from the University of California - Berkeley. He was a registered professional engineer licensed in Georgia, Tennessee, North Carolina and Nevada. Dr. Krenkel was a well recognized expert in the field of environmental engineering and was an author and co-author of numerous books and articles addressing the subject of environmental engineering. Dr. Krenkel was Professor and Dean Emeritus of the College of Engineering at the University of Nevada, Reno.



Krenkel

He served as Dean of the College of Engineering during the period of 1982-1987. He was director of the division of environmental planning for TVA, 1974-1978, and executive director of the water resources center University of Nevada Reno, 1978-1982. His previous teaching positions included various engineering classes at both Vanderbilt University in Nashville, Tenn., and the University of California at Berkeley. He was consultant to numerous industries; local, state, and federal governments; and the World Health Organization. He recently served as chairman of the Washoe County Regional Water Planning Commission. From 1995-2007, he was a member of the Washoe County Water Commission. He served as a member of the Community Advisory Board for the Nevada Test Site, U.S. Department of Energy, Las Vegas from 1998-2007. Because of his background and interest in environmental engineering and because of his past leadership role with the College of Engineering, the family has requested that gifts in his name be made in lieu of flowers to the Peter Krenkel Civil and Environmental Engineering Scholarship for graduate students to the University of Nevada, Reno Foundation directed to M. Perish, College of Engineering, MS 256, Reno, NV, 89557.

Charles Ernest Tam '50 (electrical engineering) passed away Tuesday, Jan. 15, 2008, at West Hills Hospital in West Hills, Calif. at the age of 83. Charles was born Jan. 4, 1925, in San Francisco to Ernest and Dulcie Tam. He was raised in San Francisco where he graduated from St. Ignatius High School in 1943. Following high school he entered the U.S. Navy for the duration of World War II. Upon his return from his duties in the Navy he completed his degree at the University of Nevada, Reno. On Jan. 27, 1951, Chuck married Geri Clays after meeting at a Wolf Pack football game in 1949. They lived in several places including San Francisco, Sacramento and Walnut Creek. They moved to Bellevue, Wash. in 1969 and in 1973 they settled in West Hills, Calif. The two were married for 56 years. In his leisure time Chuck enjoyed salmon fishing, traveling first class, poker night, football, a well prepared meal and spending time with his family and Labrador Retriever, Georgie Girl. His family remembers him as a loving husband, father and grandfather, who possessed a wonderful sense of humor, great attention to detail, and as a man who made friends wherever he went. Chuck is survived by his loving wife, Geri, children, Katie Devine (Larry Devine), Lisa (Dennis) Mitchell and Steve Tam (Borianna). He was preceded in death by his sons, Christopher in 1988 and Michael in 2001.

John J. Quintana '56 (civil engineering) passed away on March 4, 2008 at his home in Agate Bay, Calif. John resided in Agate Bay, starting a construction company, Quintana Construction in 1962. In 1990 he became a rancher. He ran two ranches, one in Loma Rica, Calif., and his summer ranch in Sierra Valley, Calif. John served in the U.S. Navy during World War II and the Korean War. John is survived by his wife of 52 years, Corrine, son, Gary, daughter, Carol W. Johnson, brothers, Frank and Ed, grandsons, Shaun and Randy; grand-daughter, Jessica Miller (Paul Miller), great grandchildren, Tyler Williams, Garret Williams, Ellie Williams and Dare Miller.

COMPUTER SCIENCE

KOSTAS BEKRIS has joined the Department of Computer Science and Engineering as an assistant professor. He acquired his Ph.D. titled "Informed Planning and Safe Distributed Replanning under Physically Realistic Constraints," from Rice University. He has also received his M.S. from Rice University, while his B.S. degree is from the University of Crete in Greece.

The research area of Dr. Bekris is in motion planning, the algorithmic computation of feasible motions for systems, either physical or virtual ones, so as to achieve a desired goal. The application areas include robotics and physically realistic simulations, such as problems in controlling autonomous vehicles, sensor-actuator networks and agents in computer games. Kostas published his work and presented papers at various ACM and IEEE forums and publications. His paper presented at the International Conference on Robot Communication and Coordination (ROBOCOMM) won the Best Student Paper award.

MEHMET H. GUNES has joined the Department of Computer Science and Engineering as an assistant professor. He has received his Doctor of Philosophy in Computer Science from the University of Texas at Dallas in August 2008 and his Master's of Science in Computer Engineering from Southern Methodist University in May 2004. He was top graduate in both CSE and EE majors from Isik University, Turkey in 2002.

During his master's studies, he studied VLSI testing and has developed efficient algorithms for path delay fault coverage with compact graph representation of test vectors. His Ph.D. specialization was on Internet measurements. Dr. Gunes is interested in large complex networks such as the Internet, as well as biological networks. He has devised mechanisms to



Evrenosoglu



Gunes



Bekris



Zhu



Leang

map the Internet which has become one of the largest complex networks. He is investigating mechanisms to understand topological and functional characteristics of such complex networks. He is also interested in computer communication networks and network security. Dr. Gunes' work has been presented and appeared at various IEEE and ACM forums and publications.

ELECTRICAL AND BIOMEDICAL ENGINEERING

CANSIN YAMAN EVRENOSOGLU

obtained his B.S. and M.S. degrees from Istanbul Technical University, Istanbul, Turkey in 1998 and 2001 respectively. He received his Ph.D. from the Department of Electrical and Computer Engineering at Texas A&M University, College Station, Texas in 2006. During his Ph.D. studies he worked as a research and teaching assistant specializing in power system operations, analysis, control, electromagnetic transients and visualization. He joined the Electrical and Biomedical Engineering Department at University in August 2008. His research and teaching interests span electric power system analysis, operation and design; integration of renewable energy systems (distributed generation) to the power system grid; power system dynamic/static state estimation; fault location along power system transmission and distribution lines; optimal power flow studies and power system visualization.

DR. XIAOSHAN ZHU received his Ph.D. in Electrical Engineering (specialty: BioMEMS

and Biosensors) in 2005 at the University of Cincinnati. From 2005 to 2008, he was in YSI (Yellow Springs Instruments) as a scientist while focusing on microfluidics based bioanalytical devices for environmental monitoring. In 2008, he joined the University as an assistant professor in the Department of Electrical and Biomedical Engineering. His research interests include electroanalytical chemistry, electrochemical/optical immunoassay, bio-separation, microfluidics, micro/nano biosensors, integrated bio-analytical systems, and the applications of above technologies or systems in environmental monitoring, biomedical diagnostics, food safety, and drug discovery.

MECHANICAL ENGINEERING

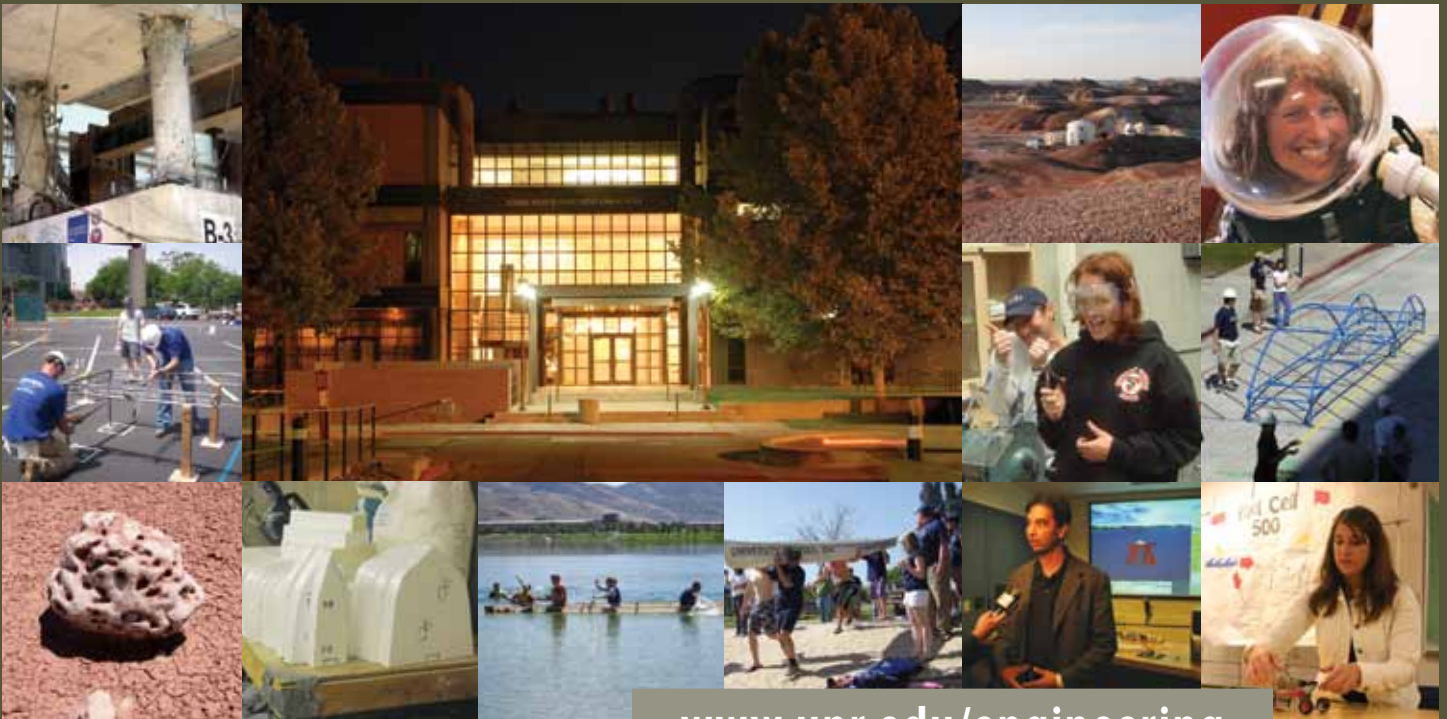
DR. KAM K. LEANG recently joined the Mechanical Engineering Department in July after spending nearly three years as an assistant professor in the Mechanical Engineering Department at Virginia Commonwealth University, Richmond, Va. In the early 1980s, his family was sponsored into the United States from Cambodia. Dr. Leang grew up in Tremonton, a small town in northern Utah. After completing his B.S. and M.S. degrees in Mechanical Engineering at the University of Utah in 1997 and 1999, respectively, he attended the University of Washington in Seattle, and then completed the Ph.D. degree in Mechanical Engineering in December 2004. Dr. Leang's research centers around modeling and precision control of electroactive material systems for micro- and nano-technology.

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