

# engineering

winter 2009

SAN JOSÉ STATE UNIVERSITY

— Charles W. —  
**Davidson**  
COLLEGE OF  
ENGINEERING  
San José State University



L-R: Mayor Chuck Reed, Raymond Yee, Sam Liccardo, Thuy Le, Fred Barez, Yusuf Ali, Belle Wei, and Tai-Ran Hsu.



The college hosted over 400 interested parents and high school students at Spartan Preview Day on November 8, 2008. Pictured above are some of the CoE staff and student volunteers who welcomed the visitors.

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## Watch out Detroit— here comes ZEM!

**O**N TUESDAY, DECEMBER 9, 2008, the City of San José presented the SJSU Zero Emissions (ZEM) team with a commendation for their work on the ZEM car, a sustainable vehicle for urban transportation.

San José Mayor Chuck Reed and Councilmember Sam Liccardo gave the commendation to Tai-Ran Hsu, the lead faculty supervisor for the project. Also present were faculty supervisors Raymond Yee and Thuy Le. Yusuf Ali, a graduate student, was the student representative. Belle Wei, Don Beall Dean of Engineering, and Fred Barez, chair of the Mechanical & Aerospace Engineering Department, were also on hand.

The ZEM vehicle is powered by human, electric and solar power. The vehicle can be driven at low speeds by human



pedaling. The electric motor can power the vehicle to run at higher speeds, up to 35 mph. Solar energy provides a continuous charge of the batteries during the operation of the vehicle and also when it is idle. The vehicle has a cruising range of 40 miles. With the solar energy supplement, its range is 50 miles.

Key industry sponsors include SunPower Corporation of San José and CleanPower Battery Technologies of Santa Clara.

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## dean's MESSAGE

We begin 2009 facing an economic crisis of “historical proportions.” This crisis compels the nation to think deeply about the actions we need to take, not only to solve the problems of the present but also lay a foundation for the future. The crisis has revealed that education and engineering are going to play an increasingly central role in developing solutions. In particular, President Barack Obama has proposed plans to build infrastructure, develop renewable energy resources, construct smart electric grids, and computerize medical records. The centrality of using technology to solve problems and improve the quality of the life has been reiterated by many speakers in our Silicon Valley Leaders Symposium: Dr. Craig Barrett, chairman of Intel; Dr. Josephine Cheng, vice president of IBM Almaden Research Center; Brian Halla, chairman and CEO of National Semiconductor; and Wim Roelands, chairman of Xilinx. We are grateful to these speakers, who shared their insight with us and expanded our knowledge on these new possibilities.

I am pleased to tell you that many of our students have embraced the challenges of our time. Last semester, fall 2008, we had a record number of first-year engineering students, 624. They are motivated, hardworking, and enthusiastic about being part of the solution to solve energy and climate problems. In the same semester, we were saddened by the passing of our dean emeritus, Dr. Jay Pinson. Dean Pinson raised private funds to build the current engineering building, the first in SJSU history. Initially, his effort was met with resistance, but his “we can do it” spirit mobilized the support from Silicon Valley companies and enabled the wonderful facilities we enjoy today. Now we must respond to the enormous challenges of the state budget cutback without compromising the quality of how we educate our students. Keeping Dean Pinson’s spirit in mind, “we can do it.”

Sincerely,  
 Belle Wei  
 Don Beall Dean of Engineering  
 Charles W. Davidson College of Engineering

## college rankings

The *U.S. News and World Report’s* “America’s Best Colleges 2009” has ranked the SJSU Davidson College of Engineering 12<sup>th</sup> among master’s granting institutions. The college has moved up four places in one year.

Listed in the top five of their engineering specialties are Industrial/Manufacturing, ranked 3<sup>rd</sup>, and Computer Engineering, ranked 4<sup>th</sup>. Electrical Engineering ranked 10<sup>th</sup> and Mechanical Engineering 14<sup>th</sup>.

Overall, SJSU was ranked 13<sup>th</sup> among master’s granting public institutions in the west. Rankings are determined in part by quantitative data, such as student retention rates and faculty resources as well as peer rankings.

## in memoriam

On Saturday, September 20, 2008, **Dr. Jay Pinson**, dean emeritus of the Davidson College of Engineering, died of cancer. Pinson was dean of the college from 1979–1994.

Pinson is best known for capitalizing on the human power that SJSU provided to Silicon Valley. In the 80s, it was the Valley’s best-kept secret that many of SJSU’s engineering alumni worked and lived in the area, contributing to the economy and development of the industry. As dean, Pinson’s mission, in part, was to strengthen the bonds between the college and high-tech industry, making it publicly known that SJSU engineering was a major contributor to the Valley’s growth.



His legacy to the college is the building itself and what it symbolizes. As the leader of Project 88, Pinson helped raise \$38 million from state and industry funding to renovate and expand the college’s facilities. In 1988, the expansion was completed, increasing the capacity of the college to enroll over 4,000 students. Under Pinson’s direction, Project 88 brought together the financial and moral support of CSU leaders, industry and alumni in a collaborative effort to grow engineering education.

## Fall 2008 Commencement

**T**HIS FALL THE College of Engineering graduated over 750 students with their bachelor's and master's degrees on Saturday, December 20 at the SJSU Event Center.

Distinguished alumnus **L. Carl Harris** (B.S. & M.S. '63 & '67) was the commencement speaker. Harris graduated from SJSU 45 years ago, the first in his family to earn a college degree.

He went on to become the founder and chairman of the board of Harris & Associates, a successful civil engineering consulting firm with over 450 employees and 15 offices, including locations in Nevada, Utah, Arizona, and Washington.

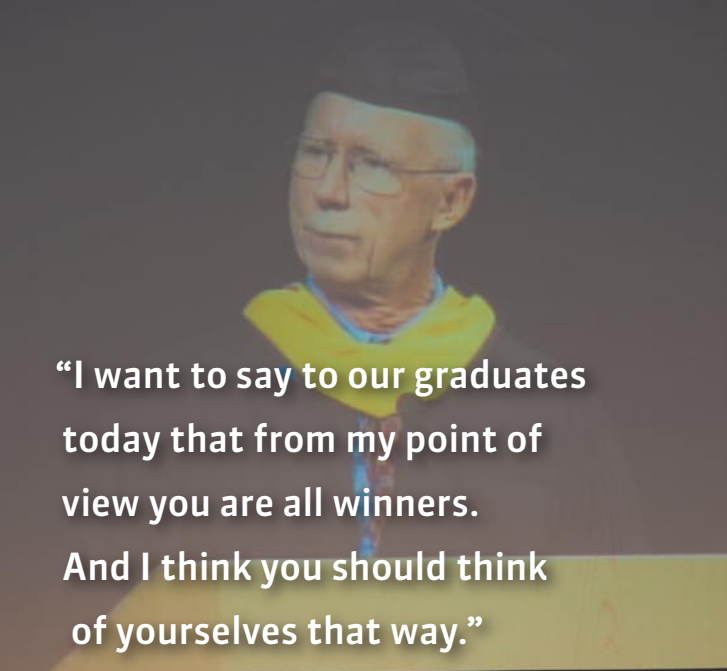
Although graduation signals the end of test taking for many students, Harris encouraged the degree candidates to become professionally certified in their fields.

As an example, Harris suggested that engineers may want to earn Leadership in Energy and Environmental Design (LEED) professional accreditation. Operated by the U.S. Green Building Council, LEED certification has become the industry standard for rating a building's sustainability and energy efficiency.

Since the 60s, Harris's own work found ways to reduce costs and reuse natural resources, such as methane gas to produce electricity. Engineers did this because, as Harris explained, it just made "engineering sense."

Harris also gave the graduates sound professional advice about job seeking, work relationships and personal goals.

Harris is a licensed private pilot. He is a member of the American Public Works Association, the American Council of Engineering Companies, and the American Society of Civil Engineers. He supports Habitat for Humanity, the American Red Cross, the American Cancer Society, and the National Multiple Sclerosis Society. In 2008, he was the recipient of the College of Engineering's Alumni Award of Distinction.



**"I want to say to our graduates today that from my point of view you are all winners. And I think you should think of yourselves that way."**



Commencement speaker, L. Carl Harris.

## SILICON VALLEY ENGINEERING SCHOLARSHIP DONORS:

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Cisco  
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Intel  
KLA-Tencor  
Lam Research  
Emma E. Legg Memorial  
Lockheed Martin  
Vincent E. Morine Memorial  
Doug Munson  
Novellus  
Rockwell Collins  
San José State University  
Silicon Valley Electrical Engineering—  
Atmel, Cadence  
and National Semiconductor  
Harry Wong Memorial  
Xilinx



## Making dreams come true

**D**URING THESE TURBULENT economic times, it is especially good news to hear that companies and individuals continue to provide financial support to higher education and its deserving students.

The Davidson College of Engineering has been befriended over the years by many corporate and individual donors, including alumni and friends of the university. These groups have generously sponsored engineering scholarships for high-achieving students.

On Thursday, December 4, the college held its annual Scholarship Recognition Luncheon to show its appreciation to the scholarship sponsors and to recognize the scholarship awardees. Charles W. Davidson (B.S. '57), the college's namesake, and Dana Ditmore were the guest speakers at the luncheon.

Two engineering students, **Andrea Rios** and **Uchenna Anyanwu**, spoke about what their scholarships mean to them. Both students expressed how fortunate they were to be selected and how the scholarship would alleviate a financial burden on them and their family.

Andrea, a junior in mechanical engineering, explained the choice she might have had to make between SJSU and a community college, if she had not received her scholarship: "I was seriously considering attending a community college, but

my dream was to attend a four-year university from the very beginning. Well, I received the good news about the scholarship on my birthday. What an incredible day! That is, hands down, the best birthday present I have ever received."

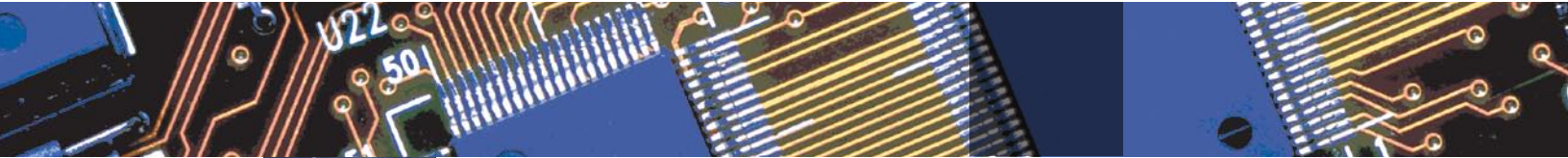
Uchenna, who is a senior in computer engineering, shared his future plans with the luncheon attendees: "I plan on pursuing a master's degree in Computer Engineering and exploring a variety of avenues in computer applications. Many of us see ourselves as future Silicon Valley leaders. We will never forget those who helped us get there and who supported us in this long journey."

Andrea described the meaning of these scholarships in the lives of the students: "Many of you donors do not realize the impact you are making in all of our lives. I certainly hope that sharing my story has given you a better understanding of just how much your sponsorship is supporting all of us scholarship recipients in our academic endeavors. I think we can all agree that the future is too important not to invest and give back to our community."

To the scholarship sponsors, we salute you and thank you for continuing to believe in our talented students; they are our future. To the scholarship recipients, we encourage you to be curious about learning and passionate about how you can change the world for the better.



## SJSU technology professor's legacy continues



Gerrish “inspired and launched the careers of hundreds of enthusiastic students.”

**H**OWARD H. GERRISH was an educator in the true spirit of the word. Professor emeritus, Gerrish taught at SJSU beginning in 1961 in Industrial Arts. During his tenure, he mentored and inspired generations of teachers-to-be and technologists destined for industry.

Now the Howard H. Gerrish Memorial Endowment continues his educational legacy. Established in 2008, the endowment supports the CoE's technology programs. The gift of \$420,000 will be used “to promote the technology programs, upgrade equipment and facilities, and increase student enrollment,” said Seth Bates, chair of the Aviation and Technology Department.

“This gift is special to the college because it has been given by one of our very own SJSU faculty. We are grateful to the Gerrish family for their generosity in continuing to support the program and its students,” said Dean Belle Wei, Don Beall Dean of Engineering.

Yet Gerrish's contributions to education go beyond the university level. During his 24 years teaching in the CSU system, Gerrish was instrumental in developing the technology curriculum for middle and high school students. His most popular textbook is *Electricity and Electronics*, first published in 1964 and now in its 10<sup>th</sup> edition. It is used in electricity and electronics high school programs throughout the U.S. Altogether Gerrish published eleven textbooks during his career, nine of them with Goodheart-Willcox Publisher.

John Flanagan, president & CEO of Goodheart-Willcox Publisher, said that Gerrish “inspired and launched the careers of hundreds of enthusiastic students. His legacy lives on in his generous donations to support technical and technology education both at the university level and at the professional association level.”

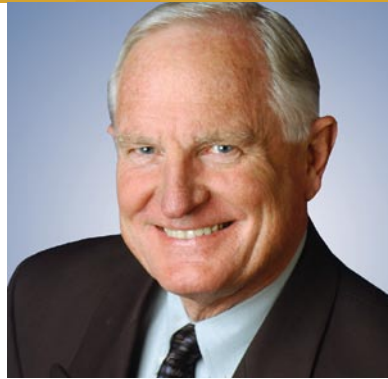
Roy Brixen, a former student of Gerrish's and technology professor at College of San Mateo, said, “Howard ran the class as a master teacher demonstrating ‘how to do it’ to a bunch of young apprentices.”

Gerrish was born in 1910 in Lisbon, Maine. He was a captain in the U.S. army during WWII. He graduated from the University of Michigan in 1946 and earned his master's from Wayne State University in 1953. He retired from teaching in 1972. Gerrish was married to Virtue Gerrish. They were ardent supporters of education and sponsored several scholarships through the International Technology Education Association.

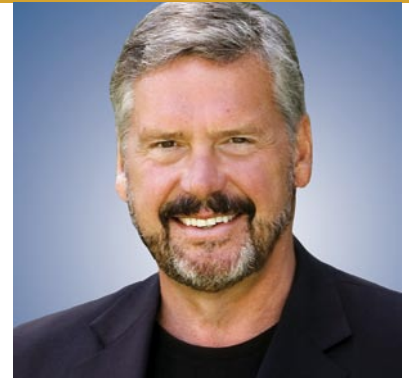
For more information about giving to the CoE, contact Laura Henderson, Senior Director of Development for the College of Engineering, at [laura.henderson@sjsu.edu](mailto:laura.henderson@sjsu.edu) or 408.924.1139.

## Silicon Valley Leaders Symposium

# SVLS speakers



**Dr. Craig Barrett**



**Brian Halla**

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### “Always ask why”

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Zen philosophy could not do better.

**Dr. Craig Barrett’s** presentation, “The Business of Innovation,” was full of enduring wisdom.

To the 100+ engineering students in the audience, he advised that asking questions, not just once or twice but again and again, of faculty, colleagues and leaders, is the only way to understand a problem and begin to find a solution for it.

Barrett, chairman of the board of Intel, Corporation, visited the college on November 13, 2008. Speaking in the Silicon Valley Leaders Symposium (SVLS) series, Barrett discussed a range of issues: technology and innovation; education and healthcare; and leadership and professional success.

His presentation provided sage advice from someone who is a respected leader in business and technology. For instance, he explained how “nothing beats investing in good people and good ideas.”

To demonstrate, Barrett pointed out that Intel was funded by venture capitalist Arthur Rock, who knew Gordon Moore and Robert Noyce and believed in the two men and their good idea. Despite the fact that Moore and Noyce’s business plan consisted of only about 168 words, Barrett explained that Rock funded them \$2.5 million.

Barrett offered other professional advice, such as “change before you have to” and “a small deed done is better than a great deed planned.”

Barrett has a B.S., M.S. and Ph.D. in materials science from Stanford University. Before joining Intel in 1974, he was an Associate Professor in the Department of Materials Science and Engineering at Stanford. He serves on many national and international committees.

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### “The explosion is upon us”

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Glug, glug, glug. BURP! Did you know your iPhone might have a drinking problem?

**Brian Halla**, chairman and chief executive officer of National Semiconductor Corporation, wanted to make a very important point to the crowded room of engineering students who attended his SVLS presentation on October 23.

In his presentation on “The Role of Innovation and Our Industry’s Responsibility to the World,” Halla showed them an iPhone screen, which looked like a glass of beer. When the phone is tipped over—as if someone is drinking the beverage—the liquid appears to drain from the screen and the phone emits, after the appropriate pause, a satisfied belch.

Jokingly calling this cell phone add-on the ultimate “output of our R&D dollars,” Halla spent the time demonstrating how technological innovation has not been used as wisely as it could to help people in the world.

Halla explained that the technology industry needs to be measured by other, more important, applications. Engineers and scientists must collaborate and share existing technology with each other. Together they must also develop new solutions for some of the biggest problems humans face in the 21st century: alternative energy, accessible healthcare, and national security and personal safety.

Leading by example, Halla described his patent for “heat transfer control for a prosthetic retinal device.” By using existing technology that has been around for over 20 years — a peltier heat pump — Halla was able to help solve a current medical problem for those who suffer from macular degeneration and blindness.

Previously, Halla was Executive Vice President of LSI Logic. He is on the board of directors for Cisco Systems, the IEEE Noyce Award Committee, and the Silicon Valley Leadership Group. He has a B.S. in electrical engineering from the University of Nebraska.

To watch the SVLS speaker presentations online, go to [www.engr.sjsu.edu/about/svls](http://www.engr.sjsu.edu/about/svls).



**Juneseok Lee**

## Dr. Juneseok Lee

Assistant Professor

Civil and Environmental Engineering Department

### EDUCATION

M.S. & Ph.D. Civil & Environmental Engineering, Virginia Tech

B.S. Civil & Environmental Engineering, Korea University, South Korea

### RESEARCH & SPECIALIZATION

**Water Resources Engineering.**

Lee is interested in sustainable drinking water infrastructure systems. His specialties include decision analysis, hydraulic experiments, and accompanying numerical verifications. Currently, he is involved in identifying energy consumption due to water leakage and residential water demand analysis.

## Dr. Laura Sullivan-Green

Assistant Professor

Civil and Environmental Engineering Department

### EDUCATION

M.S. & Ph.D. Civil Engineering, Northwestern University

B.S. Civil Engineering, University of Dayton



**Laura Sullivan-Green**

### RESEARCH & SPECIALIZATION

**Geotechnical engineering.**

Sullivan-Green researches crack dating, which determines the age of cracks in construction materials. There are two methods to determine the life of a crack: carbonation, which involves neutralizing the cement material and then measuring the pH balance; and biological crack dating, which measures the amount of biomass, such as bacteria or molds, on the construction material.

## Professor Jinchun Xia

Visiting Professor

Computer Engineering Department

### EDUCATION

Ph.D. ABD Computer Science, Iowa State University

M.S. Cryptography, Southwest Jiaotong University

B.S. Computer Science, Southwest Jiaotong University

### RESEARCH & SPECIALIZATION

**Software engineering.**

Xia wants to improve the reliability of service-oriented software systems by mitigating failure and thereby reducing risks and costs to businesses. Her research identifies compatibility and



**Jinchun Xia**



**Mallika Keralapura**

reliability problems in software design so that companies can avoid expensive software patches.

## Dr. Mallika Keralapura

Assistant Professor

Electrical Engineering Department

### EDUCATION

Ph.D. Biomedical Engineering, U.C. Davis

M.S. Biomedical Engineering, University of Akron

B.S. E.E. Bangalore University, India

Postdoctoral Fellowship Radiation Oncology, U.C. San Francisco

### RESEARCH & SPECIALIZATION

**Biomedical Engineering.**

Keralapura focuses on developing new ways of detecting and treating cancer using ultrasound and biomedical imaging. By using novel techniques such as ultrasound-based elasticity imaging, the stiffness of tissue can be identified and tumors detected, which do not normally show up in regular ultrasounds. Keralapura hopes to enhance the ability to diagnose and treat different kinds of cancer, such as breast and prostate.



**Maryam Mobed-Miremadi**

## Dr. Maryam Mobed-Miremadi

Kordestani Chair

Bioengineering

### EDUCATION

B.S., M.S. & Ph.D. Chemical Engineering, McGill University, Canada

### INDUSTRY EXPERIENCE

Abaxis

Agilent Technologies

Boston Scientific

### RESEARCH & SPECIALIZATION

**Bioengineering.**

Mobed-Miremadi's interdisciplinary graduate research included working in the Center for Artificial Cells and Organs in the Faculty of Medicine at McGill. After graduation, she spent 11 years in the biomedical industry. Her role at the college is to assist with interdisciplinary lab and course development for the college's bioengineering curriculum, including genomics, drug delivery, biodiagnostics, medical devices and bioinstrumentation.

**Silicon Valley Leaders Symposium  
Spring 2009 Schedule\***

The symposia take place every Thursday from 12:00pm to 1:00pm in the Engineering building auditorium, ENG 189.

For the most up-to-date schedule as well as podcasts of previous speakers go to [www.engr.sjsu.edu/about/svls](http://www.engr.sjsu.edu/about/svls).

**FEBRUARY 12, 2009**

**Dave House, Chairman**, Brocade Communications Systems, Inc.

**FEBRUARY 19, 2009**

**Dr. R. Sean Randolph**, President & CEO, Bay Area Council Economic Institute

**FEBRUARY 26, 2009**

**James C. Davis**, President, Chevron Energy Solutions, Chevron Corporation

**MARCH 5, 2009**

**Patricia Lawicki**, Senior Vice President & Chief Information Officer, Pacific Gas & Electric Company

**MARCH 12, 2009**

**Joanne Maguire**, Executive Vice President, Space Systems Company, Lockheed Martin Corporation

**APRIL 16, 2009**

**Dr. K. R. Sridhar**, Co-Founder & CEO, Bloom Energy

**APRIL 23, 2009**

**Laura K. Ipsen**, Senior Vice President, Global Policy & Government Affairs, Cisco Systems, Inc.

**APRIL 30, 2009**

**Farhat Ali**, President & Chief Executive Officer, Fujitsu Computer Systems Corporation

\* Speakers and dates are tentative. Please go to [www.engr.sjsu.edu/about/svls](http://www.engr.sjsu.edu/about/svls) for the most up-to-date schedule. For additional information, contact Dr. Ahmed Hambaba, Associate Dean of Graduate & Extended Studies, Davidson CoE: [ahmed.hambaba@sjsu.edu](mailto:ahmed.hambaba@sjsu.edu).

For inquiries about the CoE newsletter, please contact Dr. Joy Leighton, Director of Communications, at [joy.leighton@sjsu.edu](mailto:joy.leighton@sjsu.edu).



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*CONTINUED FROM PAGE ONE : WATCH OUT DETROIT—HERE COMES ZEM!*

In addition to being environmentally friendly, the ZEM vehicle offered its students and faculty a plethora of positive learning experiences. First, it was a multidisciplinary, collaborative student project over a three-year period of time. Over 70 students from mechanical and electrical engineering and from the College of Business participated in designing and building the ZEM vehicle. Advisors from the College of Business as well as Silicon Valley industry mentored the students throughout the different stages of the vehicle's development. These partnerships enabled the students to gain valuable hands-on experience and work with some of the most advanced photovoltaic and battery technology on the market.

In January 2009, ZEM student team member Reena Obediah (B.S. '08) along with Tai-Ran Hsu presented the ZEM project at the California State University (CSU) Board of Trustees' meeting. The two explained the opportunities, challenges and key learning outcomes that resulted from the project.



**Reena Obediah, team leader for ZEM vehicle.**

No expensive gas, no toxic pollution, and some exercise! What could be more perfect for a motorist in 2009?!

To read more about the ZEM vehicle and the media coverage, go to [www.engr.sjsu.edu/about/news/zem-public-debut](http://www.engr.sjsu.edu/about/news/zem-public-debut).



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