

# engineering

summer 2007

SAN JOSE STATE UNIVERSITY

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First Place SJSU Zero Emissions (ZEM) Human Hybrid Powered Vehicle (HHPV)

## ZEM zooms into 1st place!

**What if you didn't have to buy gasoline for your car at all?**

**Imagine the savings to your pocketbook and the environment!**

**A** TEAM OF ENGINEERING students recently won the National I2P™ (Idea-to-Product) Competition and \$15,000 with their ZEM (Zero Emissions) Car. The ZEM car, a Human Hybrid Powered Vehicle (HHPV), is a collaborative project between the College of Engineering and the College of Business and is the first of its kind to be powered by human, solar, and electric energy.

The target audience for the ZEM vehicle is people living in urban areas of developing countries. Examining the popularity of motor scooters in Asia, specifically China and Taiwan, the team found that over 18 million scooters are sold in Asia every year. Eleven million are sold in China and over 800,000 in

Taiwan. Although Taiwan may be 3rd in global scooter sales, it has the highest density of scooters: one scooter for every two people! Given the need for smaller automobiles and scooters in Asia and the projected growth, the team had as their goal a vehicle that was practical, economical, and environmentally friendly.

Dr. Tai-Ran Hsu, Mechanical and Aerospace Engineering (MAE), led a team of twenty engineering students in winning the competition for Engineering Projects in Community Service (EPICS) and Social Entrepreneurship at Princeton University. The prize money is to be used toward investing in the car's technology and commercial production.

### Come celebrate with us!

In March, SJSU President Don Kassing announced that the COE was the recipient of the largest private individual gift in the history of SJSU donated by alumnus Charles W. Davidson ('57 Civil Engineering).

The COE is pleased to announce the dedication ceremony of the naming of the College of Engineering on Thursday, September 27, 2007.

For further information regarding the dedication ceremony and about Charles W. Davidson, please visit [www.engr.sjsu.edu/about/coe-naming](http://www.engr.sjsu.edu/about/coe-naming).

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## dean's MESSAGE

This year is very special for us as we celebrate SJSU's 150th Anniversary. It is also special as we become the Charles W. Davidson College of Engineering.

Entering a new era, we must look ahead to what is on our horizon. Unfortunately, our future is overshadowed by the global warming crisis. If not contained, increases in CO2 emissions will result in flooding or water shortages in many parts of the world, impacting billions of people.

Given this potential catastrophe, the College is committed to developing green engineering programs to educate its students and develop solutions. For instance, recently Mechanical and Electrical Engineering faculty and students won first place in the national Idea-to-Product competition by designing a zero emissions vehicle (ZEM), powered by human, solar, and electric energy. In addition, a group of Aviation students and faculty won a FAA competition with their proposal to replace conventional airport lights with LEDs, which are more energy efficient.

Global warming compels us to change the way we live and work by making well-informed public policies, using resources more efficiently, and developing renewable energy sources. Ultimately, though, we must all work together to engineer a sustainable future for all.

Sincerely,  
Belle Wei  
Dean, College of Engineering

## kudos!

### Synopsys and Intel grant

Synopsys and Intel Corporation have awarded the COE the Charles Babbage Grant. The grant, which is awarded to universities globally, provides the COE with licenses to electronic design automation (EDA) software as well as curriculum support. In addition, the grant provides 32 Intel Pentium 4 processor-based systems. The new Process and Integrated Circuit Design Laboratory will house the software and hardware, which is valued at over a million dollars. The Babbage Grant provides cutting-edge tools to universities to prepare students to be competitive in industry and research in Silicon Valley and beyond.

### Earthquake loading

The National Science Foundation (NSF) has awarded \$1.36 million to three professors in the College of Engineering at SJSU: **Dr. Kurt McMullin**, Civil and Environmental Engineering; **Dr. Winncy Du**, Mechanical and Aerospace Engineering; and **Dr. Thuy Le**, Electrical Engineering.

The project, "NEESR-SG: Experimental Determination of Performance of Drift-Sensitive Nonstructural Systems under Seismic Loading," will study the effects of earthquake loading. The researchers will examine earthquake loading on "the performance of non-structural building components," such as precast concrete façades, windows, and plumbing components. Tests of full-scale building shells will be conducted in 2009 at the (NEES) test facilities at U.C. Berkeley.

### Corker NASA grant

Associate Dean **Kevin Corker** has been awarded by NASA a \$1.7 million grant to work on "Computational Models of Human Workload: Definition, Refinement, Integration, and Validation in Fast-Time National Airspace Simulations."

The work is supported by NASA in conjunction with an intergovernmental "Joint Planning and Development Office," which is a national initiative to anticipate and investigate future air transportation technologies. The research grant supports work in prediction of human-system safety and effectiveness and helps define human-automation requirements for system wide information management and air traffic control.

### Educator of the year

**Belle Wei**, Dean of the COE, was awarded Educator of the Year at the *EE Times* ACE (Annual Creativity in Electronics) Awards. The annual event recognizes individuals in the technology industry, who have demonstrated innovation and leadership. The Awards ceremony was held on April 3, 2007.

Dean Wei has promoted college-wide discussions and programs addressing globalization and innovation, resulting in the Global Technology Initiative (GTI), a student study-tour of China, Taiwan, and, in 2008, India. She has also worked to increase the representation of women and underrepresented minorities in engineering. During her tenure, the COE's ranking has moved from 16th to 12th place for B.S. and M.S. degree granting institutions according to *U.S. News & World Report*.

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## snapshots

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### Under construction!

A team of COE faculty, staff, and students have been hard at work during the spring and summer semesters designing a new curriculum for E10 Introduction to Engineering. To accommodate the needs of the revised E10 curriculum, laboratory space is being completely remodeled. ENG labs 391 and 393 will have laboratory benches, tables, and work surfaces supporting new computers and measurement instruments to facilitate hands-on and team projects.

The new curriculum covers three major topics: industrial planning techniques with an energy concentration; wind and solar power energy generation and storage; and robotics covering intelligent and sensor programming.

The team-based projects will expose students in an engaging way to the engineering practices represented by the different disciplines in the college. For example, one of the projects requires the students to design, fabricate, and test a small scale wind turbine. The students will use three-dimensional solid modeling software to design the turbine blades; a state-of-the-art rapid prototyping machine will fabricate their designs, all within a matter of minutes. Testing their designs with a small scale wind tunnel, the students will explore parameters for optimizing the power generated by their turbine blades.

The labs are expected to be completed for Fall 2007.

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## announcements

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### New faculty endowment

Drs. Don and Dean Newnan have established the Newnan Brothers Excellence in Teaching Endowment. The purpose of the endowment is to give three annual awards to faculty, who exemplify an outstanding commitment to teaching, a core value to the Newnan brothers and the COE.

Dr. Don Newnan was faculty in Industrial and Systems Engineering at SJSU. From 1978-79, he was the Interim Dean of Engineering. He retired in 1983. Dr. Newnan now lives in Las Vegas, where he is the President of Tech Publishing Corporation and a director of the Bank of Commerce.

Dr. Dean Newnan was faculty in General Engineering and later Chemical Engineering at SJSU. He passed away in 1981.

The recipients for this inaugural year are the following:

**Dr. Gregory Young**  
Dean Newnan Excellence in Teaching Award for Faculty in the Department of Chemical and Materials Engineering

**Dr. Kevin Corker**  
Don Newnan Excellence in Teaching Award for Faculty in the Department of Industrial and Systems Engineering

**Dr. Tai-Ran Hsu**  
Newnan Brothers Faculty Award for Faculty in the College of Engineering



### Outstanding Staff!

*These awards are given to an individual who has achieved a particular outstanding accomplishment or has a record of sustained excellence provided to faculty, students, and staff.*

**John Cardoza (L)**  
Equipment Systems Specialist,  
Computer Engineering  
Onslow H. Rudolph, Jr. Staff Award for Excellence in Service

**Morris Jones (R)**  
Co-founder, Chips and Technologies  
Dean's Service Award

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## in memoriam

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It is with regret that the COE reports that the following faculty members of the College's community have passed away. The COE's sincerest sympathy and heartfelt sadness are extended to the family and friends of the deceased.

**Emeritus Professor George Sicular**, Civil Engineering, passed away on February 28, 2007, in Saratoga, California. Dr. Sicular retired in 1996.

**Dr. Alex Liniacki**, Mechanical and Aerospace Engineering, passed away on December 15, 2006 in Los Gatos, California. Dr. Liniacki taught at SJSU from 1969-2002.



## Cheers!

Charles W. Davidson: Building the Future



**W**HEN PRESIDENT DON KASSING announced Charles W. Davidson's gift of \$15 million to the SJSU College of Engineering, it was an historic occasion. President Kassing, Mayor Chuck Reed, Dean Belle Wei, and Mr. Charles Davidson said a few words to a crowd of several hundred onlookers.

Mr. Davidson graduated from the SJSU College of Engineering in 1957 in Civil Engineering. He went on to create one of the largest Bay Area home development companies. Yet in spite of all of his success he is keenly aware of his roots and values. Mr. Davidson's gift to the College of Engineering will be used to support student success and faculty excellence, leading-edge engineering, innovation, and globalization.

# Nobel Laureate Speaks in SVLS Series

**I**N SPRING 2007, the College of Engineering participated in SJSU's sesquicentennial anniversary celebrations with the SJSU's 150th Anniversary Deans' Speaker Series: Silicon Valley Leaders Symposium (SVLS). The list of speakers was impressive and included Nobel Laureate Dr. Myron Scholes.

Dr. Scholes, who won the Nobel Prize in Economic Sciences in 1997 with Robert Merton, presented "A Speculator's View of Risk Management."

Dr. Scholes earned his Ph.D. in Economics as well as his M.B.A. at the University of Chicago, a university that is world renowned for its own school of thought: the Chicago School of Economics. Currently, he is the Frank E. Buck Professor of Finance, Emeritus, at the Business and Law School at Stanford University. During his prestigious career, he has also been faculty at the Sloan School of Management at MIT and the Graduate School of Business at the University of Chicago.

Born and raised in Ontario, Canada, Dr. Scholes, as a young man, was fascinated by business, finance, economics, and risk management. Various family members were involved in different business ventures, and his exposure taught him many lessons based upon their experiences. In his autobiography, he recounts that while growing up he "was always the treasurer of my various clubs," "traded extensively among my friends," and "gambled to understand probabilities and risk."

Dr. Scholes' own research in stocks led to the Black-Scholes options pricing model in 1973. In this now famous formula, Fischer Black and Dr. Scholes developed an equation to determine a stock option's value.



**Dr. Myron Scholes,**  
Nobel Laureate in  
Economics

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

For more information please visit  
<http://www.engr.sjsu.edu/about/svls>

# 150

**SJSU'S 150TH ANNIVERSARY DEANS' SPEAKER SERIES**

Silicon Valley Leaders Symposium  
Fall 2007 Schedule

**SEPTEMBER 20**

Emmanuel "Manny" Hernandez  
CFO, SunPower Corporation

**SEPTEMBER 27**

CleanTech Panel

Mark Huang  
Senior VP, General Electric

J. Christopher Moran  
V.P., General Manager, Applied Materials

Charles F. Gay  
V.P., General Manager, Applied Materials

**OCTOBER 4**

Jen-Hsun Huang  
Co-Founder, President, & CEO, Nvidia

**OCTOBER 11**

Dr. Richard N. Zare  
Chair, Department of Chemistry  
Stanford University

**OCTOBER 18**

Carol Bartz  
Executive Chairman of the Board, AutoDesk

**OCTOBER 25**

Fred Reid  
CEO, Virgin-America

**NOVEMBER 1**

Kamran Elahian  
Co-founder & CEO, Global Catalyst Partners

**NOVEMBER 8**

Adam Smith  
Print Product Manager, Google

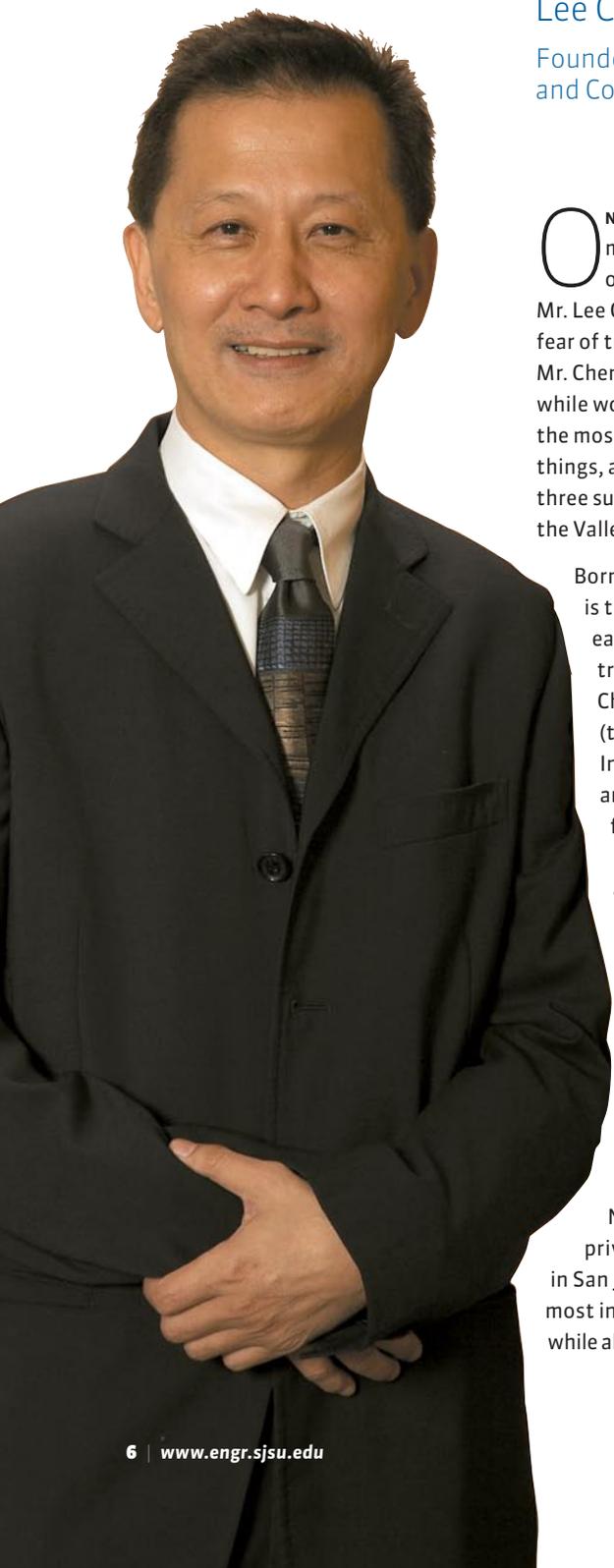
**NOVEMBER 15**

T. J. Rodgers  
Founder, President, & CEO,  
Cypress Semiconductor

## No Fear

Lee Chen

Founder & CEO, A10 Networks, Inc.  
and Co-founder, Foundry Networks, Inc.



**O**NCE, WHEN ASKED by a businessman from Tokyo about the fear of failure as an entrepreneur, Mr. Lee Chen responded that he has no fear of trying and failing. Instead, for Mr. Chen, one must do the best one can while working on the things one enjoys the most. His passion is creating new things, and this has led him to found three successful hi-tech companies in the Valley.

Born and raised in Taiwan, Mr. Chen is the fourth of six children. He earned his bachelor's in Electrophysics from the National Chiao-Tung University of Taiwan (the "M.I.T." of Taiwan) in 1976. In 1979, he emigrated to the U.S. and immediately began working for Control Data Corporation. During this time, Mr. Chen also enrolled at San José State University full time in the evenings, earning his Master's in Electrical Engineering in 1982.

A technology entrepreneur with the desire to create products that will improve the lives of others, Mr. Chen founded, most recently, A10 Networks, Inc., a venture-funded private company headquartered in San José. Its mission is to build the most innovative and fastest networks while also providing security solutions.

Mr. Chen is also the co-founder of Foundry Networks, Inc., of which he served as Vice President of Engineering. Foundry Networks is a high performance LAN Switching company that went public in 1999. On the first day of trading, its stock went up by 525%, making NASDAQ history.

While at Foundry Networks, Mr. Chen led a team of approximately 100 engineers. During his five-year tenure, not one single engineer left the company, a remarkable feat considering the fact that during the late 90s an average engineer changed jobs about every six months! His leadership inspired those around him and in return his colleagues showed their commitment and dedication to the company.

Finally, he is also a founding member and architect of Centillion Networks (acquired by Bay Networks) in Sunnyvale, which built high performance multi-service switches. The company was sold for \$145 million after only 18 months of operation.

Mr. Chen's interest in starting new companies stems from his love for the creative process. He thrives in situations where ingenuity and invention are rewarded, and his professional success is an outward manifestation of his inner passion.

# Where's America?

Joseph E. Louis

President, Louis Engineering Corporation  
and M. J. M. Land Development Company Inc.

**M**R. JOSEPH LOUIS BEGAN his civil engineering career as a bricklayer in Syria. After applying to several universities in different countries, Mr. Louis elected to attend school in the U.S. Taking a Greyhound from Washington, D.C. to Bozeman, Montana, in 1961, he thought he had arrived in Alaska because there was so much snow on the ground and the temperature was well below zero in Bozeman.

When he got settled, Mr. Louis wondered where was the “America” he had seen in the Hollywood movies. His friends told him that that “America” was California. After working in Idaho at a paper and lumber mill and in Washington picking asparagus, Mr. Louis eventually moved to California. Driving along Highway 101, he passed by San José State University; he decided to apply and was accepted.

After completing his degree in Civil Engineering from SJSU in 1969, Mr. Louis and his business partner, Horst Diederich, started Louis and Diederich, Inc., an engineering and land surveying company. In 1981, Mr. Louis became the sole proprietor of the firm, which was renamed Louis Engineering Corporation. It specializes in land development design and subdividing property, and planning for roads, utilities, and other elements of infrastructure. Shortly thereafter, Mr. Louis also started M. J. M. Land Development Company, Inc.

Among the many construction projects on which Mr. Louis has worked, some include Mt. Pleasant Road, Sundown Lane, White Road, Coyote Road, and Almaden Expressway. His work has touched the lives of many residents in the Valley.

However, his contributions to the Valley go beyond the region's infrastructure. From the time Mr. Louis launched his career, he has been an active leader in the community. He co-founded the Silicon Valley Engineering Council (SVEC); founded the Arab American Congress of Silicon Valley; and opened the Arab Cultural Center in San José. He has headed other organizations, such as the California Society of Professional Engineers, and is an active member of the American Society of Civil Engineers and the American Public Works Association.

His tireless efforts in founding and leading many civic organizations in the Valley are a testament to Mr. Louis' commitment to the livelihood of his community, and he has described his life in the Valley and the larger U.S. as the following: “This is paradise for me—there is nothing I can't do here.”



# awards! STUDENT ACHIEVEMENT

The College of Engineering is proud to present the following student awardees for 2007. Recognition is given to students who have demonstrated one or more of the following criteria: distinguished academic performance, exceptional engineering accomplishments, and exemplary record of service.



**Maryam Tabesh**  
**College of Engineering Award  
for Academic Performance  
Graduate Student**

**Electrical Engineering**  
Member of student chapter IEEE  
  
Published article  
"A Highly Efficient CMOS  
RFID Front-End"



**Tony Cacace**  
**Lockheed Martin Academic  
Performance Undergraduate**

**Mechanical Engineering**  
Rockwell Collins Scholarship recipient  
  
2006 Global Technology Initiative  
Fellow  
  
Dean's List



**James Abrams**  
**Donald Beall-Rockwell Award  
for Engineering Accomplishment**

**Mechanical Engineering**  
Design Project  
"Accessed Controlled Pill  
Dispenser," 2nd place in  
the NEAT Ideas Fair,  
Fall 2006.  
  
Owner/founder of a motorsport  
company specializing in thermally  
active automotive coatings to  
dissipate or block heat transfer in  
different materials.



**Ashley Krugman**  
**Scott T. Axline Memorial Student  
Award for Excellence in Service**

**Materials Engineering**  
President of the SJSU chapter of the  
Society of Women Engineers  
  
Past president of Materials Advantage  
  
Winner of the 2006 Arthur E. Focke  
LeaderShape Award



## Aviation teams land first place in FAA competition!

**I**MPROVEMENTS TO AVIATION and efficiency are always being made, and two SJSU student teams have been recognized nationally for their proposals to upgrade airport communications and technology.

The student teams, from the Aviation and Technology Department, each won first place in the FAA Airport Design Competition for Universities, a national competition with a \$2,500 prize for first place. The teams took first place in the categories of Airport Operations and Maintenance and Airport Environmental Interactions.

The Airport Operations and Maintenance proposal, "Airport Communicator Software," considered a software approach to integrating airport communications. The "Feasibility of Replacing Conventional Airport Lighting with Light Emitting Diodes" won the Airport Environmental Interactions Challenge.

**From left to right: Dr. Triant Flouris, Terry Higgins, Michelle Sheffield, Monica Singh, David Ozoa, and Caroline Quinanola.**

Dr. Triant Flouris, Aviation and Technology and Director of the Aviation Program, was the faculty advisor for all the COE teams, including two additional teams who received Honorable Mention. In order to complete their projects successfully, students collaborated with industry as well as government organizations.

Student representatives received their award in Washington, D.C. in June at the meeting for the American Association of Airport Executives.



## Faculty Excellence in Service

*Dr. Thuy Le carried out his “service with distinction, precision, quality, completeness and total dedication.”*

**D**R. THUY T. LE won the McCoy Family Faculty Award for Excellence in Service. He joined the SJSU faculty in 2001 in the Department of Electrical Engineering (EE). He developed and managed the Digital System Interfacing and Embedded Control System Laboratories, developed and taught a variety of EE courses at both the graduate and undergraduate levels, served as project advisor for many students, and successfully led the EE department assessment program.

His research interests and publications include topics in high-performance computing architectures, system-area networks, cluster computing and architectures, radiation effects on electronic devices, and solar energy system design and applications.

# Faculty Excellence in Teaching

*Dr. Donald Hung is considered by his peers and his students to “be a very good teacher!”*

**D**R. DONALD HUNG won the Applied Material Faculty Award for Excellence in Teaching. He joined the SJSU faculty in 1999 in the Department of Computer Engineering. A professor in digital and computer system design, Dr. Hung has developed and taught advanced digital and computer system design courses, managed a laboratory environment with \$15 million (market value) of industry donated equipment and CAD tools, and served as the computer engineering graduate program coordinator.

Dr. Hung was the chair of the 8th, 9th, and 10th International Conferences on Computer Science and Informatics and currently serves on Cypress Semiconductor Corporation’s Academic Advisory Board.



# SWEet Success!

Women are still an underrepresented group in engineering; however, the SJSU Society of Women Engineers (SWE), a student organization which is not just for women, is trying to change this by making women engineers more visible.

From March 2-4, 2007, the SJSU chapter of SWE hosted the Region A Conference on the SJSU campus. The conference attracted over 220 attendees from the western region of the U.S., including northern California and Nevada, and Hawaii.

Keynote speakers included Jane Evans, the first woman to graduate in Electrical Engineering from SJSU and the first woman to be hired by Hewlett-Packard; Susan Scheer Aoki, Vice President of SP Marketing & Engineering at Cisco; and Kathryn Kranen, President and CEO of Jasper Design Automation.

By hosting the conference at SJSU, the local SWE chapter brought attention to the organization's objective: to promote and support women in engineering professions and leadership roles.

Statistics show that the U.S. needs to produce more engineers to remain globally competitive. In part, SWE is trying to change this, one talented woman engineer at a time.

CONTINUED FROM PAGE ONE: ZEM ZOOMS INTO 1ST PLACE!



From left to right: Carson Lee, Javier Manriquez, President Don Kassing, Dean Belle Wei, Richard Henry, Otto Wan, Richard Sessions, Scott Cassell, Hlwan Aung, Andrew Chau, Brad Maihack, Digesh Malla, Nathan Kong, Dr. Thuy Le, Richard Okumoto, Dr. Tai-Ran Hsu, Tim Wang, Ryan Hansen, Dr. Raymond Yee, Wilson Lam, Jeff Gordon, Sergio de Ornelas, Jose Origel, Alice Chan. Not present: Cristhian Reyes, Ricardo Flores, Jr., Larry Nguyen, and Duy Tran.

The national competition was held on March 24, 2007. The students will continue on to Austin, TX, in the fall to compete in the Global I2P Competition.

In addition to Dr. Hsu, faculty supervisors include Dr. Raymond Yee, MAE, and Dr. Thuy Le, Electrical Engineering (EE). Dr. Malu Roldan of Management Information Systems of the College of Business and Dr. Ji C. Wang of MAE served as faculty consultants.

The SJSU student team consisted of 17 students from the Mechanical Engineering program, including one graduate student, and 3 students from EE.

Two students, Scott Cassell and Tim Wang, earned special recognition.

The Social Entrepreneurship Working Group, who provided their expertise and advised the SJSU team, consisted of Brad Maihack, Richard Sessions, and Richard Okumoto.

The Industrial Advisory Panel consisted of Gregory Brown, Robert Garzee, Jim Helmer, Yevgeny Meydbray, and Jim Robbin. Jeff Gordon from SJSU Research Foundation served as a consultant. Dr. Belle Wei, Dean of the COE, and Dr. Fred Barez, Chair of MAE, sponsored the team.

For more information, go to:

<http://www.engr.sjsu.edu/about/news/zem>

## COLLEGE OF ENGINEERING

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