

# engineering

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SAN JOSE STATE UNIVERSITY

Charles W.

**Davidson**

COLLEGE OF  
ENGINEERING

San José State University



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## Making the Skies Friendlier

**I**N 2007, THE U.S. recorded its worst year yet in air traffic delays. However, two SJSU engineering faculty are working to change this.

Dr. Wenbin Wei, from the department of Aviation and Technology, and Dr. Kevin Corker, from Industrial and Systems Engineering, have won a NASA grant worth \$1.5 million to help solve this public headache. Their project, "Integrated Approaches for Surface Traffic Optimization," will result in less air traffic congestion and improved safety at all U.S. airports.

Dr. Wei is the principal investigator (PI). The co-PI, Dr. Corker, is also the Director of HAIL (Human Automation Integration Laboratory) and has won numerous NASA and FAA grants researching and solving similar problems.

An interdisciplinary project, the grant will also involve graduate student assistants from two colleges. Engineering

graduate students from the departments of Computer Engineering and Industrial and Systems Engineering as well as graduate students from the College of Science's Computer Science department will assist on the project.

Dr. Wei explained the three-year grant project: "In order to increase the capacity of airports and reduce congestion and delays, we will build optimization and simulation models, addressing the multiple uncertainties and constraints airports face daily, in order to improve airport operations."

In effect, the researchers are looking to increase the capacity of airports but at the same time safely reduce delays. This may sound very logical and straightforward, but it has its complications. Dr. Corker pointed out that the two primary objectives, increasing air capacity and ensuring safety, can be at odds with each other. This is where the

CONTINUED ON BACK



## dean's MESSAGE

The past year has been an extraordinary year for us at the Charles W. Davidson College of Engineering. We have received very strong support from alumni, friends, and industry — the CoE family — for our “Engineering the Vision” Initiative.

The initiative aims to help the college to educate new engineers to rise to the challenges of the new century. Whether these challenges are advancing the U.S.'s technological leadership or developing climate solutions, they all require engineers to possess higher-level capabilities in both technical and non-technical domains.

Several of the stories in this edition of the newsletter highlight the college's success in some of the key areas of the initiative: student success, such as the MSU/SJSU Ph.D. Gateway Program; faculty excellence, such as Drs. Wenbin Wei and Kevin Corker's \$1.5 M NASA Grant “Integrated Approaches for Surface Traffic Optimization”; and cutting-edge multidisciplinary programs, such as the Green Engineering Initiative.

The work that the faculty and staff do at the college enables our students to do good work and lead a good life. We are pleased to share with you the college's accomplishments.

Best wishes to you in the new year!

Sincerely,

Belle Wei

Don Beall Dean of Engineering

Charles W. Davidson College of Engineering

## Pinson Chair

Dr. Rochit Rajsuman

Pinson Chair Professor in the Electrical Engineering Department

**I**N AUGUST, THE Davidson College of Engineering announced the appointment of Dr. Rochit Rajsuman as Pinson Chair Professor in the Electrical Engineering Department.

Created in 1994, the Pinson Chair Professorship is an endowed position in honor of Dr. Jay Pinson, former dean of the college from 1979 to 1994. It is awarded to an outstanding individual with industrial engineering and leadership experience, who can fulfill the critical needs of the college.

“I am very pleased that the College of Engineering was successful in recruiting an individual who has outstanding experience in both the academic and industrial world to fill this Chair Professorship,” said Dr. Jay Pinson.

“An educational institution in Silicon Valley has a tremendous challenge of maintaining high quality educational programs to meet the needs of a rapidly changing technological society. The purpose of this endowed Chair is to assist in meeting this challenge.”

Dr. Rajsuman has a Ph.D. in Electrical Engineering from Colorado State University. He was a faculty member in Computer Engineering at Case Western Reserve University from 1988 to 1994. From 1995 to 2001, he worked for LSI Logic, Equator Technologies, and Advantest America R&D Center. In 2001, he became Chief Scientist at ARD, and in 2004 he became Chief Scientist at Advantest America Corporation. Before joining SJSU as Pinson Chair Professor, he was President and CEO of Roctechonology, a startup company.

Dr. Rajsuman has more than 30 U.S. patents and is the author of 3 textbooks. He is an IEEE Fellow.

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## in memoriam

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It is with regret that the CoE reports that the following faculty member of the college's community has passed away.

**Professor Edward Dionne**, General Engineering, passed away on August 20, 2007. Professor Dionne began teaching at the college in 1953 and retired in June 2007. He was 84 years old.

The CoE's sincerest sympathy and heartfelt sadness are extended to the family and friends of Professor Dionne.

# Introducing...

Dr. Vanessa M. Rivera

Executive Director of the Engineering Student Success Center



**C**HARLES W. DAVIDSON'S vision for the Davidson College of Engineering is, in part, to create a supportive learning environment where engineering students are successful in attaining their professional goals and aspirations. Taking steps to make Mr. Davidson's dream a reality, the college has created the Engineering Student Success Center with the aim of supporting and empowering engineering students.

Dr. Rivera has been named the Executive Director of the Center. "This is a unique and exciting opportunity to be able to become the founding director of such an incredible and exciting initiative. It's creating something from the ground up. I'm excited about the opportunity to showcase the college through the Engineering Student Success Center. We are creating this center to meet the vision of the donor [Mr. Davidson] as well as the dean of the college of engineering and her leadership team. It's Mr. Davidson's donation that is making this center a reality."

Services that the center can provide include academic advising, outreach and recruitment, tutoring, and other

support services. In addition, to help ensure the success of engineering students in the college during their four years, the center may also encompass in its scope first-year experience programs for first-time freshmen and transfer students, such as CELL (Community for Engineering Living and Learning) and ELCAS (Engineering Learning Community for Academic Success).

Dr. Rivera has been working in higher education for the last 25 years. She brings a wealth of experience with her from community colleges to four-year institutions. Growing up in Puerto Rico, Dr. Rivera attended the University of Massachusetts, Amherst, for her Ed.D. in Higher Education Administration and M.Ed. in Counseling and School Psychology. She has a B.S. in Psychology from the University of Puerto Rico. Her main area of expertise has been the development and planning of academic programs in higher education. For the last ten years at UMass Amherst, she was the Assistant Dean for Student Affairs for the College of Engineering.

## It's getting easier to be green...

**K**ERMIT MAY HAVE lamented the metaphysics of being green, but the Davidson College of Engineering has just made it a little easier to help save the planet. Beginning in Fall 2008, engineering students will be able to take ENGR 101 Renewable Energy Engineering, one of the core courses for the new minor in Green Engineering.

The goal of focusing on energy alternatives within the college is to broaden the education and preparation of engineering students for the 21st century.

Dr. Patricia Backer, General Engineering, is coordinating the minor in the college. Dr. Backer notes that engineering education is now taking a "cradle to grave" approach or, as the description of the minor states, to "use life cycle thinking in engineering activities." The green engineering minor is, in effect, concerned with ensuring that engineering is "integrated into society as a whole," according to Dr. Backer.

The minor is an interdisciplinary collaboration with the College of Social Sciences' Environmental Science Department.



Evacuated tube solar thermal collector.

Dr. Backer is working with Dr. Rachel O'Malley, chair of the Environmental Studies (ES) department, and Dr. Asim Zia, an assistant professor in ES.

Within the U.S., Dr. Backer noted that there are less than 20 green engineering programs. If approved, this will be the first official minor in green engineering in the state of California. Pending university approval, the minor will be official in Spring 2009.

ENGR 101 Renewable Energy Engineering focuses on solar energy, fuel cells, and biomass. The sequel to this course, ENGR 102 Environmental Life Cycle Analysis, will study methods to quantify, analyze, and evaluate the impacts of engineering activities on the environment.

The minor includes courses in Alternative Energy Solutions, including Solar Energy and Recycling. The courses appeal to all engineering majors and provide policy perspectives.

Going Far Together

## MSU & SJSU Engineering Partnership



Mississippi State  
UNIVERSITY



San José State  
UNIVERSITY

**A** N AFRICAN PROVERB advises, “if you want to go quickly, go alone. If you want to go far, go together.”

SJSU’s Davidson College of Engineering has teamed up with Mississippi State University’s (MSU) James Worth Bagley College of Engineering to offer the best of both worlds to engineering students at MSU and SJSU.

Dr. Peter Rabideau, MSU Provost, and Dr. Carmen Sigler, SJSU Provost, signed a memorandum of agreement on October 15, 2007. The agreement is the first step in enabling SJSU engineering students to pursue doctoral degrees through MSU, and MSU students to pursue work with Silicon Valley industry through SJSU.

Dr. Glenn Steele, MSU’s Interim Dean of Engineering, and Dr. Belle Wei, SJSU’s Don Beall Dean of Engineering, were present to witness the collaborative agreement.

While SJSU graduate students will gain access to faculty expertise and resources at Mississippi’s flagship engineering college, MSU students will have the opportunity to obtain master’s

degrees from SJSU based on research conducted with SJSU faculty in Silicon Valley, drawing on San José State’s role as the largest provider of engineers to the region’s hi-tech companies.

Dr. Kevin Corker, who was instrumental in facilitating the agreement, pointed out some of the program’s benefits. For MSU students, “It gives you an opportunity to get your master’s degree and establish yourself in the Valley, both professionally and personally.” SJSU students will “have access to a first-class university for a Ph.D. without having to physically uproot yourself and go there... it’s very non-disruptive.”

Both universities expect the gateway program to enhance the educational process and contribute to the advancement of knowledge in the engineering and science fields. “This collaboration will allow us to access the advanced research programs at Mississippi State and, therefore, strengthen SJSU’s ability to educate new engineers for a dynamic and competitive Silicon Valley,” said Dr. Wei.

“The synergy that will be developed by this partnership between the two engineering colleges will significantly increase the research capabilities of both and will make us more competitive for research funds,” said Guna Selvaduray, SJSU’s Associate Dean of Research.

Silicon Valley business executive James W. Bagley, a Mississippi State alumnus and namesake of its engineering college, helped initiate the gateway program. Bagley is executive chairman of the board at Fremont-based Lam Research Corporation, a major supplier of wafer fabrication equipment and services to the world’s semiconductor industry. Lam Research, under Bagley’s leadership, is a supporter of the Davidson College of Engineering.

“This program will provide greater opportunities for qualified students of both universities,” Bagley said. “Growing the engineering graduate student enrollment at each of these institutions will help address the national need for more advance-degreed engineers as well as enhance the stature of both engineering colleges.”

The next stage will be in defining the details of the implementation. For more information about the program, please contact Dr. Guna Selvaduray, Associate Dean of Research, 408-924-3874 or [guna.selvaduray@sjsu.edu](mailto:guna.selvaduray@sjsu.edu).

## Alumnus Donald R. Beall Endows Deanship



**From left to right:**  
**SJSU President**  
**Don Kassing,**  
**Mr. Donald Beall.**

**S**AN JOSÉ STATE University Charles W. Davidson College of Engineering is pleased to announce a gift from the Beall Family Foundation establishing the Don Beall Dean of Engineering.

The Beall deanship will provide funding to support the strategic direction of the college and contribute to the overall success of SJSU engineering students. The funding will be used to launch initiatives for student success, faculty excellence, and cutting-edge multidisciplinary programs such as green engineering, biomedical device engineering, global experiential learning, business education for

engineers, and professional development and practice for engineering students.

Mr. Beall retired from Rockwell in 1998 after a 30-year career. He served as President of the company for 10 years and then served as Chairman/CEO for the next 10 years. Under his leadership, Rockwell became a global leader in aerospace, electronics, and automotive markets.

Mr. Beall serves as a director on the boards of Rockwell Collins, Conexant Systems, Mindspeed Technologies, and CT Realty. He is a former director of Jazz Semiconductors, Skyworks Solutions, Proctor and Gamble, Amoco, Rockwell, and Times Mirror. Currently, he is a partner in Dartbrook Partners (a family partnership) and the Chairman of the Beall

Family Foundation. His wife, Joan, and their two sons, Jeffrey and Kenneth, are active in the management of both Dartbrook Partners and the Beall Family Foundation. He is an overseer of the Hoover Institution at Stanford University and has received many honors including the Horatio Alger award.

An alumnus of SJSU, Mr. Beall earned his B.S. degree in Metallurgical Engineering in 1960. In 1961 he earned his MBA from the University of Pittsburgh. He is involved in numerous professional, educational, public service and philanthropic endeavors.

Mr. Beall believes very strongly in the value of engineering and science education, which are crucial to the innovation and entrepreneurial process that leads to a stronger America. His generous gift will help in implementing the college's vision to educate new engineers, who possess the technical capabilities and ethical orientation to meet the challenges of the 21st century.

To view Mr. Beall's profile on the CoE website, go to [www.engr.sjsu.edu/alumni/profiles/donald-r-beall](http://www.engr.sjsu.edu/alumni/profiles/donald-r-beall)

*"As we move ahead, in the years to come, it is going to be crucially important that America field the best educated, the most motivated, the most innovative young people that it can in order to be competitive worldwide."*

—Donald R. Beall

Excuse me, do you speak Portuguese?

## U.S.-Brazil Exchange Program



From Left to Right, Standing: **Moreno Mello, Raymond Brasil Cota, Gustavo Kawakami, Joao Meyer, Maria Vega, Emily Allen, Margarise Correa.** From Left to Right, Sitting: **Jansher Ashraf, Henrique Carmo, Christopher Penksa, Willie Wesley Wells.**

**I**N THE 80s everyone wanted to learn Japanese. Then in the 90s everyone wanted to learn Chinese. Now the U.S. government is encouraging students to learn Portuguese and study abroad in Brazil.

Why Brazil? Economic forecasters have predicted that four countries have the potential to become the major economies of the world: Brazil, Russia, India, and China. Referred to in the acronym BRIC, these four countries possess the resources to sustain rapid economic growth and eventually surpass the current major economies. As a result, the U.S. is taking a proactive approach and investing in these countries because they see them as major trading partners.

Through the Funds for the Improvement of Post-Secondary Education (FIPSE), the U.S. Department of Education is promoting a U.S.-Brazil national student exchange program.

Dr. Emily Allen, chair of the Materials and Chemical Engineering department, facilitates the national exchange program for

the Davidson College of Engineering. Working with West Valley College and Dr. Mike Conniff, Director of Global Studies at SJSU, Dr. Allen assists SJSU engineering students in planning their course of study in Brazil.

Currently, the pattern of exchange is that Brazilian students study at SJSU in the fall and U.S. students go to in Brazil in the spring. In Spring 2008, Willie Wells, majoring in chemical engineering, and Raymond Cotta, majoring in mechanical engineering, will study at UNIFEI, Federal University of Itajubá.

Henrique César de Oliveira Carmo, from the state of Minas Gerais in Brazil which is also known as “Electronic Valley,” studied electrical engineering in Fall 2007 at SJSU. “It was an excellent opportunity for me to have this experience. Being here in the nest of almost all the great technologies used nowadays and seeing how the people who live here think and conduct their lives is really inspiring. I met some wonderful people, who are really passionate about what they want, and saw all the hard work that they do to achieve their goals.”

In order for U.S. students to prepare for living abroad, they study Portuguese in the fall and then take an intensive four-week Brazilian language and culture class at West Valley College in January. Along with other students participating in the exchange, they begin their semester abroad in February which continues through July.

There are three Brazilian institutions participating in the program. One is a federal, public university, Universidade Federal de Itajubá, Minas Gerais. The other two are private: INATEL, Minas Gerais and FUCAPI, Manaus, Amazonas.

SJSU’s Davidson College of Engineering was selected to participate in the program because of Brazil’s interest in nanotechnology and materials science. Both governments provide scholarships and travel stipends to their students.

Several hundred students have gone to Brazil in this national program. For more information about the program, go to [www.sjsu.edu/depts/studyabroad/students/bi\\_brazil.htm](http://www.sjsu.edu/depts/studyabroad/students/bi_brazil.htm)



**Dr. Magdalini Eirinaki**

Assistant Professor  
Computer Engineering  
Department

**EDUCATION**

Ph.D. Informatics, Athens University of Economics and Business, Greece, 2006

M.Sc. Computer Science, Imperial College, University of London, U.K.

B.Sc. Informatics, University of Piraeus, Greece

**INDUSTRY EXPERIENCE**

Unisystems, Greece, 2000–01

**ACADEMIC EXPERIENCE**

Visiting Researcher, UC Santa Cruz, 2006–07

**PRIMARY FIELD OF RESEARCH**

Data mining, web mining, and web personalization. More specifically, Dr. Eirinaki concentrates on the popular strategy of personalizing websites and search engines for specific users. Her work provides tools for companies' marketing strategies as well as enhancing the web user's experience by tailoring the web to their specific needs.



**Dr. Jae-Ho Pyeon**

Assistant Professor  
Civil and Environmental  
Engineering Department

**EDUCATION**

Ph.D. Civil Engineering, University of Florida, 2005

M.E. Civil Engineering, University of Florida

B.S. & M.S. Civil Engineering, Kyungpook National University, South Korea

**ACADEMIC EXPERIENCE**

Postdoc, University of Florida, 2005–07

**PRIMARY FIELD OF RESEARCH**

Civil engineering, specializing in construction engineering and management, focusing on safety, time, cost, and quality. Currently, Dr. Pyeon is working on a grant proposal to evaluate the incentive contracting techniques for Caltrans constructions projects. In this proposal, Dr. Pyeon seeks to measure and evaluate Caltrans' incentive contracting practices to ensure that the best business practices are being implemented in order to maximize the taxpayers' money for construction projects.



**Dr. Birsen Sirkeci**

Assistant Professor  
Electrical Engineering  
Department

**EDUCATION**

Ph.D. Electrical Engineering, Cornell University, 2006

M.S. Electrical Engineering, Northeastern University

B.S. Electrical Engineering & Math, METU (Middle East Technical University), Turkey

**INDUSTRY EXPERIENCE**

Aware, Inc., Boston, 2000–02

**ACADEMIC EXPERIENCE**

Postdoc, EECS Department, UC Berkeley, 2006–07

**PRIMARY FIELD OF RESEARCH**

Wireless communications with applications, for instance, for cell phones and satellites. Dr. Sirkeci is interested in working on creating a wireless network using, for example, other people's cell phones as a sophisticated relay system. She is also interested in finding solutions to reduce power while increasing the capabilities of hardware.

To read their complete profiles go to  
[www.engr.sjsu.edu/about/nl/](http://www.engr.sjsu.edu/about/nl/)

**Silicon Valley Leaders Symposium  
Spring 2008 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 and to watch podcasts of last semester's series, go to [www.engr.sjsu.edu/about/svls](http://www.engr.sjsu.edu/about/svls).

**FEBRUARY 7**

**Wim A. Coekaerts**, Vice President—Linux Engineering, Oracle

**FEBRUARY 14**

**Dr. Richard Swanson**, President & Chief Technical Officer, SunPower

**FEBRUARY 21**

**Dr. Laura Haas**, Distinguished Engineer and Director—Computer Science, IBM

**FEBRUARY 28**

**Curt Cotner**, IBM Fellow, Vice President & Chief Technology Officer for Database Servers, IBM

**MARCH 6**

**Dr. Peter Norvig**, Director of Research, Google Inc.

**MARCH 13**

**Cecilia Claudio**, Senior Vice President & Chief Information Officer, SanDisk Corporation

**APRIL 10**

**Steve Newberry**, President & Chief Executive Officer, Lam Research

**APRIL 17**

**Mark Bergman**, Executive Vice President & Chief Technology Officer, Symantec Corporation

**APRIL 24**

**Dr. Qi Lu**, Executive Vice President of Engineering Search & Advertising Technology, Yahoo!

For more information contact **Dr. Ahmed Hambaba**, Associate Dean of Graduate & Extended Studies, Davidson College of Engineering: [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 : MAKING THE SKIES FRIENDLIER*

experts—Drs. Wei and Corker—come into the picture. By using mathematical techniques, algorithms, and simulation models, they can satisfy both goals simultaneously.

The surface traffic optimization project is part of a larger, government-sponsored effort to improve air travel throughout the U.S. Dr. Corker explained, “This research is part of a national effort to improve safety and to improve air traffic service in the United States and internationally. It represents collaborative support between NASA and the Federal Aviation Administration (FAA) and the Next Generation Air Transportation System Integrated National Plan.”

The Next Generation Air Transportation System Integrated National Plan will completely transform air traffic control from a ground-based system of radars to a satellite-based system. The new system is needed to handle future air traffic, which is expected to double by 2025.

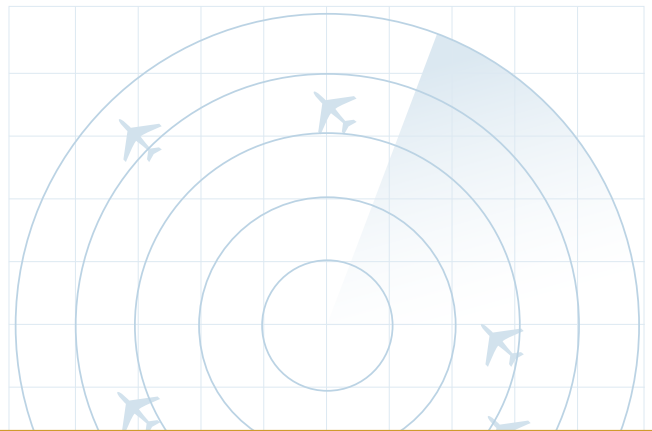
After developing their optimization model, Drs. Wei and Corker will conduct a case study at the Dallas-Fort Worth



**Map of civil (non-military) flights in U.S. airspace at a given moment.** Courtesy of FlightAware ([flightaware.com](http://flightaware.com))

airport in Texas. Once the research is completed, the researchers will provide the algorithms to NASA, who will then help the FAA implement the new and improved system throughout U.S. airports.

Industry partners include Victor Cheng from Optimal Synthesis Inc., a Palo Alto firm; David Davis of VGO Associates, Cambridge, MA; Larry Ho, professor emeritus of Harvard University; and Jim Poage of JLP, Boston, MA.



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