

Research Expo 2011: a Snapshot of the Jacobs School

Jacobs School Mechanical Aerospace Engineering



[1] Chirag Patel, a UC San Diego electrical engineering Ph.D. student, nabbed top prize for his poster during Research Expo 2011, whose theme this year was "Innovation for Life." Watch Patel [describe his work on YouTube](#) [2].

San Diego, CA, April 19, 2011-- From robots to UAVs, railway safety, social networks and grocery shopping technology for the blind, engineering graduate students at the University of California, San Diego presented their latest research to industry, potential investors and to fellow students and faculty at Research Expo on April 14, 2011.

Electrical engineering Ph.D. student Chirag Patel won the top prize – the Rudee Outstanding Poster Award – at Research Expo 2011 for his work on RF MEMS metal-contact switches. The switches could make their way into MRIs and other medical equipment, satellites, and electronic instrumentation such as spectrum analyzers and signal sources. Read about Patel's research [here](#) [3]. Research Expo also included [faculty tech talks from all six engineering departments](#) [4]. All talks touched on the event theme, "Innovation for Life."

Greg Lucier, CEO of Life Technologies, gave the keynote on the theme of engineering advances in medicine. Industry leaders from various sectors – from defense to information technology and biotech – got a chance to meet the engineering workforce of the future. Industry sponsors of Research Expo 2011 were ViaSat, Life Technologies and Qualcomm.

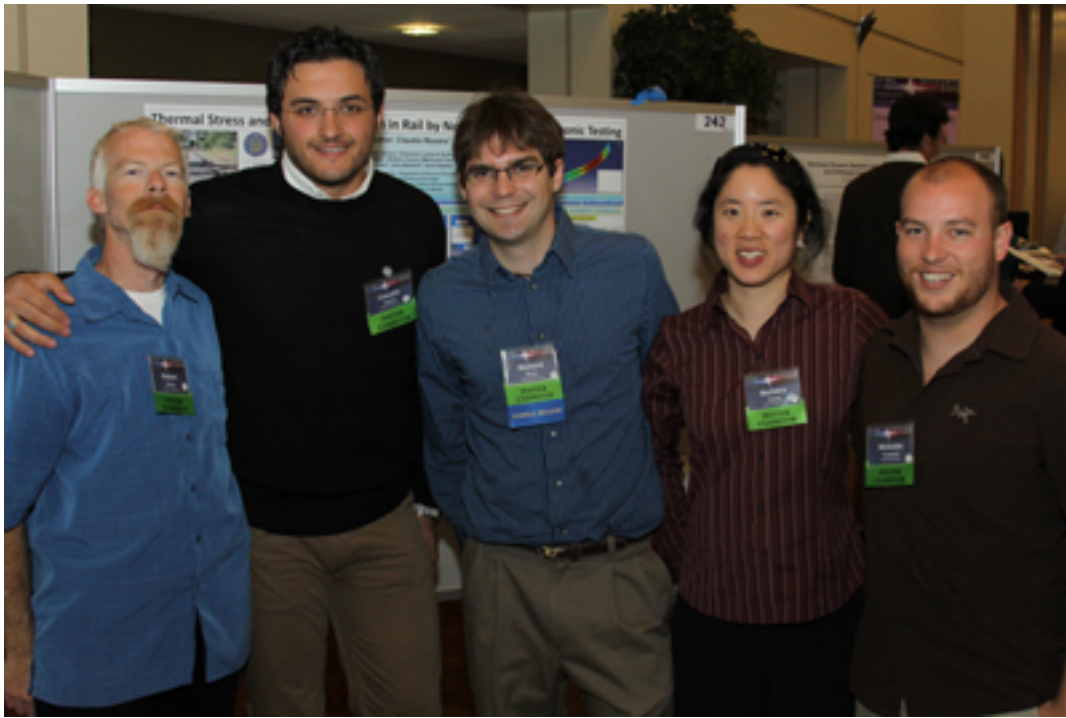
"I love coming here -- just to see the energy and enthusiasm of the kids and to see the technology going on here," said Nick Patti senior technical recruiter for Northrop Grumman and a member of the Jacobs School of Engineering Corporate Affiliates Program. "It's great to see what the students are bringing to the table for the next generation of technology in America."

Nothing Beats Networking

For structural engineering Ph.D. student Bob Phillips, networking with industry is key to future employment.

"Many students don't know how to market themselves [or understand] the effort it takes to get a job," Phillips said. "Part of that is talking to people from industry and networking. You can be a 4.0 student, but if you don't know how to communicate and interact with industry, you'll have a really hard time finding a job."

Before the interview, Phillips was explaining his poster, "UCSD Rail Inspection System for the Federal Railroad Administration," to an industry representative. Phillips, whose advisor is structural engineering professor Francesco Lanza di Scalea, is developing a system for high-speed and non-contact rail defect detection.



[5]

Jacobs School structural engineering students had a strong showing during Research Expo. From L to R, Bob Phillips, Claudio Nucera (SE poster winner), Richard Wood, Barbara Chang and Nicholas Trombetta. See more Research Expo photos on [Flickr](#) [6].

“We’re creating a method that will allow us to detect flaws and cracks in railways more consistently and accurately than the current systems at a higher rate of speed,” Phillips said. “Undetected cracks in railways have caused several derailments in the United States, which have costs millions of dollars and lives.”

Phillip’s research colleague, structural engineering Ph.D. student Claudio Nucera, also presented his railroad safety work at Research Expo 2011. Nucera’s poster, “Thermal stress and buckling detection in rail by non-destructive ultrasonic testing,” won best structural engineering poster.

“The goal is to develop a monitoring system to measure the stresses and have a signal/warning using ultrasonic technology,” he said. “The next step will be to develop a prototype.”

Nucera said it was perfect timing for him to present his work at Research Expo.

“It’s a great event and share information with industry and advertise your projects,” he said. “It’s great opportunity as a student to practice summarizing and explaining your ideas.”

Shopping and Interpersonal Informatics

Karan Sikka’s electrical and computer engineering poster “Grozi: A Grocery Shopping Assistant for the Blind” also captured attention at Research Expo. Sikka leverages visual recognition techniques from computer vision to assist the blind in

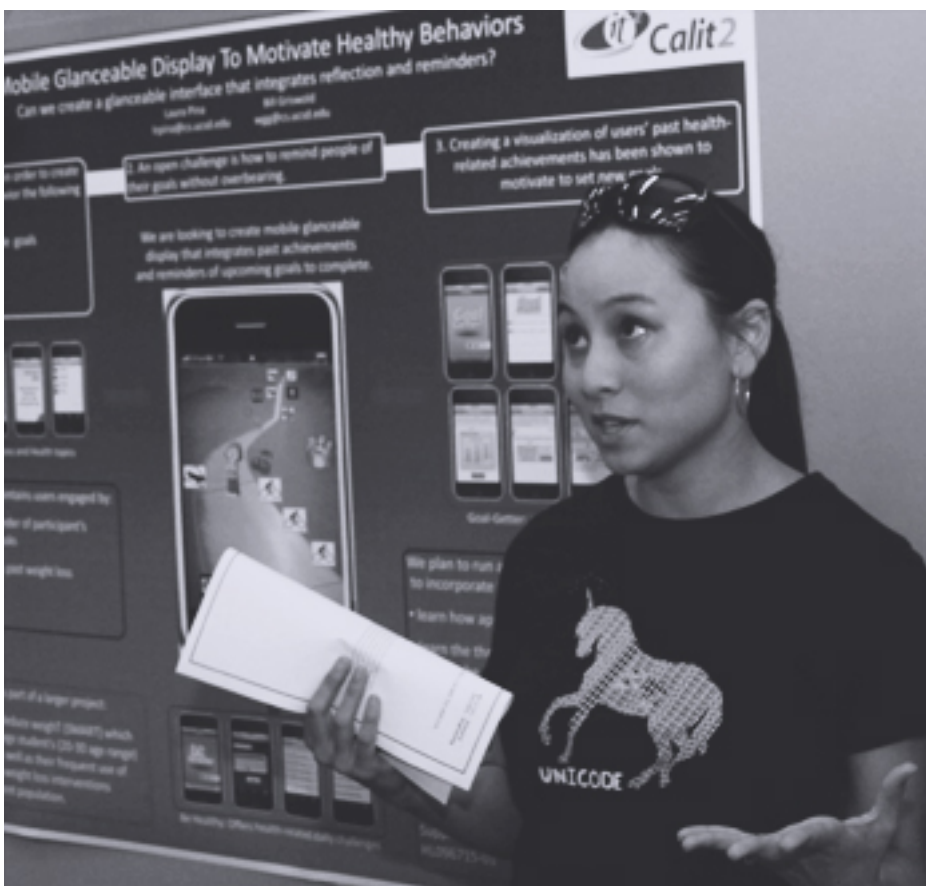
grocery shopping.

“Grocery shopping is a common activity that people all over the world perform on a regular basis. Unfortunately grocery stores and supermarkets are still largely inaccessible to people with visual impairments,” Sikka said.

Sikka and his team have developed an algorithm that will be incorporated in a handheld device with camera and haptic feedback. (Haptic feedback takes advantage of a user’s sense of touch by applying forces, vibrations and/or motions to the user.)

“It’s quite exciting because you’re leveraging computer vision technology to assist people,” said Sikka, whose advisor is computer science and engineering professor Serge Belongie.

Sikka said events like Research Expo give him a chance to not only interact with his peers but also with industry. “I always need feedback from industry,” he said, adding that he has an internship at Qualcomm this summer. “Industry is interested in how much you know about your work and how well you can communicate it. A forum like this gives you good contacts and feedback. I’m really jazzed. It’s good to be here.”



[7]

Elizabeth Bales, a UC San Diego computer science and engineering grad student, explains her research on interpersonal informatics via social networking.

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Published on Electronic Component News (<http://www.ecnmag.com>)

In the Department of Computer Science and Engineering (CSE) section of the Research Expo poster exhibit, graduate student Elizabeth Bales explained her project, "Interpersonal Informatics: Bringing Light to Social Influence." Her research highlights early technological applications for interpersonal informatics, a class of tools that allows groups of people to collect, aggregate, analyze and share personally relevant information.

One goal of interpersonal informatics is to help people understand that what they see around them affects their habits, beliefs, and health, explained Bales, whose advisor is computer science professor William Griswold.

"What we want to do is show people how they can make better decisions by using personal informatics. They can capture what they do every day. With mobile devices and sensors you can track anything.

"Making a positive influence is one of the things that makes we want to continue working on this kind of research," Bales added.

Lea Rudee Outstanding Poster Award at Research Expo 2011

Electrical and Computer Engineering

#130 [High-Power, Large-Force, and Temperature-Stable Metal Contact Switches](#) [8]

Chirag Dipak Patel (Professor Gabriel Rebeiz)

[Read more about Patel's research](#) [3].

[Watch Patel describe his metal switches on YouTube](#) [2].

Research Expo 2011 Best Poster Winners by Department

Bioengineering

#3 [A Custom Integrated High Input Impedance Biopotential Amplifier for Non-Contact and Mobile Health \(ECG/EEG\) Monitoring](#) [9]

Yu Mike Chi (Professor Gert Cauwenberghs)

Computer Science and Engineering

#79 [Kremlin: Like Gprof, but for Parallelization](#) [10]

Donghwan Jeon, Saturnino Garcia (Professor Michael Taylor)

Electrical and Computer Engineering

#130 [High-Power, Large-Force, and Temperature-Stable Metal Contact Switches](#) [8]

Chirag Dipak Patel (Professor Gabriel Rebeiz)

Mechanical and Aerospace Engineering

#157 [Investigating the Use of Wing Sweep for Pitch Control of a Small Unmanned Air Vehicle](#) [11]

Kim Wright, Saam Ostovari, Anand Vaidya (Professor Thomas Bewley)

NanoEngineering

#223 [Biological Applications of Catalytic Nanomotors](#) [12]

Daniel R Kagan (Professor Joseph Wang)

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([Watch related videos on the Jacobs School blog](#) [13].)

Structural Engineering

#242 [Thermal Stress and Buckling Detection in Rail by Non-Destructive Ultrasonic Testing](#) [14]

Claudio Nucera (Professor Francesco Lanza de Scalea)

More Research Expo 2011 Stories

NanoEngineers Develop Novel Method Leading to More Efficient Fuel Cell Applications

http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=1058 [15]

Improving Cancer Diagnosis and Treatment of Cancer Through Advanced Optical Imaging

http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=1057 [16]

Future Computer Vision Tools to Aid Medical Research and Healthcare

http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=1056 [17]

UC San Diego Engineers Test and Predict Impact Damage to Commercial Aircraft

http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=1055 [18]

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Links:

[1] [http://oec-vmweb02.ucsd.edu/uploads/news_release/2011/4x6 grand prize winner outside w ribbon.jpg](http://oec-vmweb02.ucsd.edu/uploads/news_release/2011/4x6_grand_prize_winner_outside_w_ribbon.jpg)

[2] http://www.youtube.com/user/JacobsSchoolNews#p/u/6/r_MjsinIJC0

[3] http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=1062

[4] <http://www.jacobsschool.ucsd.edu/re/breakouts.shtml>

[5] [http://oec-vmweb02.ucsd.edu/uploads/news_release/2011/RE SE news final.jpg](http://oec-vmweb02.ucsd.edu/uploads/news_release/2011/RE_SE_news_final.jpg)

[6] <http://www.flickr.com/photos/jsoe/5638319038/in/set-72157626415488465/>

[7] [http://oec-vmweb02.ucsd.edu/uploads/news_release/2011/RE bales news final.jpg](http://oec-vmweb02.ucsd.edu/uploads/news_release/2011/RE_bales_news_final.jpg)

[8] <http://www.jacobsschool.ucsd.edu/re/abstract.sfe?id=1576>

[9] <http://www.jacobsschool.ucsd.edu/re/abstract.sfe?id=1678>

[10] <http://www.jacobsschool.ucsd.edu/re/abstract.sfe?id=1696>

[11] <http://www.jacobsschool.ucsd.edu/re/abstract.sfe?id=1672>

[12] <http://www.jacobsschool.ucsd.edu/re/abstract.sfe?id=1673>

[13] <http://cse-ece-ucsd.blogspot.com/2011/04/in-new-study-nanoengineers-from-uc-san.html>

[14] <http://www.jacobsschool.ucsd.edu/re/abstract.sfe?id=1570>

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