CEE major graduate University Medal finalist

CEE major Siu-Ting Mak—a tall, modest, Chinese-born pianist who was the first in his family to attend college—was one of five finalists for this year’s University Medal, UC Berkeley’s highest honor given to one graduating senior each year. This fall Mak will continue his studies, pursuing his master’s and possibly Ph.D. in CEE’s Structural Engineering, Mechanics and Materials Program. Inspired by his junior year research assignment on self-anchored suspension bridges, he has a particular passion for public works like bridges, roads, water treatment plants and air pollution control systems that undetectably keep the world’s infrastructure humming smoothly.

“I want to affect people’s lives, not in fancy ways,” Mak says, “but in implicit ways, something that people might not even notice. But if they do, they would appreciate its benefit.”

During his four years at Berkeley, Mak also performed with Cal Community Music, entertaining seniors at East Bay convalescent homes and retirement centers. An accomplished pianist, he started studying music at age five and now has a penchant for chamber music and contemporary compositions.

His parents, who live in Hong Kong, with giving him a desire to learn and his mother with suggesting that her high-achieving son apply to U.S. colleges. Now, he says, he considers his choice of Berkeley the best decision he ever made. And he appears to have started a family trend of coming to California; his sister is now studying business at San Francisco State University.

Mak was one of 1,144 undergraduate and graduate engineering students, a record high, to receive their degrees at commencement ceremonies last May 20 in the Greek Theater. Paul Jacobs (B.S. ’84, M.S. ’86, Ph.D. ’89 EECS), CEO of San Diego-based wireless telecommunications company QUALCOMM, gave the commencement address. A new video-conferencing system is developed by EECS professor Ruzena Bajcsy and colleague Klara Nahrstedt at the University of Illinois. Tele-immersive Environments for Training and Education (TEL-IMMERSE) is a new video-conferencing system.

Eyeing Jupiter’s new red spot

Scientists are now analyzing images of a new storm on Jupiter they photographed through NASA’s Hubble Space Telescope. ME professor Philip Marcus and astronomy colleague Imke de Pater snapped Red Jr., which first appeared in 2006 as a white spot but recently took on the brick-red hue of Jupiter’s 500-year-old Great Red Spot, the most powerful storm in the solar system. Red Jr. was first white, then brown; its new red color could mean it is intensifying, signaling a global warming trend on Jupiter that might have applications for Earth and other planets. Scientists theorize that the storms stir material high above the planet’s cloud cover, where solar ultraviolet rays initiate a chemical reaction that causes the red appearance. http://science.nasa.gov/headlines/y2006/02mar_redjr.htm.

New metamaterial could improve ultrasound

An inexpensive mass production process for radio-frequency identification (RFID) tags could make the technology widely affordable. Similar to a barcode, RFID tags are tiny silicon chips placed on an object and encoded to track it electronically. EECS professor Alan Technology founder). Stephen Smith developed a process that could cut the per-unit price from 50 cents today to about five cents in just three years. The Department of Defense, Wal-Mart and the Food and Drug Administration plan to use RFID to track everything from army boots to counterfeit drugs.

Cheap mass production for RFID tags

Software that renders helpful route maps has been created by EECS professor Maneesh Agrawala, who studies human perception and cognition to make computer software capable of delivering data in truly human-friendly formats. LineDrive creates route maps that, instead of focusing on details like exact scale and irrelevant streets, emphasize turning points along the route. He also developed a system for manufacturers to create assembly instructions for products like furniture and toys that reduce assembly time by 35 percent and cut assembly errors in half.

More meaningful maps

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VINEYARD SENSOR TAKES TOP PRIZE: ME graduate students (from left) Alexander De, Thomas Couley IV and Brian Sassmerich, pictured here with Special Assistant to the Chancellor for Science and Technology Jim Kiell, won the top prize in the first annual white paper competition sponsored by the Center for Information Technology Research in the Interest of Society (CITRIS) and Big Ideas@Berkeley. The paper, “Mitigation of Water Scarcity in California,” described their VinePod, a wireless network of sensors designed to help control frost in California’s vineyards. Mounted on a frost-pole in order to monitor air temperature, humidity, and soil and leaf moisture, the sensor transmits data to a central computer and signals which areas are at risk for developing frost when temperatures dip below freezing. The Berkeley team shared first prize with a UC Santa Cruz team, and both teams won $5,000. Kiell organized the competition to showcase the creativity of UC student research.

Common household air fresheners and cleaners emit chemicals that could pose health risks when used regularly or in small indoor spaces, according to a study led by CEE professor William Nazaroff. “We’ve focused a lot of effort in recent decades on controlling the big sources of air pollution,” Nazaroff says. “However, now we’ve learned that we also need to pay attention to pollution sources that are right under our noses.” www.arb.ca.gov/research/abstracts/01-336.htm.

Cutting-edge research from Berkeley Engineering

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