

Videoconferencing's next generation



You can't get much higher tech than Klara Nahrstedt's research on 3-D video distributed over Internetz. The Urbana-based computer scientist is working with Ruzena Bajcsy, a University of California, Berkeley, computer scientist on videoconferencing's next generation. It's called TEEVE, or Tele-immersive Environments for EVERybody.

Technically, TEEVE is a distributed, multi-tier application that uses 3-D cameras to capture images and send them over Internetz, a network reserved for the highest of high-tech academic, research and corporate users. TEEVE's surprising zinger is that the researchers are putting together big, 3-D, over-the-Internet video, and it's inexpensive. That's because TEEVE relies on COTS, or commercial off-the-shelf equipment.

"TEEVE is a great technology because it allows for more cost-effective cyberspace communication of people in their full body size," Nahrstedt says. "The system is especially well suited for learning new activities, training and meeting in cyberspace if a physical activity is to be performed."

Nahrstedt and her Berkeley colleague set the video bar high in their tech tests, synchronizing the steps and spins of two dancers from the two campuses in cyberspace. That's a big technological step up from today's slightly jerky, talking-head, video-over-the-Internet exchanges. But, more important than improved video quality, Nahrstedt says, are the new applications that could truly improve people's lives.

Some examples include telemedicine, instruction in sports and other physical activities and entertainment. The latter is ideally suited as a use for the new system. "With TEEVE, we want to allow distributed artists such as dancers to train, design new choreography and experiment with different movements in the cyberspace," she says.

The next research steps are to integrate better technology into TEEVE and at the same time make the user-technology interface less complex than programming a VCR. Nahrstedt says in five to six years users should be able to tune in.

Reporting by Melissa Mitchell, Urbana News Bureau



SPRINGFIELD

Collaborating on computer ethics

Keith Miller, UIS professor of computer science, was named the 2006 recipient of the outstanding service award presented by the Association for Computing Machinery's Special Interest Group on Computers and Society. The award recognizes Miller's many professional contributions, particularly his collaborations with computer ethicists in philosophy and computer science disciplines.



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McCall named Packard Fellow

Benjamin McCall, a chemistry professor in Urbana, was named as one of 20 U.S. 2006 Packard Fellows for science and engineering by the David and Lucile Packard Foundation. He will receive \$625,000 during the next five years to help fund his research efforts in astrochemistry. McCall's research program addresses both fundamental chemical problems and longstanding problems in molecular astrophysics.



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Closing in on a terahertz

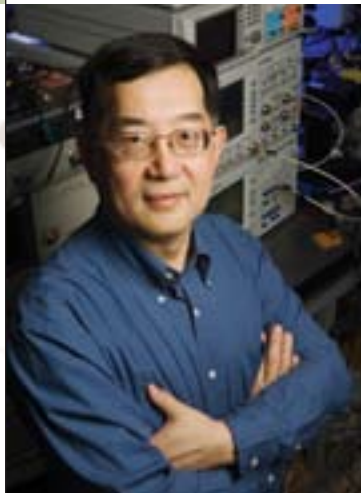
Milton Feng, the Holonyak Chair Professor of Electrical and Computer Engineering, and graduate student William Snodgrass took the transistor to a new range of high-speed operation, bringing the “Holy Grail” of a terahertz transistor finally within reach. The Urbana scientists broke their own speed record for the world’s fastest transistor in December 2006. With a frequency of 845 gigahertz, their latest device is approximately 300 gigahertz faster than transistors built by other research groups. Faster transistors translate into faster computers, more flexible and secure wireless communications systems and more effective combat systems.



URBANA

Mona Lisa 83 percent happy

Thomas Huang’s emotion-recognition software garnered worldwide attention when a colleague applied the technology to an image of the Mona Lisa to answer the long-burning question of whether she is happy or sad. Conclusion? She is 83 percent happy. Using applications such as emotion- and voice-recognition software developed by Huang and his group, the Beckman Institute researcher and professor of electrical and computer engineering is trying to improve the quality and depth of users’ interactions with computers. His work could help develop computers that sense a user’s emotions and public displays that “read” customers’ faces and display information catered to that customer.



URBANA

Wiring the washing machine

The Urbana campus is a top 10 wired campus according to PC Magazine and The Princeton Review. Saying that “not all campuses are created equal,” PC Magazine searched for the “most connected, plugged-in and high-tech campuses in the country.” Urbana was cited for its rich history in computing, extensive wireless connectivity and 600MB of free online storage for each student. Junior Gordon Yang noted campus wiredness has updated and made more user-friendly such formerly mundane activities as online course registration, health center appointments and event calendaring. Even doing laundry is made easier with the laundry update that gives the availability of dorm washing machines.

URBANA

Lincoln fires up supercomputer

The new Institute for Advanced Computing Applications and Technologies in Urbana will be home to a supercomputer called “Lincoln,” funded by the state of Illinois, that will eventually be capable of more than 100 trillion mathematical calculations per second. Part of the National Center for Supercomputing Applications (NCSA), the Institute is integrating emerging high-performance computing technologies, applications and approaches around a collection of research themes that will be announced this year. New faculty will work with existing NCSA technology specialists and Urbana faculty to exploit the technology in areas of strategic importance.

CHICAGO

Network security expertise

Students at UIC learning to secure computer networks against hackers now qualify for a special certificate of expertise sanctioned by the federal government’s National Security Agency. Undergraduate and graduate students who successfully complete a series of computer science and math courses can receive UIC-issued certificates in information systems security. The course sequence is designed to give students a broad understanding of what to consider when designing and maintaining network security systems and prepares them to be information systems security professionals.

CHICAGO

Wireless hospitals improve care, business

The University of Illinois Medical Center at Chicago has been named among the top 100 “Most Wired Hospitals” for 2006 by Hospitals & Health Networks magazine. Hospitals were surveyed on their use of information technology to improve quality, customer service and patient care. The hospitals are recognized for using information technology to streamline business and clinical practices, reduce medical errors and improve clinical outcomes. The Medical Center was also recognized as one of the top 25 “Most Wireless” organizations for its widespread deployment of wireless systems throughout the hospital.