

# Unlocking The Potential of Wireless Video Networks

**A**lthough wireless video surveillance or sensor networks are envisioned for monitoring wildlife, detecting natural disasters such as forest fires, for homeland security surveillance and sensing, or for real-time military information, they live still in the realm of future technology.

Thomas Hou, an expert in computer networks and telecommunications, has developed a novel architecture and traffic management plan to overcome some of the major obstacles in deploying wireless video networks. He recently won a prestigious Young Investigator Program (YIP) award from the Office of Naval Research (ONR) to develop this networking technology.

The ONR grants only 26 YIP awards nationwide each year to young faculty at U.S. universities whom it considers “the best and brightest young academic researchers.” The \$300,000 awards support basic research in fields that are critically important to the technological superiority of the Navy and Marine Corps.

## Real-Time Wireless Video

Current wireless sensor networks measure scalar data like temperature and pressure. Hou, however, envisions developing

large scale, video-enabled wireless surveillance networks that can be deployed quickly and provide accurate, real-time visual data from the field. According to Hou, Naval use of the technology could include on-land and at-sea surveillance, video-assisted navigation, video assisted ship management, and remote monitoring of training exercises.

Wireless video sensor networks would be composed of interconnected, battery-powered miniature video cameras, each packaged with a low-power wireless transceiver that is capable of processing, sending, and receiving data.

Recent developments in device miniaturization, embedded computers, systems-on-a-chip, ultra-low-power streaming video technology, and wireless communications will soon provide the components, Hou explained. “Now we need to develop the networking technologies to handle the huge traffic volume of real-time video and have such networks operate for as long as possible under limited battery power.”

## Architecture, Traffic, and Lifetime Issues

Hou is working on three major issues, network architecture, scalable traffic management, and network lifetime. “How can we design the network so that it can grow as needed and not be limited in size? How do we manage the very heavy

