Title: A Framework for Fusion of Human Sensor and Physical Sensor Data

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Abstract

Many disaster warning and response systems can improve their surveillance coverage of the threatened area by supplementing in-situ and remote sensor data with crowdsourced human sensor data captured and sent by people in the area. This talk will present fusion methods which enable a crowdsourcing enhanced system to use human sensor data and physical sensor data synergistically to improve its sensor coverage and the quality of its decisions. The methods are built on results of classical statistical detection and estimation theory and use value fusion and decision fusion of human sensor data and physical sensor data in a coherent way. They are building blocks of acentral fusion unit in a crowdsourcing support system for disaster surveillance.

Biography

Dr. Pei-Hsuan Tsai received her B.S. degree in Computer Science and minor B.S. degree in Materials Science and Engineering from National Tsing Hua University, Hsinchu, Taiwan, in 2003. She received her M.Eng degree in Computer Science from Cornell University, Ithaca, New York, in 2004, and her Ph.D. degree in Computer Science from National Tsing Hua University, Hsinchu, Taiwan, in 2010. In August 2011, she joined the Institute of Manufacturing Information and Systems in National Cheng Kung University as an assistant professor. Before joining NCKU, she was a postdoctoral researcher at the Institute of Information Science, Academia Sinica, Taipei.

Her research interests have been in the areas of real-time and embedded systems, hospital automation, scheduling algorithms and user interface architectures and designs. Her recent research focuses on technologies for building healthcare assistive devices, applications and services for disaster management and real-time image processing.