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Participatory Urban Sensing

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LOCATION: Calit2 Room 3008

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SPEAKERS

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Abstract

Two billion people carry mobile phones. These ubiquitous devices can act as sensor nodes: they are increasingly capable of capturing, classifying and transmitting image, acoustic, location and other data, interactively or autonomously. Though there is much interest and research in distributed sensing for the sciences, industry and defense, we know much less about its function and utility in the public sphere, when the components are owned and operated by everyday users. As sensors, network-connected mobile handsets will be embedded near the ultimate elusive subjects: people and their built environments. Instead of being in the hands of a central observer, these sensors are always-on and under their owners' control. Leveraging them effectively and conscientiously will require models that prioritize user participation in sensing.

Participatory urban sensing tasks everyday mobile devices, such as cellular phones, to form interactive, participatory sensor networks that enable public and professional users to gather, analyze and share local knowledge. This talk presents motivations, applications and an initial architecture to enhance data credibility, quality, privacy and 'shareability' in such networks. A campaign application model will be described that encompasses directed sensing applications at personal, social and urban scales. Example applications will be outlined in four areas: urban planning, public health, cultural identity and creative expression, and natural resource management.

Biographical information

Jeff Burke has designed, managed or produced performances, new genre art installations and capital projects in eight countries over the last seven years. He is Executive Director of REMAP, the Center for Research in Engineering, Media and Performance at UCLA, a joint program of the School of Theater, Film and Television and Henry Samueli School of Engineering and Applied Science. He is currently focusing on urban public space uses for mobile, embedded and media technologies, including approaches that involve communities in system specification and design. <http://remap.ucla.edu/jburke/>

Mani Srivastava received his Ph.D. in EECS from U.C. Berkeley in 1992. Currently he is a Professor on the Electrical Engineering Faculty at UCLA. He is also associated with the UCLA Center for Embedded Networked Sensing (CENS). His current interests are in embedded sensing, wireless systems, power-aware computing and communications, and pervasive computing and sensing. More information about him and his research group is available at his Networked and Embedded Systems Lab's web site <http://nesl.ee.ucla.edu>.

Deborah Estrin is a Professor of Computer Science and Electrical Engineering at UCLA, holds the Jon Postel Chair in Computer Networks, and is Founding Director of the NSF-funded Center for Embedded Networked Sensing (CENS). Estrin received her Ph.D. (1985) in Computer Science from the Massachusetts Institute of Technology, and her B.S. (1980) from U.C. Berkeley. Before joining UCLA she was a member of the University of Southern California Computer Science Department where much of her research focused on the design of network and routing protocols. Her current research focuses on the application of spatially and temporally dense embedded sensors to environmental monitoring, including participatory-sensing systems, leveraging the installed base of image and acoustic sensors on cell phones.