



Method and System for Retrieving Information from Wireless Sensor Nodes

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an alternative approach to retrieving information from a wireless sensor network.

Overview

Wireless sensing technology provides an unprecedented ability to monitor the physical environment by using a network of cheap sensor nodes. Current approaches to extracting information from a wireless sensor network are geared toward in-network processing, where the nodes exchange information with each other; however, excessive delay and energy consumption occur during this exchange.

The Invention

UW-Madison researchers have developed an alternative approach to retrieving information from a wireless sensor network. In this method, a computationally powerful Wireless Information Retriever (WIR) interrogates a group of computationally “dumb” wireless sensor nodes with wideband radio-frequency signals. The sensors act as “active scatterers” and generate a multipath response to the interrogation signal that includes the sensed data. The WIR then separates the signals from different sensors by matched filtering to their location-dependent response to rapidly retrieve their information.

Applications

- Monitoring all types of environmental conditions, from traffic congestion to magnetic fields
- Rapidly learning unknown sensor field characteristics

Key Benefits

- Dramatically reduces the delay and energy consumption seen with existing in-network approaches to information retrieval
- More cost effective than current methods of information retrieval
- Suppresses residual interference from different sensors
- Leverages emerging technological advances in RF front ends

Stage of Development

The development of this technology was supported by the WARF Accelerator Program. The Accelerator Program selects WARF’s most commercially promising technologies and provides expert assistance and funding to enable achievement of commercially significant milestones. WARF believes that these technologies are especially attractive opportunities for licensing.

Tech Fields

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