Data Dissemination and Fusion In Sensor Networks

University of Central Florida

The need for Data Dissemination and Fusion

- Energy efficiency is an essential factor; therefore, short-range hop-by-hop communication is preferred over direct long-range communication to the destination

- Since sensor network contains large amount of data for the end user, methods of combining or aggregating data into small set of information is necessary and contributes to energy savings

- Data aggregation (aka data fusion) can combine unreliable data readings to produce accurate signal by improving the common signal and reducing the noise

Energy-Efficient Communication Protocol Architecture for Wireless Microsensor Networks (LEACH Protocol)

[Heinzelman+ 2000, 2002]

- **LEACH** (Low-Energy Adaptive Clustering Hierarchy) is a clustering-based protocol that utilizes the randomized rotation of local cluster base stations to evenly distribute the energy load within the network of sensors
- It is a distributed, does not require any control information from base station (BS) and the nodes do not need to have knowledge of global network for LEACH to function
- The energy saving of LEACH is achieved by combining compression with data routing
- Key features of LEACH include:
  - Localized coordination and control of cluster set-up and operation
  - Randomized rotation of the cluster base stations or clusterheads and their clusters
  - Local compression of information to reduce global communication