

## Trade-off between energy consumption and target delay for wireless sensor network

### ABSTRACT

Wireless sensor networks (WSN) consists of unattended sensors with limited storage, energy (battery power) and computational and communication capabilities. Since battery power is the most crucial resource for sensor nodes and delay time is a critical metric for certain WSN applications, data diffusion between source sensors and sink should be done in an energy efficient and timely manner. We characterize the trade off between the energy consumption and source to sink delay in order to extend the operation of individual sensors and hence increase the lifetime of the WSN. To achieve this goal, the transmission range of sensors is first decomposes into certain ranges based on a minimal distance between consecutive forwarding sensors and then classifies these ranges due to Degree of Interest. It is also shown that the use of sensor nodes which lie on or closely to the shortest path between the source and the sink helps minimize these two metrics.

**Keyword:** Energy consumption; Target delay; Wireless sensor networks