Sensor Networks: A Categorized Bibliography

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Recent advances in electronics and wireless communications have led to the development of tiny, low-cost, low-power and active sensors. Besides, there are large, high bit rate sensors such as web cam, pressure gauge and so on. These large sensors are utilized in many practical sensing applications such as free parking space finding applications. Also neural network and artificial engineers are trying to embed some intelligence in today's sensors. All of these types of sensors observe a physical phenomenon such as temperature, humidity, and do some processing and filtering on the sensed data. These sensors are spread over a region to build a sensor network and the sensors in a region co-operate to each other to sense, process, filter and routing. Usually a sensor node contains a sensing, a processing and a communication unit where in some sensor nodes mobility unit and location detection units are embedded.

Like the traditional computer networks sensor networks can also be analyzed in terms of seven OSI layers as they are more or less a must analysis points in any kind of networks with some different attentions. So the existing researches on the layers of sensor networks have been discussed in this report with some analogy and differences with traditional computer networks.

For tiny, low power sensors the most important issue is the power consumption. To make such sensor networks useful power consumption issues must be addressed. In a word, all protocols and applications for sensor networks must consider the power consumption issue and try to the best to minimize power consumption. Existing power saving research on sensor networks are also addressed in this report.

Sensor networks are somewhat different from traditional networks as sensor nodes are very prone to failures. As sensor nodes die the topology of the sensor networks changes very frequently. Therefore, the algorithms for sensor network should be robust and stable. The algorithms should work in case of node failure. When mobility is introduced in the sensor nodes, maintaining the robustness and consistent topology discovery become much difficult. Besides, there are huge amount of sensors in a small area. Most sensor networks use broadcasting for communication while traditional and adhoc networks use point to point communication. Hence the routing protocol should be designed considering these issues as well.

A bibliography on different category of sensor network research is provided as below

- Design and Architecture

- Physical Layer

- Protocols

- Power Management

- MAC/Data Link Layer

- Network Layer

    – Addressing Mechanism
    – Routing
    – Others

- Distributed Network

    – Overview
    – Algorithms
    – Location Mechanism/Deployment/Target Tracking
    – Topology Discovery
    – Time Synchronization

- Application Layer

- Operating System

- Simulation

- Query Processing

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