

Review of Sleep Scheduling Algorithm to Optimize Energy Consumption in Wireless Sensor Network

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Abstract:

WSN is an energy constrained network whose lifetime is depending on the energy of nodes. Nodes in the network spends energy for event detection and data transmission. It is necessary for the sensor nodes to conserve energy to extent the network life time. The energy required to sense events is typically a persistent and cannot be controlled. By placing nodes to sleep when there are no events, the energy consumption of the sensor nodes can be considerably condensed. This paper gives the review of sleep scheduling algorithm in WSN.

Keyword: Wireless Sensor Network(WSN), Energy, Sleep Scheduling Algorithm

I. Introduction:

To extend the lifetime of these energy-constrained wireless sensor networks Sleep-wake scheduling is an effective mechanism. Some of sensor nodes. The principle mechanism in sleep scheduling is nodes in network scheduled to keep subset of nodes to be awake for particular time while remaining nodes are in sleep state[1][2]. In order to conserve battery power and to prolong the network lifetime, some sleep scheduling are employed in the networked sensor nodes.[3][4]

Sleep scheduling is a widely used and cost effective technique to save energy in WSNs. Recently, the research focus of geographic routing is centering on WSNs with duty- cycles, since duty-cycled WSNs have a natural advantage of saving energy by dynamically putting nodes to sleep and waking them according to some sleep scheduling algorithms[5][6]

Pre-Scheduling-based K-coverage Group Scheduling:

Author [7] proposed the Pre-Scheduling-based K-coverage Group Scheduling (PSKGS) to enhance

network life time by detected unwanted active sensor nodes, and Self-Organized K-coverage scheduling to keep the sensor in active mode or in sleep mode considering the neighboring nodes for each sensor.

Geographic-distance based connected-k neighbored:

Chunsheng Zhu et.al proposed two geographic-distance based connected-k neighborhood (GCKN) sleep scheduling algorithms. The first one is the geographic-distance based connected-k neighborhood for first path1 (GCKNF) sleep scheduling algorithm, aiming at geographic routing utilizing only the first transmission path in duty-cycled mobile WSNs. The second one is the geographic-distance based connected-k neighborhood for all paths2 (GCKNA) sleep scheduling algorithm, for geographic routing concerning all paths explored in duty-cycled mobile WSNs [8]

Low Power Mode Algorithm:

Nikos Pogkas et.al proposed low power mode algorithm to minimize power consumption by turning of the nodes idle during no communication in the network. Nodes cannot receive any packets during sleep state and all the nodes periodically enters into sleep state to ensure required communication[9]

Any cast packet- forwarding:

an any cast packet- forwarding scheme to reduce the event-reporting delay and to prolong the lifetime of and employing asynchronous sleep-wake scheduling.

Two methods are addressed by the authors are wake-up rates of the sensor nodes and distributed algorithm to minimize the probable event-reporting delay from all sensor nodes to the sink.

Second, using a specific definition of the network lifetime, study the lifetime-maximization problem to optimally control the sleep-wake scheduling policy and the any cast policy in order to maximize the network lifetime subject to an upper limit on the expected end-to-end delay. The advantages are sleep/wake scheduling for low duty-cycle sensor networks, consider synchronization error, achieve given capture probability threshold with min energy consumption.[10]

Conclusion:

Many of the researchers adapted Sleep wake up Scheduling algorithm to save sensor node energy to overcome energy conservation problem. Sleep scheduling mechanism is one of the best technique to overcome energy constrain problem in wireless Sensor Network.

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