Abstract

Small, low cost, low power and multifunctional sensor are developed as a result of improvement in micro-electromechanical (MEMS) technology. Sensors are connected via wireless medium and are used to observe various aspects of the physical world. Data sensed by these nodes needs to be agglomerated using data fusion, which requires clocks of nodes to be synchronized with each other. Existing approaches of clock synchronization are not designed keeping wireless sensor networks in mind. So there is a need to extend or redesign and develop a new way to synchronize the wireless sensor networks that is best suited to the specific needs of a sensor-network application. In this paper, we introduced a new approach of synchronization of nodes in WSN by enhancing the CSMA/CA protocol (slotted ALOHA). A Master Node, which is assumed to be synchronized with GPS (Global positioning System), deployed in the network. The nodes in a cluster synchronized their local clock with master node using NTP. The proposed solution features minimal energy consumption, minimal packet loss and achieve better throughput.
References

- Philipp Sommer, Roger Wattenhofer "Gradient Clock Synchronization in Wireless Sensor Networks" IPSN'09, April 13–16, 2009, San Francisco, California, USA.
- Fan Xiangning and Song Yulin &quot;Improvement on LEACH Protocol of Wireless Sensor Network&quot; 2007 IEEE
- Bilal Abu Bakr and Leszek Lilie &quot;A Quantitative Comparison of Energy Consumption and WSN Lifetime for LEACH and LEACH-SM&quot; 2011 IEEE.
- Peyman Neamatollahi, et al. &quot;A Hybrid Clustering Approach for Prolonging Lifetime in Wireless Sensor Networks&quot; 2011 IEEE.
- Jia Xu, et. al &quot;Improvement of LEACH protocol for WSN&quot; 2012 IEEE.
- Kiran Yedavalli and Bhaskar Krishnamachari, &quot;Analysis of Slotted Multi-Access Techniques for Wireless Sensor Networks&quot;.

**Index Terms**

Computer Science  
Wireless

**Keywords**

Clock Synchronization  WSN  CSMA/CA  GPS.