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A ROBUST TIME SYNCHRONIZATION SOLUTION FOR WSN IN SATELLITE VIBRATION MONITORING

Abstract

In satellite design, the requirements for satellite attitude stability are increasing. It is very important to monitor the satellite vibration. With the development of wireless sensor network, it is possible to deploy sensors in satellite to sample and gather the vibration data. For wireless vibration measurements, time synchronization is important because the vibration data are simultaneously measured at multipoint sensor nodes and are transmitted via multi-hop relayed to base station. However most of the current algorithms mainly focus on the precision of synchronization. In fact, in the context of space, stability and robustness of WSN is the key matter of concern. In this paper, a novel multi-hop time synchronization scheme is proposed with the purpose of improving its robustness and stability. Besides, it provides the capability to detect and eliminate the influence of problematic nodes.