Ultrasonic Sensor System for Ecology Observation and Timing Synchronization of ZigBee Network

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Abstract—Timing synchronization is essential in cases where multiple sensor nodes with ultrasonic sensors are deployed on the same place. This is because the ultrasonic sensors should be powered at an appropriate timing so as to prevent ultrasonic interference. In this paper, we propose a harmful bird attack system and a new timing synchronization method for ZigBee sensor network. In this timing synchronizing method, by concentrating the processing load to the server, the amount of calculation on each node can be minimized and is unaffected by the increase in the number of nodes. Evaluation of the proposed method has shown that it sufficiently fulfills the timing requirement for the proposed harmful birds attack system.

Keyword—Sensor Network, ZigBee, Ultrasonic Distance Sensor, Timing Synchronization, Reference Broadcast Synchronization

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