High-Performance Temporal Object-Tracking Algorithm Using Virtual Targets in Wireless Sensor Networks

歐陽雯,陳逸豪

Computer Science & Information Engineering

Computer Science and Informatics

ouyang@chu.edu.tw

Abstract

Localization and object tracking are important issues in wireless sensor networks. Many previous studies assume that a fixed equation can relate the received signal strength indication (RSSI) to the distance between two nodes. However, this assumption isn't suitable for real world since the RSSI can be easily affected by many factors. Thus, we adopt a more practical assumption that the higher the RSSI becomes, the closer the two nodes are, and vice versa. In our work, two tracking algorithms are proposed for random anchor deployment scenarios. The first one is a hybrid method while in the second algorithm distributed stronger signal virtual target algorithm (SSVT), a novel method to find virtual target is provided to estimate the current object location. Simulation results show that SSVT is more accurate, stable, and adaptable than previous work, especially for sparse anchor deployment networks which are more cost-effective.

Keyword：Wireless sensor networks, tracking, localization, range-free, RSSI, virtual target.