A Cooperative Trilateration Technique for Object Localization

ABSTRACT

Wireless Sensor Networks (WSN) exhibit enormous potential in the realization of Cyber-Physical System (CPS) and Internet of Things (IoT) because of their suitability for a large number of applications in healthcare, agriculture, education, aviation, weather forecast, military, smart homes, manufacturing and many other domains. One of the established applications of WSN is localization of moving objects, which is integral part of monitoring, surveillance, intrusion detection and target tracking. For localizing a moving object in WSNs, generally, a set of location-aware static WSN nodes are used to localize the mobile nodes or moving target using a specific localization algorithm. RSSI and Trilateration based location identification is a wellknown traditional method which needs distance calculation prior to localization. Many researchers have modified the traditional trilateration method to better suit their application or in general. In this paper we present, a modified trilateration method, which uses our application specific cooperative technique with better choice of beacon node placement to improve distance calculation method. The distance values are then used to expedite the trilateration process. The proposed technique has been simulated and compared with the traditional method. The results show that our proposed technique consumes less energy and ensures faster and complete localization through the deployed sensor nodes.

EXISTING SYSTEM

- In existing system, a trilateration based localization in a testbed area containing anchor and blind nodes to characterize the pathloss exponent and to determine the localization error of the algorithm.
- Though the scheme consumes more complexity, the accuracy improves and the error propagation reduces when compared to the traditional method.

PROPOSED SYSTEM

- The proposed trilateration with cooperative technique, all the nodes were localized including the moving node.
- The beacon nodes are placed in such a way that they could form the vertices of an equilateral triangle, in the middle of the RoI.
- Thus reduces the number of beacon nodes, dependency on manually localized beacon nodes and the traffic to the sink nodes.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS

- Processor - Intel core i3
- RAM - 2B
- Hard Disk - 20 GB

SOFTWARE REQUIREMENTS

- Operating System : LINUX
- Tool : Network Simulator-2
- Front End : OTCL (Object Oriented Tool Command Language)

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