Localization of a Single Sensor with Respect to a Single Beacon using Received Signal Strength (RSS) in Terrestrial Environment

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Abstract

This paper apprised the issue of finding the location of a single sensor node with a single beacon in a terrestrial wireless sensor network (WSN). Generally, the localization of a single sensor node in a terrestrial sensor network can be solved using multilateration technique with respect to three or more known beacon nodes. However, there is an area of concern, when the localization of a single sensor node (i.e. mobile station, cell phone) is to be measured with respect to only one known beacon node i.e. base transceiver station (BTS). Such a challenge is aimed to be solved with the help of received signal strength (RSS) survey data for a particular location within the desired environment. A simulated terrain and a model has been created based on RSS Survey data that defines the contours of radio frequency (RF) coverage in a particular test facility under a single beacon node. Simulation results show that our proposed model gives a solution which converges to determine the location of a single sensor node with respect to a single beacon node.

References


Index Terms

Computer Science  Signal Processing

Keywords

Wireless Sensor Networks, Received Signal Strength, Localization, Single Beacon, Heat map