Abstract

Distance based localization techniques have always been of interest among researchers. The free received signal strength index (RSSI) requires no extra hardware for distance measurement. Authors in this paper assume that RSSI based distance estimation technique will have some error due to noisy RSSI readings. The localization algorithm proposed here takes into account this error and localizes a WSN in three stages. Due to this error in distance, nodes in neighbor of three anchor nodes determine their uncertainty region with some accuracy and become virtual anchors. These nodes then help other nodes in the network to determine their region. These non virtual anchor nodes collaborate among themselves to further decrease the size of uncertainty region. The collaborative nature of nodes is exploited to increase the accuracy and precision of localization. The authors in this paper have used only three anchor nodes to localize a full blown Wireless Sensor Network (WSN) of 100 nodes with better accuracy compared to existing techniques using RSSI till date. Authors also analyze the energy and communication cost involved in localization process.
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Index Terms

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Keywords

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Localization