

Distance Estimation Algorithm of Two-hop Neighbor in Wireless Sensor Networks

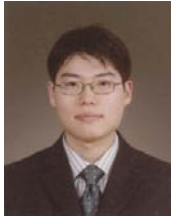
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(Pt9)Abstract—In case of wireless networks which does not contain a localization system, Euclidean distance between two nodes those are out of carrier sensing range each other cannot be measured with ranging techniques such as RSSI, ToA, and TDoA since they are not able to communicate directly. To deal with this issue, range-free schemes like a hop-count based approach and a connectivity based approach were used. These methods, however, are decreased in accuracy at low node density networks, so it is hard to apply to other wireless network except the densely deployed sensor networks. In this paper, we present a novel distance estimation method. When two nodes are in 2-hop neighbor relation, our method can estimate a distance using ranging information of their overlapped neighbors and connectivity information. Simulation results show that the proposed method outperforms hop count based and connectivity based distance estimation methods.

(Pt9)Keyword—Sensor networks, distance estimation, interference range



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