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## Abstract

Localization of the sensor nodes is considered as one of the most important issue in a Wireless Sensor Network (WSN). The objective of localization is to determine the physical co-ordinates of a group of sensor nodes. The location information plays a significant role for coverage, deployment of sensor nodes and rescue operations. Many applications such as routing and target tracking are all location dependent. This work aims at determining the location of the sensor nodes with high precision. This work is based on localizing the nodes using Mobile Anchor Positioning (MAP), a range-free localization method. As the anchors move through the network, they broadcast their location as beacon packets. The sensor nodes use the location information of beacon packets obtained from mobile anchors as well as the location packets from neighbouring nodes to calculate their location. The proposed approach for Localization is Modified Cuckoo Search with Mobile Anchor Positioning (MCS - MAP) algorithm. The MCS – MAP algorithm is incorporated over the results of MAP to enhance the location accuracy and also to compare the performance between MCS-MAP and Cuckoo Search with Mobile Anchor Positioning (CS - MAP) algorithm. Root Mean Square Error (RMSE) is the performance measure used to compare between the two approaches namely, MCS-MAP and CS-MAP. Simulation results demonstrate that our proposed MCS-MAP algorithm is effective in bringing down the localization error as well as converges faster when compared to CS-MAP algorithm.

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Computer Science

## **Index Terms**

Wireless

## **Keywords**

Localization Mobile Anchor Modified Cuckoo Search Cuckoo Search Root Mean Square Error.