

## Enhanced Weighted Centroid Localization Algorithm for Indoor Environments

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**Abstract :** Lately, with the increasing number of location-based applications, demand for highly accurate and reliable indoor localization became urgent. This is a challenging problem, due to the measurement variance which is the consequence of various factors like obstacles, equipment properties and environmental changes in complex nature of indoor environments. In this paper we propose low-cost custom-setup infrastructure solution and localization algorithm based on the Weighted Centroid Localization (WCL) method. Localization accuracy is increased by several enhancements: calibration of RSSI values gained from wireless nodes, repetitive measurements of RSSI to exclude deviating values from the position estimation, and by considering orientation of the device according to the wireless nodes. We conducted several experiments to evaluate the proposed algorithm. High accuracy of ~1m was achieved.

**Keywords :** indoor environment, received signal strength indicator, weighted centroid localization, wireless localization

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