

# 基于 WiFi、PDR、地磁相融合的室内定位研究

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**摘要:** 针对 WiFi 定位、PDR (行人航迹推算) 定位、地磁定位的特点, 提出了基于 WiFi、PDR、地磁相融合的室内定位方法. 所提的融合定位方法首先通过 UKF (无迹卡尔曼滤波) 算法将 WiFi 定位及 PDR 定位的结果进行融合得到一个改善的定位结果, 通过实验及仿真验证, 所提的融合室内定位方法平均定位误差低至 1.41 m, 取得了较好的定位精度.

**关键词:** WiFi 定位; 行人航迹推算; 地磁定位; 无迹卡尔曼滤波; 室内定位

## Research on Indoor Positioning Based on Fusion of WiFi, PDR and Geomagnetism

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**Abstract:** In view of the characteristics of WiFi positioning, PDR (pedestrian track calculation) positioning and geomagnetic positioning, an indoor positioning method based on fusion of WiFi, PDR and geomagnetism is proposed. Firstly, the proposed fusion localization approach fuses the results of WiFi localization and PDR localization by UKF (Unscented Kalman Filtering) algorithm, and obtains an improved localization result, then, with the improved positioning result as the center, the size of the range is dynamically controlled by the standard deviation of the error in the improved positioning result and the WiFi positioning result of this time, finally, second positions are made by geomagnetic matching in this range, and the final positioning results are obtained. Through experiments and simulation, the average positioning error of the proposed fusion positioning method is as low as 1.43M, and the positioning accuracy is improved greatly.

**Key words:** WiFi positioning; PDR; geomagnetic positioning; UKF; indoor positioning

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