

Accuracy Evaluation methods for Pedestrian Localization in Indoor Space

Jinjin Yan, Delft University of Technology

Indoor localization has attracted much attention from both academia and industry because of its wide applicability and potential business value. Accuracy is an important performance indicator for assessing an indoor localization method or system. Current accuracy measurement methods are either too effort-intensive or fail to provide a proper measure of the accuracy. We make a deeply research on the existing three typical indoor pedestrian positioning accuracy assessment methods, Cross-track-based method and Marker-based method. To solve these problems, we propose a novel landmarks- based accuracy measurement method with step length interpolation for indoor pedestrian localization. We first recognize landmarks, typically including stairs, corners, elevators, doors, and then use these landmarks to assist the accuracy measurement. We also design a ground truth collection system based on smartphone. A series of real-world experiments were conducted in a multiple- floor office building and the results indicate that this method outperforms the cross-track-based method, and closes to the markers-based method but with significant effort reduction. The advantages of the proposed method are that it frees users from actively participating in the performance evaluation, requires little or no manual effort, is easy to implement and provides high accuracy.