Development of Pedestrian DR and Beacon AP integration Filter

With Simple Map Matching

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**ABSTRACT**

Since the needs to localize in indoor navigation in smartphone increases, many indoor positioning system is developed using smartphone sensors and WiFi signals. Previously, Beacon AP and pedestrian DR integration filter is suggested for this purpose. On the other hands, the geomagnetic sensor and WiFi signals are influenced by indoor environment, which corrupt the accuracy of indoor navigation. Other approach such as map matching is needed to provide accurate user position.

This paper suggests indoor pedestrian navigation system with simple map matching. To apply simple map matching, evaluation function is defined to select a link among candidate links. The evaluation function makes multiple hypothesis technique to be a single target problem. The evaluation function considers the output of the integration filter, the information from map network, the distance from links, and user direction, which makes multiple hypothesis technique to be a single target problem. In conclusion, this paper verifies that the performance of indoor pedestrian navigation system with map matching outperforms the system without map matching.

Keywords: indoor navigation, map matching, multiple hypothesis technique