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An Indoor Guidance System Combining Near Field Communication and Bluetooth Low Energy Beacon Technologies

Authors : Rung-Shiang Cheng, Wei-Jun Hong, Jheng-Syun Wang, Kawuu W. Lin

Abstract : Users rely increasingly on Location-Based Services (LBS) and automated navigation/guidance systems nowadays. However, while such services are easily implemented in outdoor environments using Global Positioning System (GPS) technology, a requirement still exists for accurate localization and guidance schemes in indoor settings. Accordingly, the present study presents a methodology based on GPS, Bluetooth Low Energy (BLE) beacons, and Near Field Communication (NFC) technology. Through establishing graphic information and the design of algorithm, this study develops a guidance system for indoor and outdoor on smartphones, with aim to provide users a smart life through this system. The presented system is implemented on a smartphone and evaluated on a student campus environment. The experimental results confirm the ability of the presented app to switch automatically from an outdoor mode to an indoor mode and to guide the user to the requested target destination via the shortest possible route.

Keywords : beacon, indoor, BLE, Dijkstra algorithm
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