

Method to generate and maintain WiFi fingerprinting database automatically

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ABSTRACT

Location fingerprinting in WiFi positioning has been widely used in indoor environments. The key to fingerprinting technology is the fingerprint database. The disadvantages of this technology are the database generation and maintenance requirements. The conventional method to create the database is that people carry out the survey manually (that is what the commercial products are doing). When the environment changes significantly (such as after a building renovation, or moving of furniture), the database has to be rebuilt. This paper proposes a new method to build and maintain the database in an efficient manner. This method only requires some people (such as security people who regularly patrol the whole building anyway) to hold a specific device which consists of a RFID scanner and WiFi tag to log the coordinates and the WiFi signal strengths. The coordinates are provided by some pre-deployed medium range (1-2 meters) RFID tags based on 'cell ID'. Those people are moving around the area of interest for purposes other than the fingerprint survey, so the fingerprint database can be generated "automatically". Also, the database can be refined as the data are being accumulated. When the environment changes, it can be detected by the self-refining database. A preliminary test was carried out for the proposed method. Results show it works well.

KEYWORDS: WiFi, Fingerprinting database, RFID