

MODELING A BLUETOOTH INDOOR LOCATION SYSTEM

Modeling of Indoor Positioning Systems Based on Location Fingerprinting A Bluetooth Localization Algorithm Based on Map Path Calibration and Time.

Because the signal propagation rate is constant and known ignoring differences in mediums the travel time of a signal can be used to directly calculate distance. In: Fekete, S. ACM Google Scholar This is the technique used by GPS. Furthermore, Bluetooth has low power consumption compared to Wi-Fi devices, which promotes longer battery life-time on mobile phones. Positioning systems enable context aware computing with location awareness [1]. Whether a sequence of locations determined form a trajectory from the first to the most actual location. The performance of this system highly depends on the accuracy of the antennas used for the angle measurement. Bluetooth was not intended to offer a pinned location like GPS, however is known as a geo-fence or micro-fence solution which makes it an indoor proximity solution, not an indoor positioning solution. High Sensitivity GNSS receivers are able to receive satellite signals in most indoor environments and attempts to determine the 3D position indoors have been successful. However, in order to make positioning signals ubiquitous, integration between GPS and indoor positioning can be made. ISDN Syst. Papamanthou, C. Due to the low range, a tagged entity will be identified by only a few close, networked receivers. This smoothing must be applied, when a target moves and also for a resident target, to compensate erratic measures. Elnahrawy, E. Non-radio technologies[edit] Non-radio technologies can be used for positioning without using the existing wireless infrastructure. King, T. A lot of systems use enhanced Wi-Fi infrastructure to provide location information. Thapa, K. Laoudias, C. Reach by these sensors mostly covers an entire floor, or an aisle or just a single room. Honkavirta, V. Roos, T. Kaemarungsi, K. Beyond, the average error budget for GNSS systems normally is much larger than the confinements, in which the locating shall be performed. Battiti, R. The results show that 2 meters median accuracy is achievable - a result that compares favourably to results for Wi-Fi based systems. The inside of buildings is not free space , so accuracy is significantly impacted by reflection and absorption from walls. These very same effects are degrading all known solutions for indoor locating which uses electromagnetic waves from indoor transmitters to indoor receivers. In addition, the multiple reflections at surfaces cause multi-path propagation serving for uncontrollable errors. The accuracy depends on the number of positions that have been entered into the database. Anyplace [48] is a free and open-source Wi-Fi positioning system that allows anybody to rapidly map indoor spaces and that won several awards for its location accuracy. ICANN Integration of data from various navigation systems with different physical principles can increase the accuracy and robustness of the overall solution. Large-scale indoor positioning system based on iBeacons has been implemented and applied in practice. Bose, A. LoCA