A Wireless Control System Based on Smart Bluetooth and Ibeacon Technology for Auditing the Patrols

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Patrol systems are used as a method of ensuring security and protection of large areas and facilities such as university campuses, military zones, etc. In general, security personnel assigned to the patrol system visit the pre-determined checkpoints at regular intervals and are obliged to make the security control of these locations. Security personnel (guards) are also audited to check if they covered all the required control points on time or not.

In recent years, considering energy efficiency, new Bluetooth devices and protocols are designed and produced. One of the most popular low-energy Bluetooth protocols is Smart Bluetooth (version 4.0). In this work, we integrated mobile devices (smart phone or tablet) with IBeacons. IBeacons are devices emitting beacons using Smart Bluetooth signals. Since Smart Bluetooth consumes low energy, these devices are small in size, have long life durations and very cheap.

In this project, we propose and implement a new system to record the patrol officers' movements in the responsible areas. At the proposed system, IBeacons are first deployed in the monitoring areas. The location and the identification of the deployed IBeacon are stored in a central database. We developed a mobile application for Android devices which can scan the environment for IBeacon signals. The mobile application collects the sensed IBeacon IDs, stamps it with a time tag and uploads it along with the mobile device ID to the central database. Using these records, we can monitor the movements of the security guards. We have also developed a web application to generate an executive summary report from these records.