IoTSSC Project
Indoor Localisation

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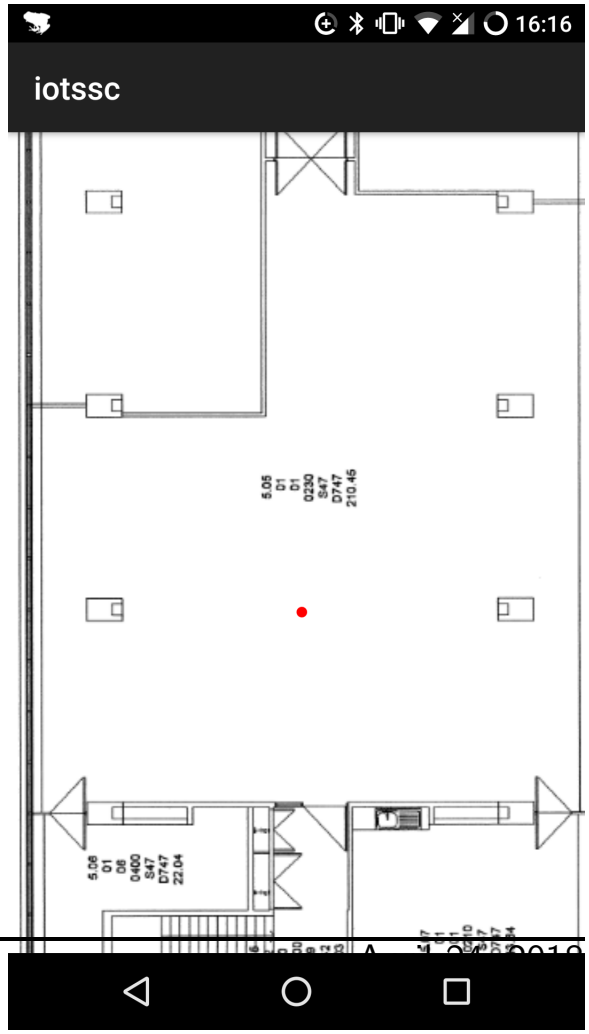
Tracking device

Our chosen localisation device is a Nordic nRF51-DK, running ARM Mbed OS 5

Due to limited processing power, the firmware running on the board is limitied to scanning for Bluetooth Beacons and updating a BLE Characteristic with their RSSI strength

Android App

The app acts as a Bluetooth gateway, connecting to the board to read from its LocationService, and forward a timestamped RSSI, BeaconID pair to the server.
Additionally, we display a map of the 5th floor, and a location marker, which can be manually modified based on the board's position to collect training data.



Server

The server is a simple Flask app hosted on a Google Cloud Virtual Machine. It receives POST requests from the Gateway, and saves the data in a file.

To ensure all data is transimitted securely, the server runs over HTTPS, using a self signed certificate manually provisioned to the app (its only client).

Analytics

... RSSI triangulation SVMs KNN Kalman Filters