Student/Intern project

IoT Proximity solution in smart cities

Smart Cities are augmented environments capable of utilizing the Internet of Things (IoT), in which computational intelligence is ubiquitous to provide people with contextual, proactive and personalized services. These environments will provide ubiquitous information and services to promote well-being as well as better management of the city's resources.

An IoT framework is being developed at the AMI-Lab to promote better delivery of services in Smart Cities. We mainly target helping aging people to lead an independent and purposeful life, through ambient assistive technologies. The framework includes software components to integrate context from sensors. These components implement diverse protocols (e.g., Zwave), and include processes to persist and interchange context.

Our team has deployed diverse IoT components in the city of Sherbrooke (e.g., sensors, actuators). We are also currently extending our platform to include various outdoor technologies in order to provide a solution that integrates a large number of IoT objects (i.e., smart objects through kiosks and smartphones). All context and services are integrated, pre-processed and kept in a knowledge base, to be consumed through the city. To provide a personalized service providing, our platform requires a solution to detect users and evaluate their proximity to IoT objects. Nowadays, Beacons/Bluetooth low energy are among the permission solutions to investigate.

Keywords

Interoperability, Smart City, Internet of Things, REST API, Android, Swift Sensors & Beacons, Dynamic and adaptable systems, Context aware services.

Required skills/background

- Strong motivation towards challenging projects
- Ease in programming (C++, Java, etc.)
- Recommended skills in Linux, embedded systems (Raspberry PI, Arduino, etc.)
- Recommended skills in Web services
- Recommended skills in Beacons and Bluetooth low energy

Role of the student/Intern

The student / Intern project mainly involves the evaluation and deployment of Beacons that allows integrating proximity context to improve end-user localization. The student / Intern will be working on the use of the proximity context for combining with GPS information (outdoor in the city) or spatial information (indoor in a home) to infer the best location. The student / Intern will be involved in the implementation of a prototype to evaluate diverse use cases, including mobility from the smart home to the smart city, i.e., automatic inferring the best available service based on proximity.

Application

Interested applicants email a detailed CV, transcripts and motivation letter to the lab director. The successful candidate will be contacted shortly after processing the received applications.

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