Septembre 2020

**Student/Intern project**

## Big data platform for IoT 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 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 IoT devices (sensors and actuators). These components implement diverse protocols (e.g., Zwave, Bluetooth Low-Energy, Beacon), and include processes to persist and interchange context.

Our team has deployed diverse IoT components in the city of Sherbrooke. We are 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 (NoSQL), to be consumed through the city. Nowadays, we are extending our platform to include a Big data solution.

### Keywords

Smart City, Internet of Things, Big data, REST API, Android, Swift Sensors & Beacons, Dynamic and adaptable systems, Context aware services, Real life deployment.

### Required skills/background

- Strong motivation towards challenging projects
- Ease in programming (C++, Java, etc.)
- Recommended skills in Linux and embedded systems
- Recommended skills in NoSQL databases and Big data solutions
- Recommended skills in Web services

### Role of the student/Intern

The student/intern project mainly involves the development of new Big data components that enable better management of IoT data. The student/intern will be asked to integrate the solution in real settings (with real data) in order to complete the implementation and performing tests. The student/intern will be involved in analyzing emerging Big data technologies for smart cities. He also will work on the design and development of an extension of our platform to manage the heterogeneous data.

### 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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