Septembre 2020

**MSc student/Intern project**

## Execution plan of complex tasks in Smart cities

Smart Cities are augmented environments capable of utilizing Internet of Things (IoT) and multimodal sensors, in which computational intelligence is ubiquitous to provide contextual, proactive and personalized services to people. The ambient intelligence in these environments will provide ubiquitous information and services to promote well-being and enable supporting people's health and life conditions.

One of the challenging aspects of smart cities is to provide computational support considering the dynamicity of people activities in these smart cities. People activities involve diverse tasks that are performed based on a goal. Achieving a goal that involves complex tasks requires that a person organizes these tasks and perform them based on an execution profile (i.e., the context of needs, desires, motivations, available resources). Nevertheless, there exist behavior-based approaches that facilitate the execution of complex tasks in non-human activities, e.g., characters in video games, missions in drones.

AMI-lab is developing a framework for integrating context and services to support user activities. Furthermore, we require creating a behavior knowledge base for user activities that enable to control the execution of dynamic tasks. As an example, in video games, creating characters demands a behavior designer who is in charge of defining the behavior of each character to be natural for the user. The outcome of the behavior designer is a knowledge base of behaviors that are the basis for diverse artificial intelligence algorithms for programming video game cycles.

### Keywords

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

### Required skills/background

- Strong motivation towards challenging project
- Ease in programming (C++, Java, etc.)
- Ease in programming in Android and/or Swift
- Skills in Linux, embedded systems (Raspberry PI, Arduino, etc.)
- Recommended skills in Web services

### Role of the student/Intern

The student/intern project involves the design and implementation of a tool for generating a knowledge base of behavior that allows monitoring everyday activities. The tool considers the formation of baseline behaviors of activities for a subsequent classification of behavior. Finally, the student/intern will be invited to create a prototype application that maintains the knowledge base of activities and implements a classification algorithm.

### 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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