

Student/Intern project**IoT feedback platform for smart cities**

Smart Houses and Cities are augmented environments capable of utilizing the Internet of Things (IoT) and multimodal sensors, in which computational intelligence is ubiquitous to provide contextual, proactive and personalized services to people. IoT is an emerging technology that provides diverse capacities to incorporate everyday objects into computational support for user activities. These IoT objects are “smart” components interact and provide information that complements artificial intelligence algorithms in order to better address user requirements. E.g., a “smart” mirror in the bathroom interacts with a user’s agenda, being aware of the next activity and showing automatically the best route to reach the activity.

Combined with IoT technologies in smart environments, health telematics can radically transform the way health-related services (diagnosis, therapy and assistance) are conceived and delivered. At our lab, a framework is being developed to help the elderly people 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 for smart houses (e.g., Zwave, Bluetooth Low-Energy, Beacon), and include processes to persist and interchange context.

Keywords

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

Required skills/background

- Skills in Android
- Skills in Linux, embedded systems (Raspberry PI, Arduino, etc.)
- Skills in Web services
- Ease in programming
- Strong motivation towards this challenging project

Role of the student/Intern

We packaged our system in a gateway in order to (1) send sensor data to a server-based platform where it is processed, (2) provide necessary subscriptions and configuration tools to access assistive services, and (3) enable advanced user interaction via diverse actuators. The implementation of the framework involves C++, Web services, distributed systems and communication protocols.

The student/intern will be involved in exploring mechanisms that augment human activities using feedback options, such as showing video, producing sounds, generating vibration, virtual reality, augmented reality. She/he will also be involved in the design and development of an API to manage heterogeneous actuators, as well as in the implementation of a prototype scenario for testing purposes. The scenario will include mobile devices; therefore, mobile development is also required.

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.