

Supervisors

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Presentation of the project

Making use of the transition towards ubiquitous environments where embedded computing devices seamlessly integrate and cooperate to serve human needs, we can design systems specially fitted to provide context-aware digital services. At IPAL, the UbiSmart framework is being developed to help the elderly lead an independent and purposeful life, through ambient assistive technologies. Therefore, we build smart homes, connected cars and smart cities, where sensors are deployed and reasoning algorithms implemented to gather knowledge about users' context. This knowledge can then be used to provide real-time services, as well as lifestyle assessment and coaching. The project incorporates research thematic including nomadic service delivery at home and in urban environments. We are currently packaging our system as a "smart home in a box" kit where a home gateway (1) pushes sensor data to a cloud-based platform where it is processed by server-side applications, and (2) provides the necessary subscriptions and configuration tools to access the cloud services.

Expected deliverables

This internship will lead to the extension of the UbiSmart framework to additional use-cases, focusing on urban locations and connected vehicles. It is targeted at separating the IoT (Internet of Things) core of the framework, from its use-case driven modules. This mission will be challenging as it requires modifications to multiple levels of the framework: e.g. communication, backend modules, semantic models, and reasoning rules. Additionally, a REST API may be developed to ensure the integration of external processing modules to augment the context-awareness aspect of the framework.

Keywords

Ambient Assisted Living, Internet of Things, Smart Home, Smart City, Connected Car, Web App, REST, Javascript, Node.js, MVC frameworks, Semantic Web.

Applicant profile

- Master Degree or Engineer Student (last year of studies).
- Skills in programming, REST, Javascript, server-side applications, node.js.
- Strong motivation towards this challenging project.
- Availability for 5 to 6 months starting in the first semester of 2016.



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