

### 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 care to the ageing population. 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 spaces 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. We are now proceeding to a large scale testbed with real users in a private homes. Our reasoning engine for context-awareness is mainly using semantic models with description logic (see N3Logic). Due to the limitations of rule-based techniques in extracting information from behaviours autonomously, we are now exploring the possible integration of statistical methods to improve our results.

### Expected deliverables

This research oriented internship addresses the design and implementation of mechanisms for the real-time interchange of data and/or results between semantic and statistical reasoning techniques. The proposed methods will be validated using real data gathered in our pilot homes.

### Keywords

Ambient Assisted Living, Context-Awareness, Data Mining, Statistical Models, Machine Learning, Ontologies.

### Applicant profile

- Master Degree or Engineer Student (last year of studies).
- Skills in machine learning and ease in programming.
- Familiarity with one or more of the following is appreciable: data mining techniques and unsupervised learning, semantic web, triplestore, Linux.
- Availability for 5 to 6 months starting in the first semester of 2014.

**Gratification:** About 800€ net per month



Image & Pervasive Access Lab

1 Fusionopolis Way  
#21-01 Connexis, South Tower  
Singapore 138632

Tel. (65) 6408 2542

Director. (65) 6408 2536

Fax. (65) 6776 1378

secretariat@ipal.cnrs.fr

www.ipal.cnrs.fr