

Sujet de stage (1^{er} semestre 2024)

Titre	Developing ontology approach for elderly people habits monitoring for frailty detection
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Mots clés	Ontologies, ADL, frailty detection, data fusion, uncertainty
Descriptif du sujet	<p>More and more elderly people prefer to live at home but securely; while living at home some signals of frailty may start but are typically detected late (e.g., after a distressful situation). By monitoring the person's habits, we are able to identify the baseline level and to detect slight changes. At the same time, we have more and more sensor at home that are used for domotics applications (i.e., light and heating automation); the information from these sensors can be an important source of information for monitoring the activities of the elderly without needing to install new monitoring systems. The aim of this research is to propose an adaptive physiological state monitoring system for elderly people living at home using existing and new sensors at home in order to provide a sustainable system. All information from sensors will be represented by a specific ontology and used by AI system in order to detect elderly frailty early but to also detect distress. The ontology representation will allow the easy addition or replacement of sensors and provide data fusion. The AI system will be composed of specific machine learning approaches in order to detect distress and frailty, but also help with decision-making by sending synthetic data to the users, family of the users and medical staff. This research work is in the framework of an existing collaboration between laboratories from Sorbonne Université - SU (BMBI, GEEPS, LIP6) and Waterloo University (Ubilab, CBB). Two experimental data bases are available: the first one is on the eBioMed platform (UTC), a fully equipped laboratory with different sensors allowing for scenarios testing; the second one is at the Research Institution for Aging (RIA) Waterloo, which has a fully equipped apartment and uses elderly volunteers and who can live there for a specified period.</p>
Profil recherché	M2 or TN10 in AI or Data processing
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