

# Multimodal interactions with IOT for disabled people

IMT Atlantique



**NICOLAS BAUDIN**  
INTERNSHIPS IN FRANCE INITIATIVE

Name of the hosting institution in France	IMT Atlantique
Name of the host laboratory / research team	Lab-STICC équipe IHSEV/INUIT
Address	Technopôle Brest-Iroise CS 83818 – 29238 Brest Cedex 3
Web site	<a href="https://www.labsticc.fr/en/index/">https://www.labsticc.fr/en/index/</a>
Name of the supervisor	Thierry Duval
Function	Full Professor of Computer Science – co leader of the IHSEV team of the lab-STICC Lab
Email	thierry.duval@imt-atlantique.fr
Phone number	+33 6 71 04 48 64

## Internship offer

Topic of the internship (title)	Multimodal interactions with IOT for disabled people			
Proposed dates of the internship*	Start	2020-12-01	End	2021-05-31

\* The supervisors have indicated the dates proposed are flexible and are able to be postponed subject to COVID-19 border closures.

### Scientific and academic objectives of the internship (detailed description of the internship content, work expected from the intern and expected outcomes):

In the context of IoT, we expect people to be able to use different interaction modalities in order to best use the interaction capabilities of the ambient system. Indeed, the interactions modalities of the system (tactile, vocal, sound, gesture, dedicated devices) should be adapted dynamically to the context, including the noise (maybe no voice and sound in a noisy environment), the lighting (no gestures if you are in the dark), but also the capabilities of the users (no visual modes for blind people, no gestures for people with strong physical disabilities, no sound for deaf people), and so on. We are currently working with Orange Labs (in Rennes) on this topic with a PhD student; the objective is to build a framework making it possible to build such multimodal interactive systems in the IoT context. While the main use-cases of the Ph.D. are the deployment of such applications in a professional context, the objective of the internship would be to study if this framework could also be deployed in a personal context for old or disabled people. To do this, we can use our living lab, which is an apartment with many sensors and actuators (such as a sensitive floor, optical trackers, smart devices, interactive lightswitches) and propose new interaction modalities for its virtual inhabitants who are supposed to be old or disabled. So we will have to design some typical use-cases and make sure that they are valid when we change the context of use, which can lead to making some proposals for changes in our multimodal framework.

Name of industrial partner	Orange labs
Role of the industrial partner	The work is related to an ongoing work between Lab-STICC and Orange Labs through a CIFRE Ph.D. student.
Main contact at the French industrial partner	Anthony Foulonneau
Email	anthony.foulonneau@orange.com
Name of the Australian partner institution	University of South Australia
Name of lab/department/team involved in the Collaboration at the Australian partner institution	Advanced Computing Research Centre – the Wearable Computer Lab
Main contact in the Australian partner institution	Bruce Thomas
Function	Full Professor - Head of the Wearable Computer Lab
Email	Bruce.Thomas@unisa.edu.au

Outside of this ongoing collaboration, will applications coming from students of other eligible Australian universities be considered by the hosting institution in France?	Yes
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## Expected profile of applicant

Level of study	Master or Bachelor with honours
Discipline	Computer science
Required qualities, knowledge and skills	Human-Computer Interaction, Computer Graphics, 3D, software development with Object Oriented languages (such as C++, Java, C#)