



# CATIE

## Presentation of CATIE

CATIE (Centre Aquitain des Technologies de l'Information et Électroniques [www.catie.fr](http://www.catie.fr)), was created in 2014 on the ADEISO's initiative and on the impulse of various academics' players as well as on the Aquitaine Region's. CATIE is a non-profit organization which aim is to support Aquitaine companies when adopting and integrating digital technologies in their economic development. CATIE takes place at the technologies' level and its skills are mainly technical ones. The centre is closely linked to Digital Aquitaine and it complements local measures, aimed at sustaining companies, by focusing on technological transfers needs. In the centre of the university campus, the CATIE is an applied research and technological development centre that supports companies and especially small and medium ones. On products and/or services life cycle and mainly on innovative processes, CATIE is providing human and material resources which complement those of companies and laboratories. It also provides an industrial know-how in system integration. CATIE is closely connected both with local academic research centres and local companies. The technology centre plays an important role in contributing to the effective transfer of innovations into products and services. It also contributes in advising laboratories on companies' future interests and technological requirements. For example, CATIE provides technology transfer services for topics that will be soon on the market (see "CATIE services") or it participates to joint projects by developing technological bricks that it will then transfer. We can intervene in the following fields:

- Research and Development services, prospective research and expertise
- Access to optimized and proven technological bricks to be integrated into products
- Supervised access to CATIE shared means or Aquitaine laboratories/schools resources
- Individualized support for the transition from R&D to industry especially for small and medium companies
- Joint R&D platforms

## Project Information

### Topic:

Robotics in Application Areas and Coordination & Support ID: ICT-46-2020

Research and Innovation boosting promising robotics applications ID: ICT-47-2020

### Field of expertise related to the topic:

The project will benefit from the expertise of CATIE Robotics' members (<https://robotics.catie.fr/#Team>). Created to explore service robotics from an application-driven perspective, the team prioritises secure and robust behaviours in its development strategy (cf TDPs on the website). In 2019 CATIE Robotics successfully participated in 3 major international service robotics competitions: ranked 2nd in GermanOpen's RoboCup@Home, 3rd in Sydney's RoboCup@Home and second in SciRoc's Episode 7 challenge.



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## Potential contribution to the project:

- State of the art reviews in electronics, robotics and human factors.
- Development of open source ROS based implementations tested on our robots: a TIAGo from PAL Robotics and a M0609 from Doosan.
- Design and build of a multimodal communication system.
- Access to specific test benches relevant to future applications, such as domestic robotics competitions.

## Role in the project:

Technology development and dissemination

## Project idea: Safety and robustness in cobots

Improving safety in collaborative robot applications by integrating state of the art methods from complementary fields: sensors, control theory and human factors.

## Project description:

The project aims at improving safety using three complementary dimensions:

1. Clarify the cobot's intentions with a multimodal system
2. Identify, test and implement specific sensors to anticipate hazardous situations
3. Trigger unobtrusive safety protocols and smoothly resume operation when possible.

This approach can be used for applications based on autonomous navigation, arm movement or both simultaneously.

Developments will be done using a mobile service cobot relevant for forthcoming domestic and industrial applications. Tests will be conducted both in our premises and at the RoboCup@Home competition. The project has a human-centered approach. Insights to objectively measure the perception of safety will be provided alongside data from our tests. Contributions will be as hardware agnostic as possible, a ROS based implementation will be released.

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