

Natural language applied to interactions in a SONAR environment

CentraleSupélec



NICOLAS BAUDIN
INTERNSHIPS IN FRANCE INITIATIVE

Name of the hosting institution in France	CentraleSupélec
Name of the host laboratory / research team	Institut d'Electronique et de Télécommunication de Rennes / FAST Team
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Web site	http://www.centralesupelec.fr/fr/institut-deelectronique-et-de-telecommunications-de-rennes-umr-cnrs-6164
Name of the supervisor	Renaud Séguier
Function	Researcher
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Internship offer

Topic of the internship (title) Natural language applied to interactions in a SONAR environment

Proposed dates of the internship **Start:** 2019-10-01 **End** 2020-03-31

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

The goal of this internship is to evaluate the potential of natural language interactions for SONAR applications. The intern will study carefully state-of-the-art advances in natural language interpretation applied to industrial context. He will work under the supervision of a software engineer, at Thales DMS premises in Sophia-Antipolis (France). In the sonar software development group, the intern will work on the possibility to integrate automatic speech recognition (ASR) as a set of tools to ease the interaction of the navy officers with their sonar console while in operation. Foreseen implementations are:

1) A Direct Voice Input allowing simple entries (commands) to issue instructions or navigate through menu/screen configuration. As a first step, specific commands can be defined to reduce the recognition learning patterns. As a second step, natural language speech recognition performances may also be analysed.

2) A transcription module enabling speech recognition and translation into text. This would allow to add information on a specific object, or comment/context on a situation displayed on the screen. As a first step, speaker independent module may be selected as it does not need any training. The intern will first analyse available software modules (COTS/OSS) allowing speech recognition before selecting one and implementing the foreseen applications within an existing sonar MMI (JAVA 8). Tests will analyse the performance of the ASR module in term of % of success and its robustness with respect to ambient noise algorithm. A final report will describe the whole work and the result achieved.

Name of industrial partner	Thalès Group
Role of the industrial partner in the internship project	Main host of the intern in Sofia-Antipolis (South of France)
Main contact at the French industrial partner	Pascale Solé
Main contact at the French industrial partner's branch in Australia (if applicable)	Tim Cain
Name of the Australian partner institution	Flinders University
Name of lab/department/team involved in the collaboration at the Australian partner institution	Computing and Mathematics
Main contact in the Australian partner institution	Tony Kyriacou
Function of the main contact in the Australian partner institution	Defence Partnership Director
Email address of the main contact in the Australian partner institution	tony.kyriacou@flinders.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?	No

Expected profile of applicant

Level of study	Bachelor's degree with honours, Master or PhD student
Discipline	Applied Mathematics, Computer Science, Electrical Engineering or related disciplines
Required qualities, knowledge and skills	Machine Learning, Numerical Optimization, Programming Skills
Other specific eligibility criteria	Australian citizenship