Multi-Robot Systems

Université Polytechnique Hauts-de-France

FRANCE EXCELLENCE NICOLAS BAUDIN

Name of the hosting institution in France	Université Polytechnique Hauts-de-France
Name of the host laboratory / research team	LAMIH UMR – CNRS 8201 Laboratoire d'Automatique de Mécanique et d'Informatique industrielles et Humaines
Address	LAMIH UMR – CNRS 8201, Université Polytechnique Hauts-de-France, Campus Mont Houy, 59313 VALENCIENNES Cedex 9
Name of the supervisor	Pr. Michael Defoort
Function	Full Professor in Automatic Control
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Internship offer

Topic of the internship (title)	Design and Implementation of a multi-robot system in hazardous industrial facilities			
Proposed dates of the internship	Start	02/09/2024	End	20/12/2024

Scientific and academic objectives of the internship:

As part of the ANR project I2RM, the proposed work consists of designing and implementing a navigation scheme for the cooperative navigation of a multi-robot system in hazardous industrial facilities. In close collaboration with a team of researchers, the master student will:

Design safe decentralized collision-free path planner for mobile robots: A major part of the autonomy of agents holds on the capacity of planning feasible path in a particular environment. In hazardous industrial facilities, the environment contains some areas in which the agent cannot move. In the context of multi-robot systems, it is not only necessary to ensure a coordinate navigation of the fleet of agents in order to avoid collisions with obstacle but also to minimize the number of collision risk between robots.

Implementation: One crucial objective of the master student is to implement the developed planning scheme on a lab demonstrator (mobile robots MiR100) using ROS.

Industrial partner

Does the project involve a French industry partner?	No
Name	/
Role of the industrial partner in the internship project	/
Main contact	/
Email	/
Main contact industrial partner's branch in Australia	/
Email	/

Australian partner

Is the internship project proposed in the framework of an existing collaboration with an Australian partner university?	No
Name of the Australian partner institution	/
Lab/department/team involved in the collaboration	/
Main contact in the Australian partner institution	/
Function	/
Email	/
Outside of this ongoing collaboration, will students from other Australian universities be considered by the hosting institution in France?	[Select Yes/No]

Expected profile of applicant

Level of study	Master
Discipline	Automation Engineering
Prerequisite knowledge, qualities and skills	Applicants must have a background in automation. The candidate must be autonomous and have a rigorous scientific approach.
Language of Internship	English
Other specific eligibility criteria	/