ID de Contribution: **78** Type: **Bourse Excellence : Mobilité entrante**

Design, Learning, and Experimental Validation of Safe Pursuit-Evasion Strategies for Multi-Agent Autonomous Robots

jeudi 2 juillet 2026 14:40 (20 minutes)

Pursuit–evasion games provide a stimulating framework for studying decision-making, control, and interaction among autonomous agents. They involve pursuers and evaders evolving in complex environments where speed, safety, and adaptability are critical. These problems have direct applications in mobile robotics, autonomous navigation, security, and multi-robot cooperation. The objective of this project is to design and evaluate control and learning strategies for autonomous agents engaged in pursuit–evasion scenarios.

Three main directions will be explored: (1) dynamic modeling of the agents, (2) implementation of predictive control strategies (MPC) and safety-critical Control Barrier Functions (CBFs), and (3) integration of reinforcement learning (RL) approaches to enable adaptation in uncertain environments.

The methods will first be developed and benchmarked in simulation (Python,MATLAB/Simulink), then validated in a ROS2/Gazebo environment, with possible experiments on TurtleBot platforms.

Master

Automatique et Robotique

Laboratoire d'accueil

LAGEPP

Composante ou Département Composante

MECA

Auteur principal: HABLY, AHMAD (LAGEPP)

Co-auteur: AHMED, FAYEZ SHAKIL (LAGEPP - Université Lyon 1)

Orateurs: HABLY, AHMAD (LAGEPP); ERROUJI, Oussama

Classification de Session: Jeudi après midi