UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

PHD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING

Seminar announcement

Tuesday 15 April 2025, Time: 10:45 - 12:00
Room NA-II-A-8, Floor 2 - Via Nuova Agnano, 30 - NAPOLI - (TEAMS Code: xjtruoz)

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Robot Autonomy among Decision-Making Agents

Abstract: We move towards an era of smart cities and factories, where autonomous vehicles will provide on-demand transportation while making our streets safer, and mobile robots will automate processes in coexistence with humans. The motion plan of mobile robots and autonomous vehicles must, therefore, account for the interaction with other agents, whether robots or humans, and consider that they are, as well, decision-making entities. For example, when humans drive a car, they are fully aware of their environment and how other drivers and pedestrians may react to their future actions; or a team of mobile manipulators may coordinate to carry large objects on the factory floor. Towards this objective, I will discuss several methods for perception, motion planning, task planning and multi-robot coordination that a) account for the inherent uncertainty of dynamic environments and b) leverage constrained optimization, game theory and machine learning to achieve interactive behaviors with safety guarantees. The methods are of broad applicability, including autonomous vehicles, autonomous vessels, aerial vehicles, and mobile manipulators.

Lecturer short bio: *Javier Alonso-Mora is an Associate Professor at the Cognitive Robotics Department of the Delft University of Technology, where he leads the Autonomous Multi-Robots Lab. He received his Ph.D. degree in robotics from ETH Zurich, in partnership with Disney Research Zurich, and he was a Postdoctoral Associate at the Computer Science and Artificial Intelligence Lab (CSAIL) of the Massachusetts Institute of Technology. His research focuses on navigation, motion planning, learning and control of autonomous mobile robots, with a special emphasis on autonomous vehicles, multi-robot systems, mobile manipulation, on-demand mobility, and robots that interact with other robots and humans in dynamic and uncertain environments. He currently serves as associate editor for IEEE Transactions on Robotics and for Springer Autonomous Robots. He is the recipient of a talent scheme VENI award from the Netherlands Organisation for Scientific Research (2017), the ICRA Best Paper Award on Multi-robot Systems (2019), an ERC Starting Grant (2021) and the IEEE T-ASE Best Paper Award (2024). His work on ride-pooling has led to a commercial company, The Routing Company.*

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