CICLO DI SEMINARI
DI AUTOMATICA E ROBOTICA

📍 AULA MAGNA
DIPARTIMENTO DI INGEGNERIA

A.D. 1308
unipg
UNIVERSITÀ DEGLI STUDI
DI PERUGIA

SLAM AND SENSOR FUSION IN AGRICULTURAL ROBOTS
19/12/2024, ore 15:00

Speaker

Matteo Matteucci
Department of Electronics, Information and Bioengineering
Politecnico di Milano

Abstract

Agricultural robotics has gained momentum in recent years, transforming modern farming by automating labor-intensive tasks and paving the way for precision agriculture. This transformation addresses the pressing challenges posed by workforce shortages in the agricultural sector while simultaneously enhancing efficiency, precision, and sustainability. By integrating artificial intelligence and robotics, traditional farming practices can evolve to meet the demands of a growing global population and the need for environmentally conscious solutions.

This seminar begins with an overview of robotics's role in agriculture, along with a presentation of ongoing research activities at the Artificial Intelligence and Robotics Laboratory of Politecnico di Milano. The focus then shifts to the domain of robot perception, emphasizing Simultaneous Localization and Mapping (SLAM) and Sensor Fusion as technologies that enable autonomous robots to construct multidimensional, realistic representations of complex agricultural environments, such as crops and orchards.

The seminar will also introduce Gaussian splatting, a novel and promising technique in robot perception. This method facilitates efficient representation and processing of spatial data, allowing agricultural robots to operate with greater accuracy and adaptability in diverse and dynamic terrains. By combining SLAM, Sensor Fusion, and Gaussian Splatting, autonomous systems can increase their environmental awareness and thus decision-making capabilities.

ISARlab