ARTIFICIAL INTELLIGENCE

PNRR/Comau/Centro interdipartimentale SmartData - Multi-modal Learning for Reliable and Efficient Robotic Object Manipulation

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] COMAU S.P.A. [P.iva/CF:00952120012] Centro Interdipartimentale SmartData@PoliTO

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Context of the research activity	Development of reliable and efficient robotic object manipulation models by leveraging 2D and 3D vision and natural language. Progetto finanziato nell'ambito del PNRR - PNRR M4C2, Investimento 1.3 - Avviso n. 341 del 15/03/2022 - PE0000013 Future Artificial Intelligence Research (FAIR) - CUP E13C22001800001

Objectives	Robotic manipulation has a broad range of applications, such as industrial automation, healthcare, and domestic assistance. Existing learning approaches rely on a high level of supervision and do not generalize across different scenarios. Moreover, the models are computationally expensive, especially when involving multiple perceptual modalities that are essential to characterize the observed scene and actions. This project will be dedicated to developing reliable and efficient robotic object manipulation models by leveraging 2D and 3D vision as well as natural language.

Skills and competencies for the development of the activity	The research activity will ground in Machine Learning and Computer Vision for Robotics. Knowledge of calculus, probability and strong analytical skills are required to manage a large amount of data and design learning algorithms. The candidate is expected to demonstrate strong engineering and programming skills (Python) and proficiency in technical writing and communication. Previous experience with robotics applications and Robot Operating System (ROS) are not required but is a plus.