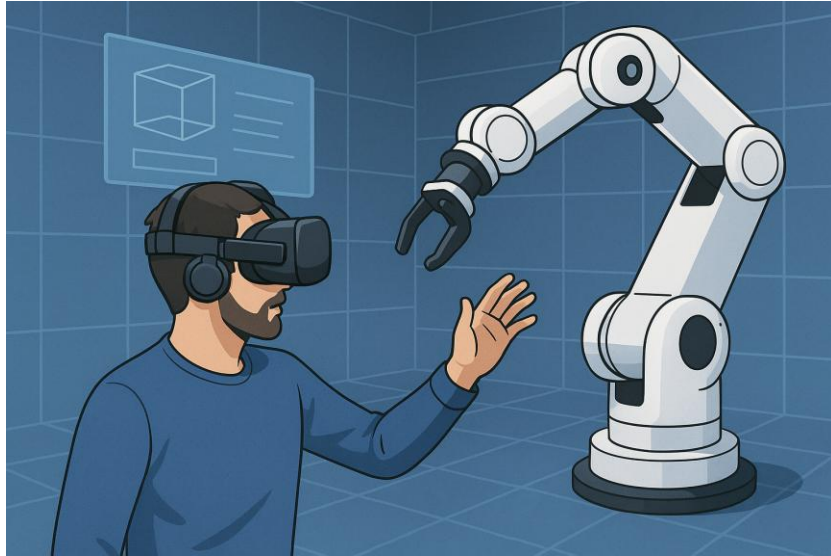




Title: Development of a Virtual Reality (VR) Environment for Human-Robot Collaboration in Unity3D

Promotor(s): Prof. Dr. ir. Ilias El Makrini

Research Group: Robotics & MultiBody Mechanics Research Group

This project aims to design and implement a virtual reality (VR) platform that allows immersive simulation of human-robot collaboration (HRC). The focus is to create a Unity3D-based environment where a user, equipped with a VR headset and motion controllers (e.g., HTC VIVE Pro, Manus Glove), can interact with a simulated robotic arm (e.g., FRANKA/PANDA) to complete collaborative tasks such as object selection, gesture-based commands, or coordinated manipulation.

The user's actions (e.g., pointing, hand signals, task demonstrations) are captured and interpreted to guide robot responses. For instance, the robot can identify and pick an object indicated by user gestures, or mimic a demonstrated motion path (e.g., painting). This setup supports safe testing, training, and prototyping of human-robot workflows in virtual environments.

The environment will be developed in Unity3D using C#, with interactive feedback and usability considerations.

Requirements: Unity3D, C# language

Available equipment: HTC VIVE Pro, Manus Glove

Number of possible students: 1

Assistant/PhD student that will guide the student:
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