



Title: Robots and Unity3D in C#: Design and Assessing New Control Mechanisms

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

Research Group: MECH

This project explores different methods for controlling robots using Unity3D and C#. Unity3D offers a flexible simulation environment, while C# provides powerful tools to implement control strategies. These methods are crucial for various applications like manufacturing, healthcare, and entertainment, where precise and efficient robot control is vital.

The goal is to implement and compare various control techniques for robots in Unity3D, focusing on: Direct input (keyboard, joystick) Autonomous control (pathfinding, AI) Sensor-based control (virtual sensors) Each method will be analyzed based on precision, responsiveness, and efficiency in simulated real-world scenarios.

Key control strategies include:

- Manual Input: User control via keyboard or joystick.
- Autonomous Control: Robots will navigate using AI and pathfinding algorithms.
- Sensor-Based: Robots will respond to virtual sensors like proximity and gyroscopes. These will be developed using Unity's physics engine and C# scripting.

The project will provide a comparative analysis of robot control methods, identifying strengths and weaknesses. This will contribute to future research in robotics and automation, demonstrating practical real-world robot behaviors in Unity3D.

Timeline:

Weeks 1-3: Literature review and method selection Weeks 4-7: Implement manual control Weeks 8-11: Develop autonomous control Weeks 12-15: Implement sensor-based control Weeks 16-18: Testing and final report.

Requirements: Well knowledge about Unity3D, C#

Number of possible students: 1

Assistant/Supervisor: Dr. ir. Mohsen Omid & Prof. Dr. ir. Bram Vanderborght

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