

Announcement for Research Project / Master's Thesis

VR-Based Demonstration Collection and Learning for Dual-Arm Robotic Assembly with Diffusion Policy

Collecting high-quality demonstrations is a key challenge for learning complex robotic assembly tasks. VR systems enable intuitive teleoperation and can be used to generate training data for robot learning. This is especially relevant for contact-rich dual-arm assembly tasks with force interaction.

1 Objectives

The goal of this thesis is to develop and evaluate a VR-based teleoperation and data collection pipeline for dual-arm Franka robots and to use the collected demonstrations to train a Diffusion Policy for a dual-arm assembly task with timber building components.

2 Scope of Work

- Build a teleoperation interface using VR Headset and ROS 2 for dual-arm robot control
- Design and record demonstrations of a dual-arm assembly task, including force/contact-related signals where available
- Prepare the dataset and train a Diffusion Policy model for the task
- Evaluate performance (e.g., success rate, robustness, repeatability) and analyze failure cases



3 Requirements

- Strong self-motivation and willingness to familiarize yourself with new topics
- Basic knowledge of, or interest in, robot learning

4 Contact

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