

Bachelor's / Master's Thesis (m/w/d) Utilizing a haptic glove as a teleoperation device to provide corrective feedback in interactive imitation learning for dexterous manipulation tasks

Problem formulation

Dexterous manipulation tasks in robotics require precise and adaptive learning mechanisms, especially in interactive imitation learning frameworks. While teleoperation devices, such as haptic gloves, offer a direct and intuitive control method, their potential to provide real-time corrective feedback to improve learning outcomes remains underexplored. Incorporating corrective feedback through a haptic glove could significantly enhance the accuracy and effectiveness of learning complex manipulation tasks.

Task definition

This thesis will explore using a haptic glove as a teleoperation device to provide corrective feedback in interactive imitation learning frameworks for dexterous manipulation. The research will involve designing a system where the haptic glove controls the robot hand and delivers real-time corrective feedback to guide the learning process. The effectiveness of this approach will be evaluated through experimental studies, focusing on improvements in task accuracy, learning speed, and the overall quality of manipulation skills acquired.



You shall offer

- Solid knowledge base and experience in deep learning, and robotics.
- Coding skills in Python and C++.
- Experience with ROS

We will offer

- The most state-of-the-art technologies in deep learning and computer vision.
- Working in a lab with a Germany-wide unique Shadow Teleoperation System
- Tight support from supervisors, including a workshop on scientific writing.

Research area:

AI & Robotics

Focus:

- Experimental
- Theoretical
- Practical
- Simulation
- Construction (CAD)

Study program:

- Maschinenbau
- Mechatronik
- Elektrotechnik
- Informatik
- Informationswirtschaft
- Wirtschaftsingenieurwesen

Begin: From now on

If you are interested, please send us an e-mail with your **curriculum vitae** and a current **transcript of records**.

Contact person:

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Please note that your data will be treated in accordance with the applicable data protection regulations as part of the application process.