SCALABLE INPUT DEVICE FOR DEXTEROUS TELEOPERATION

TECHNISCHE UNIVERSITÄT DARMSTADT

Supervisors: Omar Elsarha & Janosch Moos; L1|01 Room 212, Tel.: 16-23131, rob@ims.tu-darmstadt.de

External supervision: Dr.-Ing. Yikai Tao - **Agile Robots SE**

BACHELOR THESIS | MASTER THESIS | ADP

AEROSPACE ENG. | MECH. ENG.

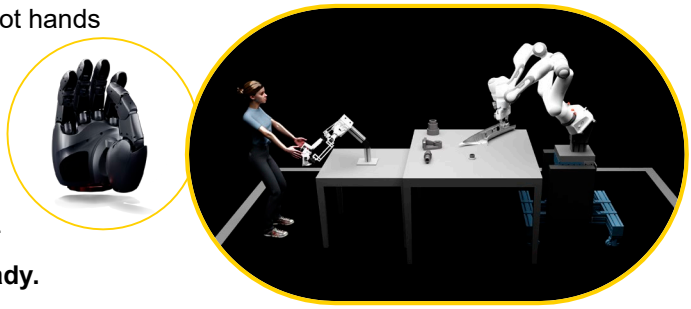
- Sustainable Use of Resources
- Clean Energy and Process Engineering
- Future Automotive Systems
- Digital Based Production and Robotics

Motivation

Agile Robots SE is developing a kinematic replica for teleoperation of a humanoid with high DoF hands for data collection used in imitation learning. The current prototype provides two single-trigger handles to signalize grasping commands. This restricts the complexity of the teleoperations and, therefore, the tasks that the humanoid learns through imitation learning. This project aims to develop a multi-trigger handle to capture more nuanced commands.

Task requirements

- Development of handles with multiple DoF of continuous input:
  - Ability to signalize different robot hand motions and their combinations
  - Input mapping to multiple (scripted) grasps of robot hands and their combination
  - Compliance to the given hardware interface
- PCB-Design for wireless use cases (optional)



Qualifications

- Experience and interest in Robotics and Electronics.

The ADP can be started as soon as the group is ready.