

Master Thesis

Towards a Systematic Selection of Interaction Modalities in Human-Robot Collaboration

Background:

Multimodal interaction in human-robot collaboration is often studied in an explorative manner, with limited understanding of when and why a particular modality is suitable. This leads to the following question: Is it possible to establish generalizable mappings between task characteristics and interaction modalities? This thesis investigates whether certain task characteristics can systematically guide the selection of interaction modalities.

Task and Objectives:

- Literature research on human-machine interaction and task characteristics in human-robot collaboration
- Design and conduct a user study investigating interaction modalities in combination with different task characteristics
- Develop and implement suitable collaborative tasks and interaction concepts for the user study
- Evaluate effects of interaction modality on task performance and other user-centered metrics

Requirements:

- Interest in human-robot interaction and experimental research
- Proficiency in data collection, statistical analysis and interpretation
- Motivation to develop and evaluate novel interaction concepts
- Programming skills (e.g. Python) are beneficial
- Good English and/or German language skills

Start date:

As soon as possible

Released on:

01.10.2026

Contact person:

Sarah Feigl

sarah.feigl@tum.de

Room MW 3305

