Hauptseminar “Research Topics for Intelligent Interactive Robots” SS25

In this seminar, you will explore recent research trends in robotics and learn how to work with scientific literature efficiently and effectively.

Interactive robots collaborating intelligently with humans are deployed in a growing number and variety of real-world applications. Key research areas driving this progress include 3D semantic environment learning, imitation learning, multimodal foundation models, human behavior modeling and transfer, dexterous grasping, mobile manipulation, and physical and social human-robot interaction.

We will present a selection of exciting research trends for students to choose from as their topic. Students will conduct a **comprehensive literature survey** in their chosen area, **identify** key papers, **analyze** their contributions, and **understand** their interconnections. They will share their findings through both a **presentation** and a **written report**.

We will address questions such as:

- **Key contributions**: What are the most influential papers in a research area, and why are they significant?
- **Hypotheses and evaluation**: What are the underlying hypotheses of these papers and their experimental designs to test them?
- **Connections and context**: How do these papers relate to others in the field -- conceptually, practically, or chronologically?
- **Scientific origins**: What are the roots of their scientific ideas and inspirations?
- **Types of impactful papers**: Beyond methodological papers, are there other significant types, such as datasets, benchmarks, or survey papers?
- **Limitations**: What are the flaws or limitations of these papers or the research area as a whole?
- **Future directions**: How could you advance the current state of the art in this field?"

During the seminar, students are expected to contribute with questions, answers, comments, and observations. We emphasize the importance of everyone attending class and actively engaging in all discussions.

The final mark is a combination of three grades: presentation, report, and active participation.

Information

- Organizer: Prof. Kai Arras
- Co-Organizers: Till Hielscher, Dennis Rotondi, Fabio Scaparro, Tim Nickel, Andrey Rudenko
- Language: English

The seminar is limited to 12 students, first come first serve.