

## Advanced seminar “Research Topics for Intelligent Interactive Robots”

Intelligent interactive robots with comprehensive scene understanding for complex tasks is a growing research field at the intersection of robotics, AI and human-robot interaction. Example problems include 3D semantic environment modeling and learning, sensory perception and analysis of humans, human behavior imitation, learning and transfer, as well as automated exploration of interaction design spaces.

### Teaching Goals

In this seminar, students will learn to **search for, read, present and summarize** a scientific paper in those fields. We will offer a selection of recent, particularly relevant publications from which students will pick their preferred paper and search for more related papers on their own. During the seminar, participants are supposed to contribute with questions, answers, comments and observations.

Learning to efficiently read a paper and to find related work in a given area are critical skills taught and practiced in this seminar. You will learn to deal with questions such as:

- What is the main research problem addressed in the paper?
- Why is this problem important?
- What are the novel ideas and key concepts proposed by the authors?
- How does the paper relate to other papers?
- Are there concepts or methods in the paper that are unclear?
- What are the flaws or limitations of this paper?
- How would you extend this work?
- What are key papers in a given area?
- Who are the important authors in a given area?
- What are the top conferences and journals in that area?

### Tasks

- In the area of your paper, conduct a literature review, find at least three important related papers.
- Present and discuss your paper and the result of the literature review in a 20-30min talk (+10 minutes discussion).
- Attend the seminar and actively participate in the discussions. Read all presented seminar papers in a quick "first-pass" fashion (you will learn how to do this).
- Write a summary about your papers which does not exceed 7 pages (latex, a4wide, 11pt). Longer summaries will not be accepted.
- Talk and summary can either be in German or English.

The final mark is a combination of four factors: literature review, presentation, summary report, and active participation during the seminar.

### Organization

- Organizer: Prof. Kai Arras
- Co-Organizers: Till Hielscher, Dennis Rotondi
- Language: English

The seminar is limited to 10 students, first come first serve.