

Masterarbeit

Investigation of human behavior using virtual reality

Human-robot teaming is becoming more prevalent in today's society because they offer both physical and emotional support. We are particularly interested in enhancing robots that assist people with motor impairments in activities of daily living. The ideal assistive robot should be able to not only support users but also prevent injury in a potentially dangerous situation. To do this, the robot requires a cognitive understanding of the task, the ability to predict what the human may do, and execute human-like behavior to complete a task. Thus, we developed a cognitive architecture-based model for the robot in a tea-making task. To improve this model, we aim to integrate eye tracking and motion tracking data from the virtual reality tea-making task.



Virtual reality tea-making setup

Project Assignment

- Part 1
 - Conduct literature review on human-robot interaction
 - Set up virtual reality tea-making task with eye-tracking and motion tracking
 - Conduct tea-making user-study
 - Analyze results to improve cognitive architecture model
- Part 2
 - Design a “*buying* a cup of tea” scene in virtual reality
 - Implement multi-players in the scene
 - Connect prosthesis and sensor glove to this VR setup
- Document and present results

Requirements

- Experience with building VR environments in Unity with C#
- Experience with Vive headset or equivalent
- Experience with cognitive architecture models
- Experience in conducting user-studies is preferred

References

Klein, G., Snowden, D., & Pin, C. L. (2011). Anticipatory thinking. In *Informed by knowledge* (pp. 249–260). Psychology Press.

Beginn: immediately

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