



Participant Consent Form for a study exploring the dynamics of human-to-human collaboration during joint task execution using augmented reality

Thank you for considering participating in this study. Before you decide to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you want to participate.

Purpose of the study

The purpose of the study is to investigate the collaboration of two people collaborating on the execution of a joint task inspired by industrial applications using augmented reality (AR).

The session lasts about an hour. Further details are provided below.

1. **Why have I been chosen?** As the study involves a task inspired by industrial applications, we aim to assess the AR application with a convenience sample resembling the target group.
2. **Do I have to take part?** No, participation is entirely voluntary. If you decide to participate, you can still withdraw from the study at any time without giving any reasons.
3. **Who is organising and funding the study?** The experiment is organised by Dr Thomas Bohné, Dr Sławomir Tadeja, and Gereon Elvers.
4. **What will happen during the study?** You will first be introduced to the study procedure. You will then be asked to complete a questionnaire on your demographic data and about your previous knowledge and experience with AR/VR. Next, you will be paired with another participant, introduced to the off-the-shelf AR headset (Microsoft HoloLens 2 or Oculus Quest 3) and go through the calibration process.

You will have a few minutes to familiarize yourself with the headset and the shared AR environment. Next, you will be asked to assemble a simplified, scaled-down design of a bridge by collaborating with your partner through the user interface displayed within your field of view through the headset.

The task will be repeated four times. After each trial, you will complete a set of questionnaires. Upon completing all tasks, you will be asked to fill out an additional

questionnaire and participate in a semi-structured interview. The questions are designed to explore the dynamics of collaboration you experienced during the task.

5. **What are the possible risks of taking part?** You might experience visually induced motion sickness, i.e., a potential side effect of using a head-mounted display (HMD) (headset). However, this is very rare. Should you feel uncomfortable during the experiment, please immediately inform the study organiser, and suspend the experiment execution. You may end the experiment at any time.
6. **What happens at the end of the study?** At the end of the study, there will be a chance for you to provide any comments or questions that you may have.
7. **What will happen to the study results?** The anonymous results (e.g., contents of the questionnaires, audio and video recordings, assembly time, and other captured numerical and non-numerical data) will be written up and published in academic papers, student's thesis and presented at research meetings.
8. **What are the possible benefits of taking part?** The results of this study may contribute to science and, therefore, improve the future design of AR-based systems for collaborative industrial settings. Your time and effort will also be reimbursed with a £10 voucher.
9. **Anonymity – will I be identified in any publications resulting from the study?** The data will be anonymised and any references to the data will be done so that you are not identifiable.
10. **What if there is a problem?** If you have a concern about any aspect of this study, you can speak with the researcher, who will do their best to answer your questions. If you remain unhappy and wish to complain formally, you can do this by contacting (Dr Rob Phaal, Director of Research, Department of Engineering, University of Cambridge at +44 (0) 1223 765824)
11. **Who has reviewed the study?** The Department of Engineering Ethics Committee has reviewed this study.

Contact Information

Gereon Elvers
ge311@cam.ac.uk
University of Cambridge