

Informed Consent Form for Participation in a Research Study

Study Title: Evaluation of the Effect of Different Feedback Modalities on Shooting Accuracy in Virtual Reality

Research Institution: INESC-ID/IST **Principal Investigator:** João Cordeiro

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<Johanna.walker@tecnico.ulisboa.pt> **Ethics Approval Number:** [TBD] **Study Duration:** 1h per session with at most 20 minutes in immersed (VR) setting.

Purpose of the Study:

You are invited to participate in a research study investigating three different feedback modalities and combinations of these, as well as two different trigger button configurations, on shooting accuracy in a virtual reality (VR) environment. The goal of this study is to assess the effectiveness of these feedback methods in tasks requiring aiming and shooting at targets. Additionally, we aim to explore their influence on task performance, user experience, ease of use, and potential side effects, such as cybersickness.

Study Procedures:

If you agree to participate, you will be asked to complete the following:

1. Perform a series of tasks in VR using the MetaQuest2 headset. These tasks will be aiming at moving targets with different feedback modalities using different trigger buttons for shooting.

Trigger buttons:

- Trigger on same hand as used for aiming
- Button on opposite hand as used for aiming

Feedback modalities:

- Visual feedback
- Haptic Feedback
- Auditory Feedback
- Visual and Haptic Feedback
- Visual, Haptic, and Auditory Feedback

2. Your interactions will be recorded, including the time to complete tasks, accuracy (distance from the center of the target), and subjective feedback using NASA-TLX and SUS questionnaires.
3. During the study, you will be asked to wear the VR headset and interact with the virtual environment while standing.
4. The session will last approximately 60 minutes; you may take breaks as needed
5. Your participation is voluntary, and you may withdraw without penalty.

Potential Risks:

There are minimal risks associated with this study, which may include mild discomfort, such as eye strain or motion sickness (cybersickness). You will be encouraged to take breaks or can quit the experience with no penalties, if needed.

Potential Benefits:

While participating does not directly benefit you personally, your involvement will contribute to the development of more intuitive and efficient VR interaction techniques, which could improve future professional applications.

Confidentiality:

All information gathered during the study will remain confidential. Your data, including recordings of your interactions in the VR environment, will be anonymous. Results will be reported without identifying individual participants.

Compensation:

There is no compensation.

Voluntary Participation:

Your participation in this study is entirely voluntary. You may decline to participate or withdraw at any point during the study without any negative consequences.

Contact Information:

If you have any questions about the study, you can contact the principal investigators: João Cordeiro <joao.m.g.n.cordeiro@tecnico.ulisboa.pt>, Johanna Walker <Johanna.walker@tecnico.ulisboa.pt>. If you have any concerns about your rights as a research participant, you may contact the IST ethics board at comissaoetica@tecnico.ulisboa.pt.

Consent:

By signing below, you acknowledge that you have read and understood this information, agree to participate in the study, and are at least 18 years old.

Participant Signature: João Cordeiro

Date: 9/1/2025