Improving the discoverability and guidance of mid-air hand gestures

Duration : 4-6 months
Level : Master
Team : Loki (Inria Lille – Nord Europe & CRIStAL)
Supervisors : Sylvain Malacria (sylvain.malacria@inria.fr)
Location : Inria Lille - Nord Europe (Villeneuve d'Ascq)
Note : can be followed by a funded PhD

This project in Human-Computer Interaction (HCI) consists in designing, implementing and evaluating . This internship is part of the ANR-funded project *Discovery*. If successful, the candidate will have the opportunity to further explore this research with a PhD.

Context

Modern interactive systems rely on interaction paradigms that strongly differ from conventional mouse and keyboard based interaction. This is notably the case of mixed-reality where users can perform hand gestures in mid-air. However, users must be aware of available gestures before hand in order to use them. In practice, this is a major obstacle to the adoption of these gestures. Even worse, they are at risk to not be used simply because users did not discover them thus trapping themselves in using sub-optimal strategies.

This master internship will investigate different methods to improve the discoverability and guidance of mid-air hand gestures in Mixed-Reality contexts.

Objectives

The candidate work will consist in:

- Review existing research regarding the discoverability and guidance of gestures, with a specific focus on mid-air hand gestures in mixed-reality
- Design novel interaction techniques that better communicate available gestures and guide users when performing them. Different options can be explored, from graphical representations to vibrotactile feedback and feedforward
- Implement a demonstrator in Mixed Reality where these interaction techniques can be used
- Run qualitative and quantitative user evaluations to investigate the benefits of the proposed interaction techniques

Although the initial motivation for this project is to explore the context of mixed-reality and mid-air gesture, it can be declined to other interactive contexts (typically wearable computing or touch-based interaction) depending on the candidate's expertise and technical skills. Depending on the progress of the project, the results may be submitted as a research paper.

Candidate

A successful candidate must be an excellent MSc student in computer science or equivalent, and show a great interest in performing high quality research in Human-Computer Interaction. He or she must demonstrate solid experience in software development, creativity, independence, team working and communication skills. An excellent level of technical and scientific English is required.

The candidate will join a vibrant and multicultural group of young researchers at Loki. Our students typically come from different horizons (Germany, Colombia, Canada, China, France). It is not required to speak French.

If interested in this project, simply e-mail Sylvain Malacria (sylvain.malacria@inria.fr) with the title of this internship as subject. All applications are welcome, regardless of age, gender, social or ethnic origin, sexual orientation or disability.