Design, implementation and evaluation of discoverable Graphical User Interfaces

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

This project in Human-Computer Interaction (HCI) consists in designing, implementing and evaluating novel Graphical User Interfaces (GUIs) that better foster the discovery of their available input methods and commands. 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. Typically, existing smartphones and tablets rely on touch-based or gestural interaction, whereas more modern interactive systems such as AR (Augmented Reality) or wearable computing rely on other paradigms such as mid-air interaction. In practice, these interactive systems suffer from a bad discoverability of their available input methods and corresponding commands. As a result, users tend to trap themselves in using sub-optimal strategies, simply because they are not aware of all the possible inputs and features.

This master internship will investigate how Graphical User Interfaces (GUIs) of modern interactive systems can be redesigned to better foster the discovery of their input methods (the actions that can be used to communicate with the system) and corresponding operations (commands and functionalities associated with these inputs).

Objectives

The candidate work will consist in:

- Produce a comprehensive framework of visual and haptic perceptual factors likely to influence the discovery of input methods in computing systems
- Produce a correspondance mapping between visual properties of objects and suggested user inputs
- Design and implement a collection of graphical widgets whose appearance and behaviour will foster the discovery of their corresponding input methods
- Run qualitative and quantitative user evaluations to investigate the benefits of the proposed solutions

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

Candidate

A successful candidate must be 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 experience or strong interest in software development. Creativity, independence, team working and communication skills are valuable advantages.

It is not required to speak French. A good level of technical and scientific English is also a plus.

If interested in this project, simply e-mail Sylvain Malacria (sylvain.malacria@inria.fr) and Gery Casiez (gery.casiez@inria.fr)