Investigating the human ability to cancel a planned motor action on tactile devices

Duration : 4-6 months
Level : Master
Team : Loki (Inria Lille – Nord Europe & CRIStAL)
Recruiter : Mathieu Nancel (mathieu.nancel@inria.fr), Sylvain Malacria (sylvain.malacria@inria.fr)

Context

“Interaction interferences” are a family of usability problems defined by a sudden and unexpected change in an interface, which occurs when the user was about to perform an action, and too late for him/her to interrupt it. They can cause effects ranging from frustration to loss of data. For example, a user is about to click on a hyperlink on his phone, but just before the ‘tap’ a pop-up window appears above the link and the user is unable to stop his action, resulting in the opening of an unwanted and possibly harmful webpage. Although quite frequent, there is currently no precise characterization or technical solutions to this family of problems.

Objectives

The project will consist in adapting experimental methods from the neuroscience literature [1] to quantify the time delay(s) from which a user can interrupt a selection or any other motor action on a touch screen. The objective is to complement previous results from the Loki team, and to learn more about the user's interruption capabilities in the specific context of tactile interactions.

The candidate will be involved in the design of controlled experiments, their implementation, and the analysis of their results. These results will help to better understand the limitations of the human psychomotor system, and to design interactive systems capable of detecting, preventing, or correcting interaction interference. Depending on the progress of the project, these results may be submitted as a research paper.

Reference

[1] Verbruggen, F., and Logan, G. D. 2008. Response inhibition in the stop-signal paradigm. In Trends in Cognitive Sciences. https://www.sciencedirect.com/science/article/pii/S1364661308002155

Candidate

The candidate must demonstrate an interest in HCI, and programming skills; knowledge of cognitive science is a plus. He/she will have to demonstrate technical and conceptual creativity.

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