Revisiting HCI with the Simplicity Principle

Advisor:

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Mots-clés

Human-Computer Interaction, Cognitive science, Simplicity principle, Gesture-based interaction, users' expertise,

Summary

The goal of this internship is to investigate how the *principle of simplicity* can be used to explain existing laws and phenomena in the area of Human-Computer Interaction.

Description

The principle of simplicity has been successfully applied in different fields (cognitive science, linguistic, perception, etc.) to explain and quantify some cognitive processes. The underlying principle is that human minds detect and learn structures that are maximally simple. For instance, this principle has recently been shown to well encompass Gestalt ideas because it provides a formal calculus that generates plausible perceptual explanations.

The goal of this internship is to study how this principle can be applied in HCI. We will work with the student to (1) review the literature on the simplicity principle, (2) to revisit Fitits' law and the Hick-Hyman law (and potentially the paradox of the active user) with the simplicity principle and (3) explain the benefits of Marking menus (as an example of structured gesture-based technique). We anticipate that this work may lead to a publication in a conference as ACM CHI.

The internship will last from 4 to 6 months and may serve as the foundation for a Phd thesis.

Required skills

- Basic knowledge about Human-Computer Interaction and experimental psychology
- A profound interest in cognitive science, modeling and theoretical framework

References

- Nick Chater and Paul Vitanyi. 2003. Simplicity: a unifying principle in cognitive science? Trends in Cognitive Sciences. Vol. 7 No. 1 January 2003
- Emmanuel L. J. Leeuwenberg. 2012. Structural information Theory. Cambridge Univeristy Press.
- Jean-Louis Dessalles website: simplicitytheory

Context

The HCI group at the Université Pierre et Marie Curie has a strong track record at the CHI conference and is part of an exciting and multi-disciplinary laboratory (robotics, machine learning, perception, cognitive science, haptics, social interaction, etc.)