

Optimal Schedules for Comparing Recall Based Interaction Techniques

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Keywords

HCI; Interaction Techniques; Optimal Experiment Design

Description

There are many recall based interaction techniques (RBIT) in HCI such as keyboard shortcuts [1] and gestures [2]. Typical evaluations of RBITs are successions of learning, where the mapping between outputs and inputs are learned by the user, and testing phases, where it is evaluated how well the user recalls this mapping. Designing experiments to compare RBITs is not easy because they involve many factors, including the duration of learning phase, the duration and amount of breaks, the number of input/output pairs --- the collection of which form the so-called schedule.

Recently, we proposed a technique to design schedules based on optimal experiment design[3], that maximizes the discriminability of two RBITs under various constraints imposed by the experimenter. However, the technique's usefulness has been demonstrated only via various simulations. The purpose of this internship is thus to perform a user study where two RBITs are compared, one using an existing schedule from the RBIT literature, the other being an optimal schedule computed by our method.

This experimented, if successfully conducted by the intern, will lead to a submission at an international conference.

Required skills

- Programming skills
- Design of experiments

Context

The intern will be hosted at the ISIR Laboratory at Sorbonne Université (Paris).

References

- [1] Appert, C., & Zhai, S. (2009, April). Using strokes as command shortcuts: cognitive benefits and toolkit support. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 2289-2298).
- [2] Kurtenbach, G., & Buxton, W. (1994, April). User learning and performance with marking menus. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 258-264).
- [3] Smucker, B., Krzywinski, M., & Altman, N. (2018). Optimal experimental design. *Nat. Methods*, 15(8), 559-560.