

THE TIRESIAS EFFECT

Exploring feedforward using light versus temperature in a tangible user interface

In this paper we discuss how light and temperature information can be designed to affect feedforward in a tangible user interface (TUI). We focus on temperature, which has not been widely considered as a mode of information representation in feedback or feedforward. We describe a prototype that implements both information modes in a TUI. Finally, we outline a user study in which these modes are explored as feedforward coaching devices for a decision-making task.

Is heat more effective, less effective or equally effective as light in feedforward in a TUI?

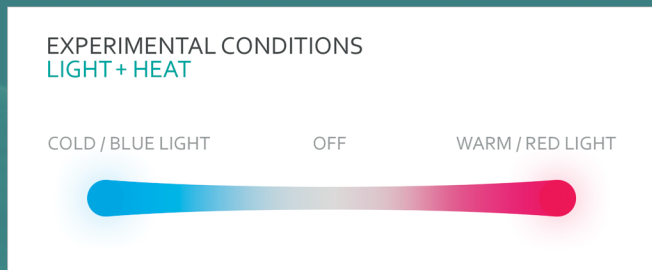
Do additional modes of information in an already busy interaction space benefit or hinder the user?

How effective is heat as an information medium? What effect does heat have on user experience?

We examine the "Tiresias Effect": like the mythological character to whom it refers, this mechanism realizes the potential of guiding the user towards future action.

PROTOTYPE

Our tangible prototype is comprised of two interfaces: one that uses heat and one that uses light to convey information to the user.



The first uses continuous light information to provide feedforward. Two differently colored LEDs move gradually between off and on states such that when one is dimmed, the other is brightened. The second uses continuous heat information modulated by a heat circuit. The temperature differential in the current prototype moves between room temperature (off) and warm; it does not yet account for cool temperatures.

Katie Seaborn kseaborn@sfu.ca

Alissa N. Antle aantle@sfu.ca

PROBLEM

- Research in TUIs has addressed tactile & haptic modalities through force, vibration and motion information.
- Temperature has not been widely explored in TUIs.
- Feedforward has not been widely investigated in TUIs.

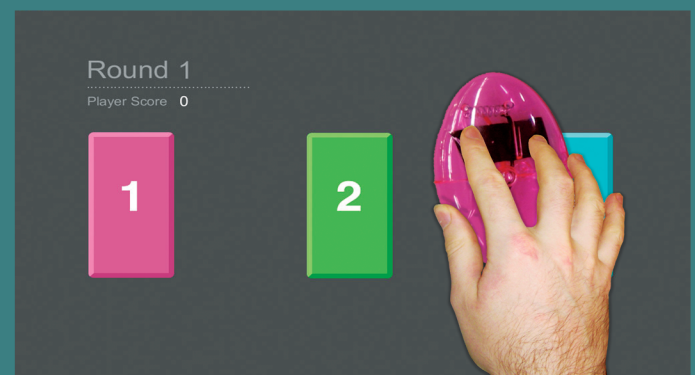
GOALS

- 1 Explore how different modes of information can be represented and interpreted in TUIs that provide feedforward.
- 2 Determine whether users can perceive and interpret information in the form of heat change.
- 3 Compare heat to light info for the same tasks.

CONTRIBUTION

- An understanding of the role of temperature as information for feedforward in TUIs.
- A set of design guidelines for designers of TUIs working with these physical characteristics.

The TUI allows for comparisons of effectiveness between light and heat in providing information. Having the same context of use will reveal differences in participants' user experience with respect to performance and preference.



The experimental task involves the user choosing between three nondescript doors, where only one is the correct choice. Each TUI provides continuous information to guide user action. Either heat or light feedforward guides the user to the correct door.