

1 Designing Brain-Computer Interfaces for Intelligent Information Delivery Systems

1.1 Peck - Thesis

1.2 Chapter One - Introduction

- Def: brain-computer interface (BCI) (via thought process) (not keyboard, mouse, etc.)
 - Alternative input
 - Direct-control BCI: brain as primary input
 - * Application: people without full motor cap.
- Into the consumer space (working environment, everyday user, etc.)
 - Direct: still not as efficient as keyboard and mouse for ordinary folks
 - Alt to augmentation (a recent shift) - *passive brain-computer interfaces* (pBCI) has advantages
 - * Nice example
 - * doesn't interfere with normal behavior
 - * Augmentative input beneficial for information delivery: subtly of when and what
 - Analogy: social interaction / treating computers as humans
 - Difficulty in applying pBCI:
 - * Very little work done
 - * Current brain sensing technologies are cumbersome, constraining
 - * Monitoring physiological data problematic to interface designers????
 - * Brain data noisy thus difficult to interpret
 - Automatic detection of user's state non-trivial

(⊥ Question: necessity?)

1.2.1 1.2 BCI for info delivery

- Manifested problem : technology is sometimes distractive and not living up to people's expectations. (Example, stats)

- Why being distracted bad (info delivery specific)
- People asking more info; easier access, too
- Problem ID : As info increase, how can tech prevent “overloading”?
- BUT, brain has mechanism to handle info effectively in social context by detecting clues?
- Devices should understand social rules so as to better serve people.
- Problem ID: Computers don’t understand us enough, (compared to social interactions)
 - Source: insufficient input (e.g. keyboard)
 - efficient delivery of info → Only Understanding
- Solution: new ways to communicating to the computer (e.g.)
- Practical level: a certain method
 - Challenges of this method, in terms of previous research, feasibility, outcome?

1.2.2 1.3 Outline

- Brain sensing can be used to capture *how* info is presented
- System to decide *which* info is presented
- System += when to deliver
- Strategies for processing brain data

Name of the game: physiological data perhaps will support intelligent info delivery system

(⌊ Question: what is an interface? A more solid description) (Brains? What is the subject?) (*neutral* predictions, etc.?)

2 Heart and mind in conflict: the interplay of affect and cognition in consumer decision making

2.1 Abstract

Decision making is influenced by

- Automatically evoked task-induced affect
- Cognitions that are generated in a more controlled manner on exposure to alternatives in a choice task

The experiment:

Chocolate cake (intense positive affect, less favourable result cognition)

•

(L Q: cognitive control)

def:Executive functions (also known as cognitive control and supervisory attentional system) is an umbrella term for the management (regulation, control) of cognitive processes,[1] including working memory, reasoning, task flexibility, and problem solving [2] as well as planning and execution.[3]

The executive system is a theorized cognitive system in psychology that controls and manages other cognitive processes, such as executive functions. The prefrontal areas of the frontal lobe are necessary but not solely sufficient for carrying out these functions.[4]

3 air-traffic controller

<http://www.skybrary.aero/bookshelf/books/1643.pdf>