

CPSC 4140/6140: Human Computer Interaction

Fall 2018

Midterm Study Guide

- Human Factors: understanding humans (work, motivation, and needs) to design/evaluate things that:
- HF occurs on four levels
- What is HCI?
- Goal of HCI
- HCI is multidisciplinary (psychology, social sciences, computer science, etc)
- What makes a good or bad design?
- What factors should be accounted for in design?
- Understanding user's needs
- How is HCI different from interaction design?
- What is a 'user experience' and can you design for it?
- Core characteristics of interaction design
- Goals for usability
- Goals for user experience (desirable, undesirable)
- Design principles
 - Visibility
 - Feedback
 - Constraints
 - Consistency
 - Affordances
- Types of interfaces (+ main research and design issues)
 - Command-based
 - WIMP and GUI
 - Multimedia
 - Virtual reality
 - Web
 - Consumer electronics and appliances
 - Mobile
 - Speech
 - Touch
 - Haptic
 - Multimodal
 - Shareable/Collaborative
 - Tangible
 - Augmented and mixed reality
 - Wearables
 - Brain-computer interfaces
- Which interface is best?
- Types of menus and design pros/cons
- Types of icons and design pros/cons
- Usability versus attractiveness
- Veen's design principles
- Why does cognition matter?
- Selective versus divided attention
- Attention + attention + attention = situational awareness
- Design implications for attention
- Input – processing – output

- Perception and HCI
- Color and HCI
- Context + memory
- Recognition versus recall
- Design implications for memory
- What is a mental model?
- Understand the gulfs of execution and evaluation (and reducing cognitive load)
- Information processing model
- Distributed cognition
- External cognition
- Computational offloading
- Communication versus coordination
- Types of communication (verbal, non-verbal)
- Co-located versus distributed communication (which is harder to design for?)
- Conversational rules/breakdowns and how to support them in: social media, remote (distributed) conversations, 3D virtual world
- What is telepresence?
- Mechanisms for coordination
- Mechanisms for awareness
- What is peripheral awareness?
- What is emotional interaction concerned with?
- Know and understand Norman, Ortony, and Revelle's model of emotion
- Does our emotional state change the way we think?
- What is an expressive interface?
- Shneiderman's guidelines for error messages
- What is facial coding?
- Persuasive technologies + behavior/attitude change
- Anthropomorphism
- Types of data gathering activities
- Types of interviews (pros and cons)
- Open versus closed questions (pros and cons)
- Questionnaire design
- Triangulation
- Direct versus indirect observation
- What is ethnography?
- Factors to consider when choosing research techniques
- Quantitative versus qualitative data
- Types of data analysis that can be used for quantitative and qualitative data
- Frameworks for qualitative data (grounded theory, distributed cognition, activity theory)
- How to choose methods for presenting data
- Requirements definition is most common failure point
- User needs versus wants
- In general, understand what a Volere shell is and what it is used for
- Types of requirements (function, non-functional, data)
- Why is environment important in establishing requirements?
- Establishing requirements for novice versus expert user
- What is a persona and how is it used?
- Four principles of contextual inquiry
- What is a use case?
- What is a task analysis?