Week 14
Final Exam Review

SFWRENG 4HC3/6HC3 Human Computer Interfaces

** Slides adapted from previous and current instructors of COMPSCI/SFWRENG 4HC3/6HC3*

McMaster University

Week 14 Overview

- **Monday**
  - Final Exam Review
  - Questions
- **Wednesday**
  - Optional, office hours instead of regular class
    - ABB C529
    - Any questions (about anything)

Exam Format

- 120 minutes, written exam
- **Three double-sided cheat sheet**
  - Basically you can put everything there, since the exam questions are more about application rather than memorization
- Short answer questions mostly and some multiple choices/true-falses
  - Questions are like shorter versions of all practices we have in this class (assignments, project milestones, in-class activities)
  - No drawing required for the final exam

Exam Topics

- Human-centered Design Process
- Design and Design Principles
- Requirements Elicitation
- Prototyping
- Evaluation

Human-centered Design Process

- Human-centered Design Process
  - How human is involved in the process
  - Different phases in the process
  - How ideas evolve throughout the process
    - Iterative Design
    - Parallel Design

Example #1

You and your friends are joining a competition to design solutions that help students manage task. The competition will be evaluated based on user friendliness, creativity, and practicality. How will you use the human-centered design process to plan your work so you can have a winning solution?

Design and Design Principles

- Interface and Interaction
- Gulf of Execution and Gulf of Evaluation
- Norman’s Design Principles
- Human’s Abilities
  - Perceptions and Vision (color)
  - Gestalt Principles
  - Memory and Cognition

Example #2.1

Given a smart home thermostat that allows users to set and monitor the temperature of their home using a wall-mounted touchscreen (which shows current temperature, weather, and option to schedule changes).

A user wants to lower the temperature to 22°C before going to bed. They try to adjust the temperature using the dial on the touchscreen but are unsure if their input has been registered because there is no immediate feedback (e.g., the temperature on the screen doesn't update right away).

Is this a gulf of evaluation or execution? Why?
What design suggestion do you have to address this gulf?

Example #2.2

Provide a visual design critique of this interface drawing from any of the visual design guidelines discussed in the class.

Provide at least one idea for improving the design, and explain why it can help improve.

Requirements Elicitation

- Requirements Elicitation Methods
  - Look
  - Ask
  - Learn and Try
- Analysis
  - User and Requirements
  - Personas
  - Scenarios
  - Task Analysis & HTA

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  - Task Analysis & HTA

When to use which method?

How to use the method?

What questions these method can help answer?

Example #3.1

You are part of a design team tasked with improving a grocery delivery app for residents in Hamilton. The app has received complaints that users often struggle to find specific items, and the app lacks accessibility needs.

How will you plan a requirements elicitation session to gather more insights on these complaints?

Example #3.2

You are designing a self-checkout kiosk interface for a grocery store, and it is important to understand the checkout process before start the design.

Relating to your own experience (purchasing groceries at the store), create a story that capture customer checkout process using a kiosk.

Perform a Hierarchical Task Analysis for the process described in the story above.

Prototyping

- Prototyping Techniques
  - Low-fidelity Prototypes
  - Interactive Prototypes
  - High-fidelity Prototypes

  When to use which prototyping technique?

  How to properly use these prototyping techniques?

Example #4

You are designing a mobile fitness app, and you have several a list of different features that you want to explore with users, including a personalized dashboard for workout schedule, an AI-generated workout suggestion, and a companion app on a wearable device with the app.

You and your team have limited time and resources, and you need to narrow down the features within a month. Which prototyping techniques would you recommend so you can quickly test these features with potential users?

Evaluation

- Evaluation methods without users
  - Performance Modeling
    - Fitt's Law, Hick's Law, KLM
  - Analytical Evaluation
    - Cognitive Walkthrough
    - Heuristics Analysis
      - Nielsen's Heuristics
- Evaluation methods with users
  - Usability Testing
  - Experiment

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When to use which method?

How to use the method?

What questions this method can answer?

Example #5

For the fitness app in example #4, and your prototype(s) are ready for evaluation. The goals for evaluation includes: understand whether users can easily navigate the app, gather feedback on AI-powered workout suggestions, identify the desirability of the companion app.

Outline an evaluation plan for these questions. Including evaluation methods, which user groups you want to involve, what data you are going to collect.