



SOEN 6751:

Human Computer Interface Design

Introduction

Based on Chapter 1 of the textbook
and the slides from Prof. T. Radhakrishnan



What is Interaction Design?

- Designing interactive products to support the way people communicate and interact in their everyday and working lives (Sharp, Rogers and Preece , 2019)
- The goal is to develop usable products
 - Usability means easy to learn, effective to use and provide an enjoyable experience
- Interaction is performed through an interface



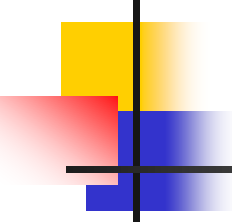
A good interface should be ...

- Easy to learn and use
 - Supports both the initial orientation and continued learning throughout the complete lifetime of use
- Engaging
 - Draws the user into the interaction and is pleasant and satisfying to use
- Effective
 - The task or experience is completed or goals reached completely and accurately
- Efficient
 - Helps complete the task quickly
- Error Tolerant
 - Prevents errors and helps the user recover from mistakes



Why User Interface Design is Different?

- Rather than designing robust and reliable software (traditional software development goals), the primary UI Design goal is to insure that the system will be effectively usable.
 - The design, evaluation and implementation of interactive systems focus on: the ease of use and ease of learning and the efficiency of task performance by end users.
- This requires knowledge about:
 - Users profile, behavior, individual's background and skill level, etc.
 - What kinds of tasks the users will accomplish with the interactive system?
 - Work context and social environment in which the system will be used.
 - What is technologically suitable and feasible? (Trade-offs involved)



What makes User Interface Design Difficult?

- There exists diversity among users, variety of tasks that one user performs, differing environments or contexts.
- Understanding the user requirements is both time consuming and the process itself is not as precise as one would want.
- Getting the 'right' set of users to conduct the UI-requirements study is not easy in real life.
- Evaluating the UI is expensive in terms of time and cost. Besides objective measures, some degree of subjectivity is also involved, making it difficult.
- Most software developers do not give importance to UI design, in the early stages of systems analysis.



Course Objectives

- Help designers:
 - understand how to design interactive products that fit with what people want, need and may desire
 - appreciate that one size does not fit all
e.g., teenagers are very different from grownups
 - identify any incorrect assumptions they may have about particular user groups
e.g., not all old people want or need big fonts
 - be aware of both people's sensitivities and their capabilities

Bad designs

- Elevator controls and labels on the bottom row all look the same, so it is easy to push a label by mistake instead of a control button



- People do not make same mistake for the labels and buttons on the top row. Why not?

From: www.baddesigns.com

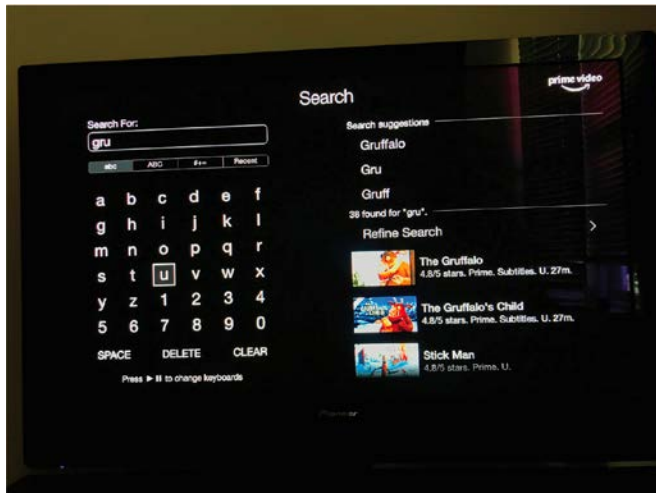
Good and bad design



- What is wrong with the Apex remote?
- Why is the TiVo remote so much better designed?
 - Peanut shaped to fit in hand
 - Logical layout and color-coded, distinctive buttons
 - Easy to locate buttons

Dilemma

- Which is the best way to interact with a smart TV? Why?
 - Pecking using a grid keyboard via a remote control
 - Swiping across two alphanumeric rows using a touchpad on a remote control
 - Voice control using remote or smart speaker



SOEN 6751, Winter 2020



Introduction



What to design

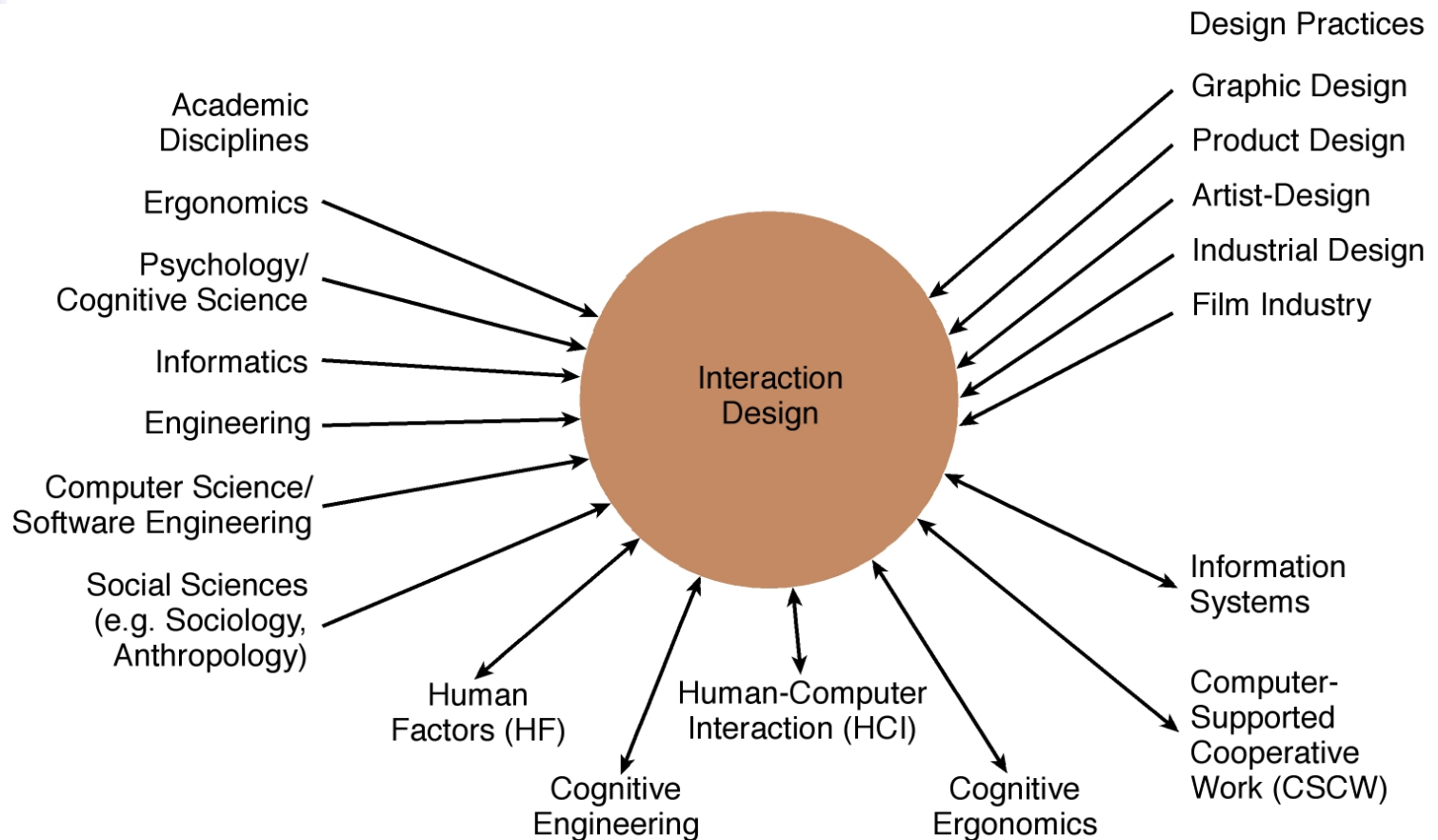
- Need to take into account:
 - Who the users are
 - What activities are being carried out
 - Where the interaction is taking place
- Need to optimize the interactions users have with a product
 - So that they match the users' activities and needs



Understanding users' needs

- Need to take into account what people are good and bad at
- Consider what might help people in the way they currently do things
- Think through what might provide quality user experiences
- Listen to what people want and get them involved
- Use tried and tested user-centered methods

HCI and interaction design





Relationship between ID, HCI and other fields

- Academic disciplines contributing to ID:
 - Psychology
 - Social Sciences
 - Computing Sciences
 - Engineering
 - Ergonomics
 - Informatics



Relationship between ID, HCI and other fields

- Design practices contributing to ID:
 - Graphic design
 - Product design
 - Artist-design
 - Industrial design
 - Film industry



Relationship between ID, HCI and other fields

- Interdisciplinary fields that 'do' interaction design:
 - HCI
 - Human Factors
 - Cognitive Engineering
 - Cognitive Ergonomics
 - Computer Supported Co-operative Work
 - Information Systems

Working in multidisciplinary teams

- Many people from different backgrounds involved
- Different perspectives and ways of seeing and talking about things
- Benefits
 - more ideas and designs generated
- Disadvantages
 - difficult to communicate and progress forward the designs being create





What do professionals do in the ID business?

- **interaction designers** - people involved in the design of all the interactive aspects of a product
- **usability engineers** - people who focus on evaluating products, using usability methods and principles
- **web designers** - people who develop and create the visual design of websites, such as layouts
- **information architects** - people who come up with ideas of how to plan and structure interactive products
- **user experience (UX) designers** - people who do all the above but who may also carry out field studies to inform the design of products