A bit more about the project
HCI History

Learning objectives:
1. Better understand what makes a good set of users
2. Understand the difference between interactions and interfaces
3. Understand the different interaction paradigms over time
4. Understand how Bush, Sutherland, Engelbart, Kay, and Weiser contributed to these paradigms through their own visions
5. Understand how interactions today meet, exceed, or fall short of these visions

Adapted from materials originally created by Prof. Jamie Ruiz

Goals of Designing Interactive Systems

Original:
- Useful: Tool accomplishes what is required
- Usable: Performs task “easily and naturally”
- Used: People want to use it

Refined:
- Discover and understand user’s underlying goals and needs
- Develop models of users, including their goals, behaviors, and context of use
- Design to the data and the models created
- Precisely measure what ways the new system improves the user experience

Project User Groups

- **Special populations** are strictly off-limits
  - Minors
  - Medical patients
  - Individuals with mental disabilities or who otherwise cannot provide informed consent
  - Prisoners
- If you are likely to encounter sensitive personal, private information (e.g., in a hospital), you are not likely to be able to study this group

Good User Groups

- Ideal user groups are people who must accomplish a very specific, specialized task under time constraints
  - Performance can be measured
- **Experts with specialties are the best**
  - Desirable if they must have at least a university-level degree to perform their duties
- Individuals do not need to currently use a computer
- **Choose people with whom you can interact throughout the term**
  - People located nearby are good
“Bad” User Groups

• Anyone with a fuzzy, undefined, hazy job/task whose performance cannot easily be assessed
• Any activity in which anyone could participate without any training
• Anyone like yourself
• Some specific groups off-limits:
  – Tourists
  – Artists, musicians

History of Interaction

• History of moving a system’s interactive language closer to the user’s language, needs, and task domains
• Major paradigms of interaction
  – Batch interfaces
  – Conversational interfaces
  – Graphical interfaces
  – “Ubicomp”
• Visionaries who inspired advances
  – Vannevar Bush, Ivan Sutherland, Douglas Engelbart, Alan Kay, Mark Weiser

Interaction vs. Interface

• What is the distinction between the two?
• Interface
  – The mediating layer between you and the computational artifact
  – Includes the physical, visual, auditory, haptic channels through which communication occurs
• Interaction
  – The activity of manipulating, and communicating through, the interface
• Why is designing interaction hard?
Interaction vs. Interface

- Both are hard, but interface (generally) has a physical representation that can be seen
  - (Partial) assessment can often occur by visually inspecting the interface
- Interaction is behavior and activity
  - More difficult to model, design, and assess activity
- Both dictate the language of interaction: How we accomplish tasks
  - Helps you avoid “pearls on a pig” syndrome and focus on real needs

Batch Interfaces

- Time period: ca. 1945-1965
- Interaction style
  - Set of instructions prepared a priori, fed to computer via punch cards, paper tape, magnetic tape
  - Response typically received via paper printout
  - No real interaction possible as system executes instructions
  - Responses received in hours, days
- Users
  - Only used by highly trained individual
- System time costs more than human time
  - $100’s/hr vs. $10-30/hr

Conversational Interfaces

- Time period: ca. 1965 – 1985+
- Command line interface
  - First commonly used interactive style
- Interaction style
  - User types command, waits for response
  - Programs usually run to completion
  - Feedback can be given during execution
  - Execution cannot generally be altered by user unless system explicitly prompts for input (system is in control during execution)
- User is guided through heavily scripted / structured interaction

Graphical User Interfaces

- Time period: ca. 1984 – present
- Hardware interface
  - High resolution, high refresh graphics display
  - Keyboard
  - Pointing device (e.g., mouse)
- Typical instantiation: WIMP interface
  - Windows, Icons, Menus, and Pointer
“Ubicomp”

- “There will be so many IP addresses ... so many devices, sensors, things that you are wearing, things that you are interacting with that you won’t even sense it. It will be part of your presence all the time. Imagine you walk into a room, and the room is dynamic. And with your permission and all of that, you are interacting with the things going on in the room.”
  – Eric Schmidt Jan, 24, 2015

Vannevar Bush

Ivan Sutherland
Beyond the Knowledge Worker
Douglas Engelbart

Alan Kay
Amplifying Imagination

Mark Weiser
1990s: Get off the Desktop