

EECS 4441 Human-Computer Interaction

Topic #4a: Interaction Paradigms
(Based on Chapt. 4 of HCI by Dix et al.)

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Paradigm

- A descriptive model for patterns of concepts and practices (in HCI) regarding computer system interaction
- Difficult (if not impossible) to predict
- Often only able to identify a new paradigm after it has been introduced and become pervasive
- Not mutually exclusive (i.e., some paradigms overlap)
- Often regarded in a historical context to outline a timeline of technological advancement

Early Computing

- Time Sharing
 - A computer system supporting multiple simultaneous users
 - Users share resources, but have the illusion of sole operation
- Video Display Units
 - Computer output, in the form of text and images, is displayed on a video terminal for users to sense and interpret
- Programming Toolkits
 - Programmers developed software that would aid in the future development of other software

Personal Computing

- Direct Manipulation
 - Replacing textual commands with the ability to interact with graphical object using actions that were incremental, reversible, and always syntactically correct
- WIMP Interface
 - Users interacted with onscreen windows, icons, and menus via a pointer (typically controlled using a mouse)
- The Metaphor
 - The use of a familiar or plausible concept to describe a complex computer system operation

Information Access

- Hypertext
 - Connecting related information using “links” that allows the user to navigate between documents
- The World Wide Web
 - A global network of computers that publishes, stores, and serves hypertext documents

Computer-Supported Cooperative Work

- A computer system that facilitates collaboration between multiple users (possibly in different locations)
- Allows multiple users to contribute to a single task
- Example:
 - Two authors contributing to a Google Docs file simultaneously

Agent-Based Interfaces

- Software entities (typically) that takes user's input and performs a more complex (or corrected) interaction on the user's behalf
- Examples:
 - Auto-correct in word processing and messaging applications, or auto-complete in spreadsheet applications
 - Google search often intuits a user's intended (but possibly incorrect) search query

Ubiquitous Computing

- Computing systems that are so numerous and so mobile, users don't consider them as "computers"
- Examples:
 - Tablets
 - Smartphones
 - Smart appliances
 - Automotive controls
 - Smart watches and fitness trackers

Context-Aware

- Computer systems are often invisible to the user; the user is not explicitly aware of the interaction
- Systems use sensors to monitor users and determine the context of implicit interaction
- Uses heuristics and artificial intelligence to determine the appropriate action
- Example:
 - Embedded devices that activate lights or increase room temperature when someone enters a room

Thank You