

HCI NOTES – MID I

Chapter: The Human

Overview:

- Humans have limited information processing capacity, which impacts design.***
- Information is received and responses given through various channels: visual, auditory, haptic, and movement.***
- Information is stored in sensory, short-term, and long-term memory.***
- Processing involves reasoning, problem-solving, skill acquisition, and handling errors.***
- Emotions influence human capabilities, and users have both commonalities and individual differences.***

Summary:

In this chapter, we delve into the human as an information processor. Humans receive information through senses, primarily sight, hearing, and touch when interacting with computers. This information is then stored in various memory types, both temporary and permanent, before being utilized in reasoning and problem-solving. Familiar situations allow for skill acquisition, but can lead to errors if context changes. While human perception and cognition are sophisticated, they come with limitations that impact interaction design. Understanding these capabilities and limitations is crucial for designing effective interactive systems, drawing on principles and models derived from cognitive psychology.

Chapter: The Computer

Overview:

- A computer system comprises input and output devices, impacting user experience.*
- Input devices include keyboards, speech input, pointing devices, and 3D interaction tools.*
- Output devices encompass various types of screens, including bitmap displays, large displays, and digital paper.*
- Specialized devices like virtual reality systems and 3D visualization tools play a unique role.*
- Physical world devices include controls, feedback mechanisms (sound, smell, haptic), and diverse sensors.*
- Paper input and output methods, along with memory and processing capabilities, are significant aspects.*

Summary:

Sections 2.2 and 2.3 explore input devices, covering text entry and pointing. This encompasses traditional keyboards, alternative input methods, and various pointing devices like the mouse and touchpad. Section 2.4 focuses on output display devices, discussing technologies like CRT and LCD screens, and emerging options like large displays and digital paper. Section 2.5 delves into virtual reality systems and 3D visualization tools, highlighting datagloves, head-mounted displays, and cave environments. Section 2.6 extends beyond the computer, addressing physical controls, feedback, and sensors. Sections 2.7 and 2.8 delve into paper input/output methods, including printers, scanners, and memory types like RAM and disks. Understanding processing speed and network impacts are vital in Section 2.9.

Chapter: The Interaction

Overview:

- *Interaction models elucidate the user-system dynamic, addressing translations from user intent to system action.*
- *Ergonomics scrutinizes physical interaction characteristics and their impact on effectiveness.*
- *Interface style shapes the user-system dialogue.*
- *Social and organizational context exerts influence on both user and system in the interaction.*

Summary:

This chapter delves into the interaction between humans and computers, emphasizing effectiveness in achieving user tasks. Norman's execution-evaluation model and the extended interaction framework aid in analysis. Ergonomics and various interface styles are pivotal in influencing interaction effectiveness. Acknowledging social and organizational factors that impact interaction is crucial for mitigating potential negative effects. Interaction design lies at the core of modern interfaces, necessitating a holistic approach considering all influencing factors for a fruitful user-system interaction.

Chapter: Paradigms

Overview:

- *Effective strategies in building interactive systems offer paradigms for usable designs.*

- *The evolution of these paradigms provides historical insights into interactive computing.*
- *Paradigms evolve from time-sharing systems to WIMP interfaces, web interactions, and modern ubiquitous and context-aware computing.*

Summary:

This chapter delves into paradigms that enhance usability in interactive systems. It highlights how the history of computing is marked by creative insights into improving human-computer interaction. While paradigms are powerful, they can sometimes lack clear definitions of how they support user tasks. Principles and theoretical models derived from successful paradigms aid in understanding their effectiveness and potential limitations. Striking a balance between creativity in paradigm development and a theoretical foundation to support repeated application is key in shaping the future of interactive system design.

Chapter: Interaction Design Basics

Overview:

- *Interaction design involves creating interventions using diverse technologies, including software, web, and physical devices.*
- *Design encompasses goal achievement within constraints, understanding both computer and human elements, and recognizing their limitations.*
- *The design process is iterative and never truly complete.*
- *Interaction design begins with understanding users and their context through observation and communication.*

- Scenarios are rich narratives that provide insights into user interactions, guiding design decisions.*
- Effective navigation design aids users in finding their way through a system, emphasizing clarity, structure, and comprehension.*
- The complexity of design necessitates iteration and prototyping for evaluation and improvement.*

Summary:

Interaction design goes beyond creating devices or software, involving the comprehensive shaping of interactions between people, technology, and environments. It's about achieving goals while acknowledging constraints and understanding both technical and human aspects. The design process is ongoing and iterative, emphasizing continuous improvement. Understanding users and their context is foundational, achieved through observation and communication. Scenarios serve as invaluable narratives guiding design choices. Effective navigation design ensures users can effortlessly traverse a system, with clear structures and comprehensible screens. The iterative nature of design requires constant evaluation and prototyping for refinement. Balancing creativity with theoretical understanding is crucial for successful interaction design.