

CS 408 MID-TERM (VIP HANDOUTS)

(ZE+BA)

Definition of HCI

HCI (human-computer interaction) is the study of how people interact with computers and to what extent computers are or are not developed for successful interaction with human beings.

Computer + Bank

A computer! Whenever I withdraw cash from an automatic teller machine (ATM), I encounter the same sullen and difficult behavior so universal with computers. If I make the slightest mistake, it rejects the entire transaction and kicks me out of the process. I have to pull my card out, reinsert it, reenter my PIN code, and then re-assert my request.

Software Apartheid

Institutionalizing horrible behavior and doubtful interactions of software-based products.

Goals of HCI

- Understand the factors that determine how people use technology.
- Develop tools and techniques to enable building suitable systems.
- Achieve efficient, effective, and safe interaction.

Usability goals

- Effectiveness
- Efficacy
- Safety
- Utility
- Learnability
- Memorability

Effectiveness

It is a very general goal and refers to how good a system is at doing what it is supposed to do.

Efficiency

It refers to the way a system supports users in carrying out their tasks.

WYSIWYG

WYSIWYG software allows users to click, drag and type to make things happen without having to know any code or commands.

Cognitive Psychology

Psychology is concerned primarily with understanding human behavior and the mental processes that underlie it

Artificial Intelligence

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems.

Processes of Cognition

- Attention
- Recognition
- Memory
- Learning
- Reading, speaking, and listening
- Problem solving, planning, reasoning, decision-making.

Modes of Cognition

1. Experiential cognition
2. Reflective cognition

Stages of Vision:

- The physical reception
- The processing
- The Interpretation

Components of Color:

- Hue
- Intensity
- Saturation

Color Theory

Primary Colors: Red, yellow and blue

Secondary Colors: Green, orange and purple

Tertiary colors: Yellow-orange, red-orange, red-purple, blue-purple, blue-green and yellow-green

Color Harmony

Harmony can be defined as a pleasing arrangement of parts, whether it be music, poetry, color, or even an ice cream sundae.

Models of Attention

- Focused attention
- Divided attention

Memory Model

- Sensory store modality-specific, hold information for a very brief period
- Short-term memory store holds limited information for a short period of time
- Permanent long-term memory store hold information indefinitely.

Types of Long-Term Memory

Episodic Memory and Semantic memory.

Episodic memory

Episodic memory represents our memory of events and experiences in a serial form. It is from this memory that we can reconstruct the actual events that took place at a given period of our lives.

Semantic memory

Semantic memory is structured record of facts, concepts and skills that we have acquired.

Terms of Learning

- Procedural
- Declarative

Types of Reasoning

- Deductive reasoning
- Inductive reasoning
- Abdicative reasoning

Deductive reasoning

Deductive reasoning derives the logically necessary conclusion from the given premises.

Inductive reasoning

Induction is generalizing from cases we have seen to infer information about cases we have not seen.

Abductive reasoning

The third type of reasoning is abduction. Abduction reasons from a fact to the action or state that caused it.

Visibility

The more visible functions are, the more likely users will be able to know what to do next.

Types of Affordance:

- Perceived
- Real

Constraints & Types of Constraints:

The design concept of constraining refers to determining ways of restricting the kind of user interaction that can take place at a given moment:

Physical, logical, and cultural are types of Constraints.

Mapping

This refers to the relationship between controls and their effects in the world.

Consistency

This refers to designing interfaces to have similar operations and use similar elements for achieving similar tasks

QWERTY Keyboard

Most people are quite familiar with the layout of the standard alphanumeric keyboard, often called the QWERTY keyboard

Eye gaze

Eye gaze systems allow you to control the computer by simply looking at it.

Types of Gulfs

Gulf of Execution & Gulf of evaluation

Gulf of execution

It is the difference between the user's formulation of the actions to reach the goal and the actions allowed by the system.

Gulf of evaluation

The gulf of evaluation is the distance between the physical presentation of the system state and the expectation of the user.

Styles of Interaction

- Command line interface
- Menus
- Natural language

Characteristics of Software Quality:

- Functionality
- Reliability
- Usability
- Efficiency
- Maintainability
- Portability

Types of users

Beginners, Intermediates, Experts

Types of Qualitative Research

- Stakeholder interviews
- Subject matter expert (SME) interviews
- User and customer interviews
- Literature review

Ethnography framework

1. Distributed co-ordination
2. Plans and procedures
3. Awareness of work

Contextual design

Contextual design was another technique that was developed to handle the collection and interpretation of data from fieldwork with the intention of building a software-based product.

Parts of Contextual design

- Contextual inquiry
- Work modeling, consolidation
- Work redesign
- User environment design
- Mockup
- Test with customers
- Putting it into practice

Environmental variables

Company size (small—multinational)

- IT presence (ad hoc—draconian)
- Security level (lax--tight)

Types of non-user goals

- Customer goals
- Corporate goals
- Technical goals

IFE

In-flight entertainment

SOCOG

Sydney Organizing Committee for the Olympics Games

SME

Subject matter expert

RAD

Rapid Application Development

GOMS

Goals, operations, methods and selection rules

MMI

Man-Machine Interface