Humans computer interact

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INTRODUCTION

Humans interact with computers in many ways; the interface between humans and computers is crucial to facilitate this interaction. Desktop applications, internet browsers, handheld computers, ERP, and computer kiosks make use of the prevalent graphical user interfaces (GUI) of today. Voice user interfaces (VUI) are used for speech recognition and synthesizing systems, and the emerging multi-modal and humans to engage with embodied character agents in a way that cannot be achieved with other interface paradigms. The growth in human–computer interaction field has been in quality of interaction, and in different branching in its history. Instead of designing regular interfaces, the different research branches have had a different focus on the concepts of multimodality rather than intellectual adaptive interfaces rather than command/action based ones, and finally active rather than passive interface.

CHARATERISTICS

The human–computer interface can be described as the point of communication between the human user and the computer. The flow of information between the human and computer is defined as the loop of interaction. The loop of interaction has several aspects to it, including

Visual Based: The visual based human computer interaction is probably the most widespread area in Human Computer Interaction (HCI) research.

- **Audio Based** : The audio based interaction between a computer and a human is another important area of in HCI systems. This area deals with information acquired by different audio signals.

- **Task environment**: The conditions and goals set upon the user.

- **Machine environment**: The environment that the computer is connected to, e.g. a laptop in a college student's dorm room.

- **Areas of the interface**: Non-overlapping areas involve processes of the human and computer not pertaining to their interaction. Meanwhile, the overlapping areas only concern themselves with the processes pertaining to their interaction.

- **Input flow**: The flow of information that begins in the task environment, when the user has some task that requires using their computer.

- **Output**: The flow of information that originates in the machine environment.

- **Feedback**: Loops through the interface that evaluate, moderate, and confirm processes as they pass from the human through the interface to the computer and back.
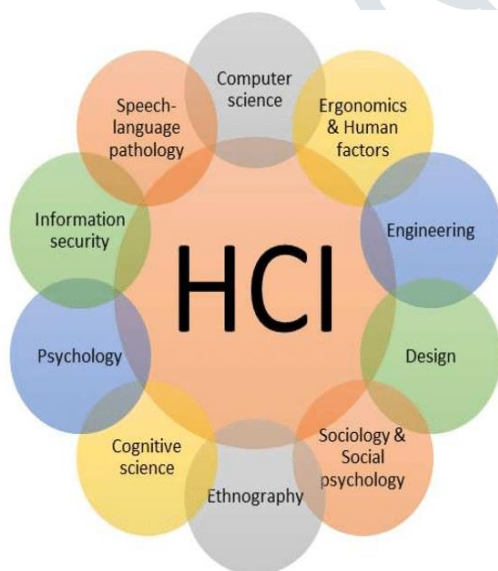
IMPORTANCE

Importance of Human-Computer Interaction (HCI) This review article is about the importance human computer interaction in the technology which increases tremendously. The goal of HCI is to improve the interaction between users and computers by making computers more user-friendly and receptive to the user's needs.

GOALS

- The goal of HCI "is to develop or improve the safety, utility, effectiveness, efficiency and usability of system that include computers.

- The goals of HCI are to produce usable and safe systems, as well as functional systems. In order to fulfill that, developers must attempt

    Understand how people use technology
    Building suitable systems
    Achieve efficient, effective, and safe interaction

- People needs, capabilities and preferences should come first. People should not have to change the way that they use a system. Instead, the system should be designed to match their requirements

ADVANTAGES

• Very flexible with the use of "switches" (options)
• Good for "expert" users - can quickly access commands
• Uses the fewest system resources

DISADVANTAGES

• Requires the user to learn "complex" commands or language
• "Hidden" features if you don't know the commands you won't know the features are there!
• Not very good for novice users
Command Line Interface Applications
• System administration
• Engineering applications
• Scientific applications
• Ideal for visually impaired users!!!

HISTORY OF HCI

History of HCI Human-computer interaction arose as a field from intertwined roots in computer graphics, operating systems, human factors, ergonomics, industrial engineering, cognitive psychology, and the systems part of computer science. Computer graphics was born from the use of CRT and pen devices very early in the history of computers. This led to the development of several human computer interaction techniques. Computer graphics has a natural interest in HCI as "interactive graphics" (e.g., how to manipulate solid models in a CAD/CAM system). Out of this line of development came a number of important building blocks for human-computer interaction. Some of these building blocks include the mouse, bitmapped displays, personal computers, windows, the desktop metaphor, and point-and-click editors .Some of the technical construction of devices for mediating between humans and machines are mentioned below:-. • **Input devices**: survey, mechanics of particular devices, performance characteristics (human and system), devices for the disabled, handwriting and gestures, speech input, eye tracking, exotic devices (e.g., EEG and other biological signals) • **Output devices**: survey, mechanics of particular devices, vector devices, raster devices, frame buffers and

image stores, canvases, event handling, performance characteristics, devices for the disabled, sound and speech output, 3D displays, motion (e.g., flight simulators), exotic device.

FUTURE CHARACTERISTICS OF HCI

Since human-computer interaction involves transducers between humans and machines and because humans are sensitive to response times, viable human interfaces are more technology-sensitive than many parts of computer science. For instance, the development of the mouse gave rise to the point-and-click style of editor interface and the mouse-based graphics program. Partially based on the above trends, we expect a future for HCI with some of the following characteristics:

Ubiquitous communication Computers will communicate through high speed local networks, nationally over wide-area networks, and portably via infrared, ultrasonic, cellular, and other technologies. Data and computational services will be portably accessible from many if not most locations to which a user travels.

High functionality systems System will have large numbers of functions associated with them. There will be so many systems that most users, technical or nontechnical, will not have time to learn them in the traditional way (e.g., through thick manuals)

Mass availability of computer graphic Computer graphics capabilities such as image processing, graphics transformations, rendering, and interactive animation will become widespread as inexpensive chips become available for inclusion in general workstations.

Mixed media Systems will handle images, voice, sounds, video, text, formatted data. These will be exchangeable over communication links among users. The separate worlds of consumer electronics (e.g., stereo sets, VCRs, televisions) and computers will partially merge. Computer and print worlds will continue to cross assimilate each other.

Large and thin displays New display technologies will finally mature enabling very large displays and also displays that are thin, light weight, and have low power consumption. This will have large effects on portability and will enable the development of paper-like, pen-based computer interaction systems very different in feel from desktop workstations of the present.

Embedded computation Computation will pass beyond desktop computers into every object for which uses can be found. The environment will be alive with little computations from computerized cooking appliances to lighting and plumbing fixtures to window blinds to automobile braking systems to greeting cards. To some extent, this development is already taking place. The difference in the future is the addition of networked communications that will allow many of these embedded computations to coordinate with each other and with the user. Human interfaces to these embedded devices will in many cases be very different from those appropriate to workstations

CONCLUSION

The field of human computer interaction deals with the study, design, and evaluation of human-machine systems with an emphasis on human capabilities and limitations as they impact system operation. The goal of HCI and the human factors methodology is to optimize system performance while maximizing human safety and operational effectiveness. HCI expertise on a design team can improve the design process and lower the overall cost of a product. A product can be designed through trial and error, which is a lengthy and costly process, through the expert opinions of the designer, which is hampered by their own personal preferences, or by the application of human factors principles to the design. Finally as per my perspective, the future of HCI will be determined more by our social motivations than by technological innovation. We can make the final decision that how much HCI will interfere in our day to day life.