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Artificial Intelligence for Human Computer Interaction: A Modern Approach

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ABSTRACT

Human Computer Interface (HCI) was previously known as the man-machine studies or man-machine interaction (MMI). It deals with the design, execution and assessment of computer systems and related phenomenon that are for human use.

Software Developers are continuously developing new products and software that can be very helpful to people. People use machines, technology and software in their daily life but everyone is not aware of how the machine actually works, the programming behind it and its logic.

The main objective of software developers is to develop a user-friendly system of software which can be used and operated using simple commands and the system will work as per instructions of the user, resulting in more efficient and effective use of the system by the users in an easier way.

Keywords: *interactive devices, AI, HCI, HCI designing, gesture recognition.*

INTRODUCTION

For the last two decades, we have seen drastic changes in the interaction between human and computers. Computers are becoming an essential factor for human being day by day. Even people who don't have knowledge about computers and machines use them in their daily life somehow.

Human Computer Interface (HCI) is a systematic way of interaction by which humans can interact with different types of computer systems. Computer needs to be feed with vast data (commands, instructions, etc.

) to work and function properly, here **Artificial Intelligence** comes to place.

Systems that interact with users always rely on mechanisms for humans to specify their intentions. Traditional techniques, including mice, keyboards and touch screens, require the user to explicitly provide inputs and commands. However, modern deep-learning based approaches are now robust enough to inherent ambiguity and noise in real world data in order to make it feasible to analyze and reason about natural human behavior, including speech and motion but also more subtle activities such as gaze patterns or bio-physical responses. Such approaches now allow to go beyond simple gesture recognition and pattern matching approaches, which still require the user to memorize a set of specific commands, and to be able to analyze complex human activity in a more continuous and holistic fashion.

DEVICES USED FOR INTERFACING

A human interface device (HID) is a method by which a human interacts with an electronic information system either by inputting data or providing output. Most operating systems (OS) recognize basic HID devices, such as mice and keyboards, without the need for a specific driver. This facilitates the plug and play (PnP) attributes of USB devices. Some HIDs, such as a mouse, receive user input only. Others, such as speakers, provide output only. While the input or output type vary, the standardization achieved by the HID standard encompasses the connection and exchange of information between the computer host and the device. These details, though hidden from the user, facilitate device implementation and are instrumental in the rapid innovation and proliferation of HIDs.

The concept of touch screen came decades ago but the platform become handy recently. From touch screen people are now also trying to use hologram which can be used only by hand movements.

In this field hand gesture recognition is also being focused. This is a brand-new interactive device which can terminate the use of mouse and keyboard. For speech recognition only certain commands are required to command the computer system and the system will perform the task as per the user needs. It is a hands-free movement technology in HCI field.

ARTIFICIAL INTELLIGENCE - HCI

Artificial Intelligence (AI) and Human Computer Interface (HCI) have become increasingly important fields in the development of technology. Here are some key points about AI and HCI:

1. User Experience: By integrating AI into HCI, the user experience becomes more natural and intuitive. For example, voice-powered virtual assistants can understand and respond to user requests, making it easier for users to access information and control devices.
2. Personalization: AI can learn from user interactions and personalize the experience accordingly. For example, recommendation systems can suggest products or content that is relevant to the user's interests.
3. Improved Accuracy: AI algorithms can help improve the accuracy of HCI systems by analyzing data, detecting patterns, and making predictions. This can help to reduce errors and increase the efficiency of the system.
4. Interaction Design: The design of HCI systems is critical to the success of AI-powered systems. HCI designers must carefully consider the way users will interact with the system and design interfaces that are intuitive and easy to use.
5. Ethical Implications: As AI-powered HCI systems become more sophisticated, there are concerns about privacy and the potential for misuse. It's important for developers to consider the ethical implications of these systems and ensure that they are designed in a responsible manner.

Overall, the integration of AI and HCI has the potential to revolutionize the way people interact with technology, making it more natural and personalized.

SYSTEM DESIGN

System designing involves the creation of a system that is designed to be user-friendly and intuitive. The focus of HCI system design is to create an interface that is easy for users to understand and use. This involves considering the user's goals, needs, and abilities, as well as the context in which the system will be used. HCI system design also involves the selection of appropriate input and output devices, the design of the user interface, and the design of the interactions between the user and the system.

In HCI system design, it is important to consider issues such as accessibility, usability, and user experience. The interface must be designed in such a way that it is accessible to all users, regardless of their abilities. It must also be usable, meaning that it is easy for users to perform the tasks they need to do. Finally, the user

experience must be positive, meaning that users find the system enjoyable and satisfying to use.

CONCLUSION

The integration of Artificial Intelligence (AI) and Human Computer Interface (HCI) is a rapidly growing field that has the potential to greatly improve the user experience in human-computer interactions. The combination of AI and HCI has the potential to revolutionize the way people interact with technology.

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REFERENCES

[1] Artificial Intelligence for Human Computer Interaction: A Modern Approach by YangLi (Editor), Otmar Hilliges (Editor).

[2] Human-computer interface development: concepts and systems for its management - https://dl.acm.org/doi/abs/10.1145/62029.62031

[3] Human- Computer/ Device Interaction – IntechOpen - https://www.intechopen.com/chapters/67441