


Chapter 4

Artificial Intelligence– Based Intelligent Human– Computer Interaction

Pinaki Pratim Acharjya

 <https://orcid.org/0000-0002-0305-2661>

Haldia Institute of Technology, India

Subhankar Joardar

Haldia Institute of Technology, India

Santanu Koley

Haldia Institute of Technology, India

ABSTRACT

Computers have become ubiquitous and play an important role in our lives. To be usable, any computing device must allow some form of interaction with its user. Human-computer interaction is the point of communication between human users and computers. AI is gradually being integrated into the human-computer interaction. Designing traditional human-computer interaction courses faces new challenges with breakthroughs in third-generation AI technology. New interaction scenarios between humans and computers, such as smart homes and self-driving cars, are constantly emerging. As AI systems become more widespread, it will be essential to understand them from a human perspective. This chapter will provide an overview to the AI-based intelligent human-computer interaction.

INTRODUCTION

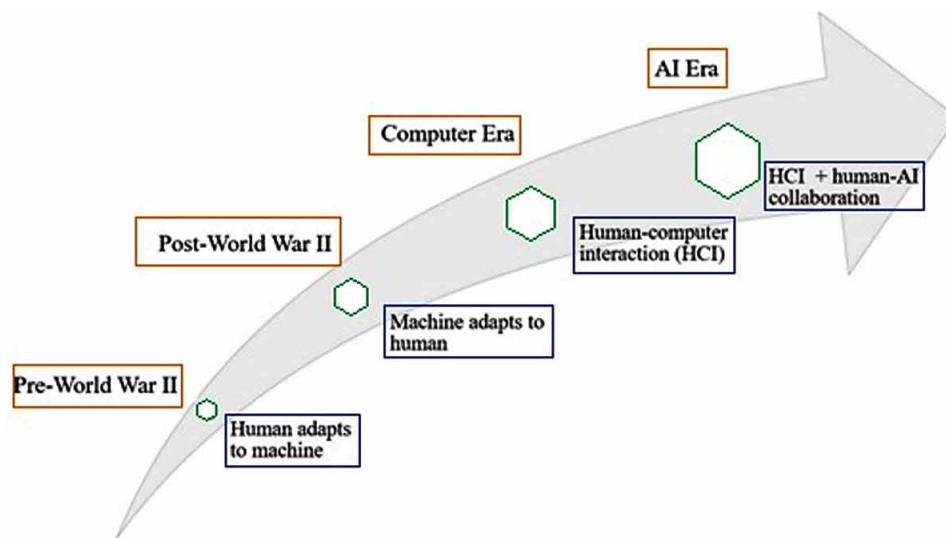
Human intelligence is the capacity for complicated cognitive feats to be performed and solved, as well as having a high level of motivation and self-awareness. Humans can learn, use logic, reason, notice patterns, make judgments, solve issues, and think thanks to intelligence. Humans have the cognitive skills necessary to observe the world, recognise good and true things, and engage in interactions with others and their environments through perception, comprehension, reasoning, and expression. Humans

DOI: 10.4018/978-1-6684-6937-8.ch004

Artificial Intelligence-Based Intelligent Human-Computer Interaction

are able to study works of classic literature and music, enjoy calming landscapes and works of art, and experience a vast world and a particular region. Then, students will be able to distinguish between them, understand what they mean, and express themselves through dialogue, writing articles, artwork, and any other means available. Humans are able to use their intelligence and interact differently because to these mechanisms. How human-machine interactions have changed through time is shown in Figure 1 below.

Figure 1. The Development of the Human-Machine Interaction over Time (Source: Xu, Dainoff, Ge, & Gao, 2021)



Artificial intelligence is a recent example of an emergent technology (AI) (M. N. O. Sadiku, 1989; R. O. Mason, 2003; S. Samoili, et.al, 2020; Zanzotto, F. M., 2019). Recently, artificial intelligence (AI) has gained widespread acceptance in a variety of sectors (Y. Mintz, et.al, 2019; A. N. Rames et al, 2004; Zhang, X., et.al, 2020; Yampolskiy, R.V., 2019; Yue, W., et.al, 2004), including virtual assistance, healthcare, and security. The field of human-computer interaction (HCI) has been combining AI and HCI (Zhou,J., et.al, 2018; Yang, F., et.al, 2020; Yang, Q., et.al, 2020) over the past few years in order to create an interactive intelligent system for user engagement. AI is being used in a variety of fields by employing various algorithms and utilising HCI to provide the user with transparency and build their trust in the computer.

Digitalization and the human-computer interaction are closely related concepts. In this study, it is referred to as HCI (A. Miller, 2019; T. Winograd, 2006; B. A. Nardi, et.al, 2009; M. Klumpp, et.al, 2019; Zhang, X. L., et.al, 2018). HCI is relevant in technical systems and software for a variety of reasons. For continued use, the perception and relationship between a human brain and a certain piece of software must be perfect and as clear as possible. Anything else won't be visible. This is a lively subject that emphasises the development of AI and HCI (M. Jeon, 2017; M. N. Posard, 2014; B. Dickson, 2017, T. Winograd, 2006; Zhou,J.& Chen, F.(2018) in addition to corporate digitization in general. AI has begun to make significant progress in a number of social concerns and has already helped with topics including agriculture and poverty, education, the environment, and health care. Simultaneously, AI has

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/artificial-intelligence-based-intelligent-human-computer-interaction/318060

Related Content

Knowledge Assets in the Global Economy: Assessment of National Intellectual Capital

Yogesh Malhotra (2002). *Intelligent Support Systems: Knowledge Management* (pp. 22-42).

www.irma-international.org/chapter/knowledge-assets-global-economy/24442

Web 2.0 Based Intelligent Software Architecture for Photograph Sharing

Arzu Baloglu, Mudasser F. Wyneand Yilmaz Bahcetepe (2010). *International Journal of Intelligent Information Technologies* (pp. 17-29).

www.irma-international.org/article/web-based-intelligent-software-architecture/46961

Automatic Incremental Clustering Using Bat-Grey Wolf Optimizer-Based MapReduce Framework for Effective Management of High-Dimensional Data

Ch. Vidyadhari, N. Sandhyaand P. Premchand (2020). *International Journal of Ambient Computing and Intelligence* (pp. 72-92).

www.irma-international.org/article/automatic-incremental-clustering-using-bat-grey-wolf-optimizer-based-mapreduce-framework-for-effective-management-of-high-dimensional-data/262649

Incremental Load in a Data Warehousing Environment

Nayem Rahman (2010). *International Journal of Intelligent Information Technologies* (pp. 1-16).

www.irma-international.org/article/incremental-load-data-warehousing-environment/45153

Improving Emergency Response Systems Through the Use of Intelligent Information Systems

Tagelsir Mohamed Gasmelseid (2014). *International Journal of Intelligent Information Technologies* (pp. 37-55).

www.irma-international.org/article/improving-emergency-response-systems-through-the-use-of-intelligent-information-systems/114958