

Human Interaction with Artificial Intelligence: A Review on Current Trends and Future Directions

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ABSTRACT:

As artificial intelligence systems increasingly permeate various aspects of daily life, knowing the dynamics of interactions between these systems is critical to ensuring their effective integration and deployment. This article provides a comprehensive review of the current state of human-artificial intelligence interaction research.

The review highlights key trends in way individuals view, engage with, and adjust to AI technologies across industries such as healthcare, education, finance and entertainment in addition, the new technologies and methods that have the capacity to get better human-AI interaction, such as linguistic analysis in natural language, emotional computing, explainable artificial intelligence, and human-centered design principles. We also look to future research directions aimed at advancing our understanding of human-AI interactions, advancing the responsible development of AI, and promoting human well-being in an increasingly AI-driven world.

Ultimately, this review advances a more thorough comprehension of the complex interactions between humans and AI systems.

Keywords:

Artificial Intelligence, AI Application, Human Centered Design, Trust in AI, machine learning.

1. INTRODUCTION

One of the earliest industry-wide programs for the building of computer systems that require little human input to meet performance goals was IBM's Autonomic Computing Initiative (ACI) [1]. Increased utilization has raised a variety of concerns for a radiology department or private practice, including the requirement for improved imaging report quality and operational efficiency while retaining adequate accuracy [2]. In addition, the human nervous system follows established/evolved "limits" and norms, reacts to impulses sensed or learned from the body or environment, and performs a variety of fluid and simultaneous functions (e.g., breathing rates fluctuate, internal temperature changes, and glands secrete hormones in response to stimuli). Like the human body, an autonomic computer environment should operate in accordance with the data it detects, accumulates, or learns; in other words, it should not require direct human supervision over system management processes [3]. An electric energy system known as a "smart grid" integrates computational intelligence, two-way, cyber-secure communication technology, and information into the production, transmission, distribution, and consumption of power. It is efficient, sustainable, resilient, safe, and stable [4]. We study the complex relationships between artificial intelligence and human intellect, looking at recent developments, difficulties, and prospects. We carry out an extensive examination of current studies, business successes, and societal ramifications to illuminate the quickly developing field of AI-human interaction and to encourage discussion on how to effectively position AI to improve human welfare.

2. History of AI

At the renowned Dartmouth Conference in 1956, John McCarthy coined the term "Artificial Intelligence"[5]. After that, artificial intelligence (AI) entered its first golden era, during which time natural language processing and reasoning as search were the primary areas of AI study [6,7]. AI saw yet another profitable time in the 1980s with the emergence of expert systems, which were also used to address the power systems scheduling issue [8]. However, within a few years, AI entered the following winter as a result of the abrupt reduction in demand for AI hardware, the high expert system maintenance costs, and the waning enthusiasm of investors [6,7]. Throughout the 1990s, as the "intelligent agent" idea gained traction [9]. When artificial intelligence (AI) resumed its regular development, the global chess champion Garry Kasparov was vanquished by the Deep Blue machine. The advancement of AI has also been aided by new application areas that have emerged in the twenty-first century, such as autonomous driving systems. Since 2011, AI has experienced an unparalleled surge in popularity due to the emergence of deep learning and big data.

3. LITERATURE SURVEY

One of the newer and more successful fields in computer science, psychology, and cognitive sciences is human-computer interaction (HCI) [11]. Additionally, HCI is influencing the domains of business, sociology, graphic design, and ergonomics. HCI offers a useful communication tool that enables people to comprehend and engage with technology [12]. One of the issues that HCI addresses is the need to describe design and development work more clearly for comprehension. The other is to provide a more detailed explanation of the contribution that psychology and social and behavioral science in general plays in HCI [13].

AI has useful uses in a number of risky fields, including medicine [16], self-driving cars [14] and manufacturing [15]. Our analysis of AI trust is comprehensive enough to cover earlier research on how humans regard automation that they perceive to be intelligent systems.

4. HOW AI IMPACTING OUR LIVES:

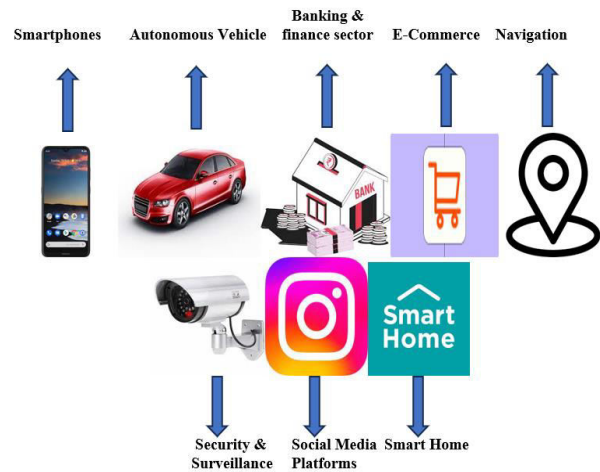


Fig 1 AI IMPACTING ON DAILY LIFE

4.1 Healthcare

AI-enabled health monitoring technology can benefit senior citizens by guaranteeing prompt care delivery, enabling medical professionals to extend patient care initiatives beyond regular business hours, and encouraging self-management [10].

The majority of research, it appears, points to AI's ability to help healthcare workers with their responsibilities, automate tedious jobs, increase medication accuracy, and strengthen teamwork and decision-making.

4.2 Finance

AI can assist banks in abstaining from bad behavior, such as exploiting customers or condoning fraud or money laundering. Important financial decisions, including processing credit card applications, are now being made by AI.

4.3 Education

The assessment of the many applications of AI in education, with an emphasis on administrative duties. According to Sharma et al., the application of AI in education offers a chance to fundamentally transform a number of educational facets [17]. By providing students with a unique educational experience, AI can improve instructional techniques. Artificial Intelligence (AI) utilizes machine learning, natural

language processing, and facial recognition to digitize textbooks, identify plagiarism, and assess students' emotions.

4.4 Social media

Algorithms driven by AI employ user preferences and behavior to filter information, suggest friends, and personalize advertisements.

4.5 Smart homes

The change from a traditional to a smart, internet-connected home was facilitated by the advancement of smart home technologies. A house furnished with sensors, actuators, intelligent systems, wired and wireless networks, and other technology is referred to as a "smart home"[18]

Smart houses can identify and react to their homeowners' needs and preferences thanks to AI technology. AI, for instance, is able to determine which rooms are in use and make proactive adjustments to the lighting, temperature, and other environmental preferences in those spaces.

Some advantages of AI include:

- Simplifying
- Saving time
- Eliminating biases
- Automating repetitive tasks

Some disadvantages of AI include:

- Costly implementation
- Potential human job loss
- Lack of emotion and creativity

5. Emerging trends and future directions:

In the following, we have highlighted some unsolved problems and research paths that require further investigation.

Cloud Computing

Keeping and utilizing data and applications on distant servers hosted over the internet as opposed to local servers or the computer's hard disk. Cloud computing, often known as Internet-based computing, is a technique in which the user receives a resource as a service via the Internet. Files, photos, documents, and other storable documents can all be considered types of data that are stored.

Quantum computing

Quantum computing solves complicated problems that conventional computers or supercomputers are unable to handle, or cannot solve quickly enough. It does this by utilizing specialized technology, such as computer hardware and algorithms that employ quantum mechanics.

Fog computing

A type of distributed computing known as fog computing moves data storage and processing closer to the network edge, which is where a lot of Internet of Things devices are situated. Fog computing improves performance and lowers latency by doing this and minimizing dependency on the cloud for certain resource-intensive operations.

6. Conclusions and summary

After several decades of advancements in computer science, computing systems now form the backbone of the corporate world, offering services based on Quantum, Cloud, Fog, and Serverless computing. Modern computing systems have enabled the resolution of numerous real-world problems that need for reduced latency and reaction times. This has aided budding entrepreneurs everywhere in launching start-ups with substantial processing power to tackle difficult challenges and advance science.

A growing number of everyday objects and gadgets, including virtual assistants on smartphones, smart home appliances, and autonomous vehicles, are utilizing artificial intelligence (AI) technology. It is anticipated that as AI becomes more commonplace and integrated into human endeavors, this trend will continue.

There Are some benefits of ai is that it makes life easier but it makes human lazier because many applications nowadays are automated.

In conclusion AI Plays a very important role in our life.

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