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Artificial Intelligence: Pros and Cons

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Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the contemporary world, reshaping the way humans think, work, and interact with their surroundings. It refers to the development of computer systems capable of performing tasks that normally require human intelligence, such as learning, reasoning, decision-making, and problem-solving. In everyday life, AI plays a significant role by simplifying complex processes, increasing efficiency, and enhancing accuracy across diverse fields including healthcare, education, industry, governance, and communication. From medical diagnosis and smart transportation to personalized learning platforms and digital assistants, AI has the potential to improve productivity and overall quality of life. However, alongside its advantages, AI also raises serious concerns. Issues such as job displacement due to automation, ethical dilemmas, data privacy, surveillance, and the growing dependence on intelligent machines highlight its potential risks. Unequal access to AI technologies may further widen social and economic inequalities. This article aims to critically examine both the positive and negative dimensions of artificial intelligence by analyzing its applications, benefits, and limitations. By adopting a balanced perspective, the study seeks to emphasize the need for responsible development, ethical regulation, and human-centric use of AI to ensure that technological progress contributes to inclusive and sustainable social development.

Keywords

Artificial intelligence, Applications of AI, Advantages, Disadvantages.

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1. Introduction

Humans are the only creatures in this vast universe that God has given the capacity to use or abuse their intellect. Humans have come a long way via intelligence, skill, and proficiency. They have given human life a new direction by using their cognitive powers to create computers, smartphones, and other electronic devices. Human intelligence has advanced to the point where people can now build robots that can think and comprehend like them. New technologies have made human life easier. One tool that has greatly aided in changing human life is Artificial Intelligence. In computer science, artificial intelligence refers to a set of techniques that can mimic human intelligence and problem solving abilities.

In 1955, John McCarthy used the term Artificial Intelligence (AI). He was an American computer scientist, which is why he is also called the Father of AI. The debates surrounding artificial intelligence have been going on for a while. The Matrix, I, Robot, and Terminator are examples of AI-based films that feature machines that think, move, and behave like people. In the domains of business and technology, Artificial Intelligence (AI) is now a tool that is frequently addressed. Despite the belief held by many that artificial intelligence is the way of the future, we can see that it is already here. We are all somehow linked to AI in addition to technology. As a result of recent investments in machine learning by numerous businesses, we now have access to a wide range of AI applications.

2. The Meaning of Artificial Intelligence

The term artificial intelligence (AI) describes how machines that have been taught to think and behave like humans can mimic human behavior. This word is primarily used to solve human-related problems. AI is a technique where we teach a machine to behave like a human, such as operating a vehicle. The ability of a computer or computer-controlled robot to perform tasks typically performed by intelligent beings is known as artificial intelligence (AI). Artificial intelligence is the ability of a computer-controlled robot to accomplish a task.

Artificial Intelligence simply means the approximation of human intelligence in machines. The foundation of AI is the idea that human intellect can be described in a way that makes it simple for a computer to replicate and carry out activities, from the most basic to the most complex. The applications for AI are endless. It is evident from its goals which include computer-enhanced learning, reasoning, and perception as it involves the development of algorithms and models that enable computers to perform tasks that typically require human intelligence (Mahajan, 2023).

Artificial Intelligence has been defined as the capacity of a digital computer or computer-controlled robot to carry out actions often associated with human intellect. According to McCarthy, “It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable” (McCarthy, 2007).

Scholars like Chopra and White (2004), Chatterjee (2015) among many others have considered AI as an accurate tool in the context of problem solving without human help. According to Chatterjee and Bhattacharya (2020), AI is usually considered as a computer-centric technology capable of easily solving various problems in the complex situations in a flawless, cost-effective and quick manner without slightest assistance of humans which was previously deemed to be unique treasure of humans.

3. Applications of Artificial Intelligence

AI technology is being used currently across diverse sectors. The fields of medicine, economics, teaching, transportation, e-commerce, cyber security, the media, entertainment, and space exploration are all profoundly impacted by artificial intelligence. This can be illustrated as follows:

3.1 AI in Health Care

AI is used in the healthcare sector in various ways. For example, AI assists in X-rays, CT scans, and MRIs by utilizing medical imaging technologies to accurately and efficiently detect bone fractures, cancer, and neurological disorders. AI-based chatbots have been developed to provide solutions to our problems when we ask them certain questions. Most importantly, in the field of surgery,

robotic surgery is a highly convenient technology that enables complex surgeries to be performed with ease. Smart watches, health apps, and fitness trackers developed using AI are technologies that allow us to monitor and track health parameters such as heart rate, blood pressure, and more.

Speed and accuracy, and optimize treatment plans, its implementation in medicine has been seen as a chance to advance medicine. However, a lot of doctors worry that AI will displace medical personnel and cause medicine to become less human. The development of AI in medicine has promise for improved results through more accurate personalized treatments and more effective diagnosis. Therefore, in order to preserve the humanistic art of medical practice, suitable regulatory laws must be investigated to guarantee the safe application of AI in medicine (Salomon and Olivier, 2024).

3.2 AI in Education

Artificial Intelligence is transforming education by enabling personalized learning experiences tailored to students' abilities and pace. AI-powered tools assist teachers in assessment, grading, and identifying learning gaps, thereby improving instructional efficiency. Intelligent tutoring systems and virtual classrooms enhance access to quality education, especially in remote areas. However, concerns related to data privacy, over-reliance on technology, and reduced human interaction need careful regulation and ethical use.

Teaching and learning approaches at many levels are impacted by artificial intelligence (AI), a potent educational technology with autonomous observation, comprehension, prediction, and action capabilities (Hwang *et al.*, 2020). AI tools like ChatGPT and Google Gemini are proving to be a boon for students in today's time. Finding answers to any kind of question has become very easy with them. Some robots, like Ozobot and Cubelets, are helping learners and children.

Hwang *et al.* (2020) have explained as to how AI technologies, which simulate human intelligence to make inferences, judgments, or predictions, computer systems can provide personalized guidance, supports, or feedback to students as well as assisting teachers or policymakers in making decisions. Although AIED (Artificial Intelligence in education) has been identified as the primary research focus in the field of computers and education, its

interdisciplinary nature presents a unique challenge for researchers with different disciplinary backgrounds. They have proposed a framework to show the considerations of implementing AIED in different learning and teaching settings.

3-3 AI in Social Media & Entertainment

AI plays a central role in social media and entertainment by curating personalized content, recommendations, and advertisements based on user behavior and preferences. AI algorithms enhance user engagement through targeted feeds, music and video suggestions, and real-time content moderation. In entertainment, AI is used in gaming, animation, visual effects, and even script and music generation. However, excessive algorithmic control can create echo chambers, spread misinformation, and influence public opinion. Issues of privacy, data misuse, and digital addiction highlight the need for ethical regulation of AI-driven platforms.

Millions of people use social media platforms like Facebook, Instagram, Snapchat, and Twitter, and AI has taken care of the proper storage of their data. New trends, news, knowledge, hashtags, and other material are neatly arranged by AI. AI helps in social media by analyzing our preferences. If we watch a video, view images, or read news, it provides us with similar and related content based on our interests.

3-4 AI in E-Commerce

AI supports e-commerce in a variety of ways, including online reviews and buying. Chatbots driven by AI fix client problems around-the-clock. AI keeps e-commerce sites completely safe and identifies fraudulent transactions. In conclusion, artificial intelligence (AI) offers a number of significant applications in e-commerce, and merchants are making significant technological investments to remain competitive and relevant (Nimbalkar and Berad, 2021).

The function of artificial intelligence in e-commerce is examined in this review. The e-commerce era has grown rapidly during the past few years. At the same time, technology advancements have produced many stages that might be helpful in updating trends and capturing consumer needs. Thus, the applications of artificial intelligence in e-commerce are the main emphasis of this paper (Soni, 2020).

3-5 AI in Cyber Security

Artificial intelligence (AI) is developing through more concentration on preventing cybercrime. AI is affecting people worldwide and is quickly becoming an essential component of any business. Cybercrime is one of the most well-known domains where AI has begun to show promise. Therefore, most organizations are implementing AI as their first line of protection in their systems. Since AI is faster than humans in spotting new attacks, it is the ideal choice for enhancing defenses against cybercrime. The development potential of AI technologies is greater (Bibhu Dash *et al.*, 2022). These days, CCTVs are installed practically everywhere in the world and are increasingly often used to prevent and solve crimes.

AI has become a crucial tool in cyber security now-a-days by detecting threats, malware, and suspicious activities in real time. AI systems analyze vast amounts of data to identify patterns and predict potential cyber-attacks before they occur. Automated response mechanisms help organizations reduce response time and limit damage from security breaches. AI also strengthens authentication through biometric and behavioral analysis. However, cyber criminals can also use AI to develop sophisticated attacks, making ethical use and continuous monitoring essential.

3-6 AI in Transportation

In big cities, transportation faces many problems related to traffic. The main reason for this is the increase in the human population, along with the rising number of vehicles on the roads. Autonomous vehicles are in the category of the easiest means of transportation for the future. With the help of AI, all systems will be set in the vehicle, ensuring that humans do not face any kind of problem. AI will aid in the creation of environmentally friendly transportation networks. The integration of electric and driverless vehicles into transportation networks can be facilitated by machine learning algorithms, which can also minimize energy use and encourage environmentally beneficial driving practices. Additionally, AI-powered routing and logistics systems will give preference to eco-friendly choices, lowering carbon emissions and encouraging sustainable mobility (Bharadiya, 2023).

AI is now transforming transportation by enabling smart traffic management, route optimization, and reduced travel time. AI-powered systems support autonomous and semi-autonomous

vehicles, enhancing road safety by minimizing human error. In public transport, AI helps in scheduling, predictive maintenance, and improving passenger experience. Ride-sharing and logistics services use AI to optimize fuel efficiency and delivery networks. However, concerns related to safety, employment displacement, and regulatory challenges remain significant.

3.7 AI in Space

AI plays a vital role in space exploration by enabling autonomous navigation, data analysis, and decision-making in distant and hostile environments. Space exploration is changing for the better thanks to AI. It is assisting researchers with finding new planets, analyzing data, and carrying out difficult jobs. Rovers and spacecraft use AI to detect obstacles, manage energy, and conduct scientific experiments independently. AI also improves mission planning and fault detection in spacecraft systems. AI will also make it feasible to investigate cosmic phenomena and extraterrestrial life. However, reliability, high costs, and ethical concerns about autonomous decision-making in space remain key challenges.

4. Advantages of Artificial Intelligence

Many scholars have explained the pros (advantages) and cons (disadvantages) of AI. For example, Bhosale *et al.* (2020) have tried to discuss AI's pros like efficiency, error reduction, automation, and innovation, while highlighting cons such as high costs, potential for job loss, lack of emotion, and making humans lazy, aligning with general research on AI's transformative but challenging impact. Similarly, Mahajan (2023) has analyzed the impact of artificial intelligence, both positive and negative, on society and shown that while the positive impacts are significant, it's crucial to address challenges such as ethical considerations, job displacement, and the potential misuse of artificial intelligence technologies. Such scholars have stressed that AI has made human life much easier in many ways.

Some of its advantages are as follows:

- ▶▶ When a human performs a task, there is always a chance of errors. However, if the same task is done by AI, the chances of errors are significantly reduced.
- ▶▶ AI is available 24/7 for our convenience, allowing us to find solutions to our problems anytime. Moreover, this round-the-clock availability improves efficiency and responsiveness in

critical services such as healthcare, customer support, and emergency management, ensuring timely assistance without human fatigue.

- ▶▶ With the help of AI, humans do not face any difficulties in decision-making, nor does it take much time. As a result, decisions may become overly data-driven and lack human judgment, ethical sensitivity, and emotional understanding, which are often essential in complex social situations.
- ▶▶ AI has automated many tasks, reducing human labour and saving time. Additionally, by automating routine and repetitive tasks, AI allows humans to focus on more creative, strategic, and value-oriented work, thereby enhancing productivity and innovation.
- ▶▶ AI can efficiently analyze large-scale data. As a result, AI helps in identifying patterns, trends, and insights that support accurate predictions and better planning in fields such as healthcare, business, governance, and research.
- ▶▶ AI helps detect fraud in banks, offices, or online transactions, preventing financial losses. Additionally, AI enhances transparency and trust by continuously monitoring activities in real time and quickly flagging suspicious behavior for timely intervention.
- ▶▶ A machine neither needs rest nor a break like a human. Therefore, AI-driven machines can maintain consistent performance and high productivity over long periods without fatigue, ensuring uninterrupted and reliable operations.

Everyday apps like Google's Gemini, Windows Copilot, Microsoft 365 copilot and Apple Siri are essential to our daily life. With the help of AI and other technologies, computers will be able to make decisions and act more quickly than humans. Humans consider a variety of aspects while making decisions, both practically and emotionally, whereas AI-powered machines follow instructions and provide results more quickly (Bhbosale *et al.*, 2020).

5. Disadvantage of Artificial Intelligence

Inspite of positive impact of artificial intelligence on society, there is its other side also. AI has also brought us many drawbacks as it brings about various challenges. Although AI has greatly facilitated our lives, it has also presented us with a number of difficulties. Some of its disadvantages are:

- ▶▶ To use AI for our convenience, machines and apps are developed, which require a high cost of production. Extensive use of AI-driven machines and applications leads to high maintenance, energy consumption, and upgrade costs, making them less accessible to small organizations and economically weaker sections of society.
- ▶▶ Since AI is performing tasks like humans, its biggest drawback is that it is making humans lazy. Additionally, over-dependence on AI reduces critical thinking, creativity, and problem-solving skills among individuals, as people increasingly rely on machines instead of developing their own abilities.
- ▶▶ If all work starts being done by machines, the biggest issue we will face is unemployment, as humans will no longer be needed for jobs. Artificial intelligence has the potential to lead to job displacement through automation, a process where tasks traditionally performed by humans are taken over by machines or algorithms.
- ▶▶ Unlike humans, machines do not have any emotions. As a result, AI lacks empathy and moral understanding, which can lead to insensitive decisions in areas that require emotional intelligence, ethical judgment, and human compassion.
- ▶▶ One of the biggest misuses of AI can be seen on social media platforms. AI can also be exploited to spread misinformation, deepfakes, and propaganda, influencing public opinion and creating social unrest.
- ▶▶ Being entirely dependent on AI negatively affects human thinking. Over-reliance on AI may also reduce problem-solving skills and creativity, as individuals increasingly depend on machines to make decisions and generate solutions.
- ▶▶ AI raises ethical questions regarding privacy, consent, and the responsible use of data. One major ethical concern of AI is the manifestation of biases in AI systems, perpetuating and amplifying societal prejudices present in training data.
- ▶▶ AI systems can be vulnerable to adversarial attacks, where malicious actors manipulate input data to deceive AI models. Such vulnerabilities can lead to critical errors in sensitive areas like healthcare, finance, and autonomous vehicles, posing serious risks to safety and security.

Machines are undoubtedly superior at operating efficiently, but they cannot take the place of the interpersonal relationships that form a team. One crucial quality in team management is that machines are incapable of bonding with people. Human interactions involve empathy, trust, motivation, and emotional support, all of which are essential for fostering collaboration and a positive work environment. While AI can assist in organizing tasks and providing data-driven insights, it cannot inspire, understand personal challenges, or mediate conflicts the way humans can. Therefore, effective teamwork still relies heavily on human connection, communication, and mutual understanding, areas where machines remain limited.

6. Conclusion

From the above discussion, we have seen how artificial intelligence has made human life easier in every way, whether in the field of health, education, social media, entertainment, or any other sector it has made human life easier everywhere than before. Throughout the world people are depending on use of artificial intelligence and it is expected this trend will increase with passage of time. AI has greatly helped humans in all areas. AI is a technology that is rapidly developing across the world. In the future, AI can make human life even more convenient and simple, and it is already doing so. Artificial intelligence technologies can provide a competitive advantage in many ways. On the other hand, it also has many drawbacks. A number of studies have highlighted the potential misuse of AI on society. This misuse is related both to ensuring that such AI do not harm humans and other morally relevant beings, and to the moral status of the machines using AI themselves.

It may be concluded that the impact of artificial intelligence is profound and multifaceted, ushering in transformative changes across various domains. In simple and straightforward language, we can say that 'AI is either the best invention made by humans or the worst'. Because as much as this technology is making human life easier, it is also bringing forth risks. We need to be mindful of how we use and misuse it. We may benefit much from this technology if we use it wisely. However, considering its potential risks and drawbacks, we must use it in a balanced and ethical manner. If we utilize it improperly, it might endanger not only the human race but the entire world.

As we navigate this era of technological advancement, it is crucial to prioritize ethical considerations, inclusivity, and the preservation of human values to ensure that AI contributes positively to society, empowering individuals, fostering equity, and enhancing overall well-being. The future impact of AI hinges on our ability to harness its potential responsibly, striking a balance between innovations and safeguarding the principles that define a fair, just, and equitable society.

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