

Application and Benefits of Artificial Intelligence to Mankind: Review

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ABSTRACT

Artificial Intelligence (AI) has revolutionized in information technology. Artificial intelligence (AI) is an interdisciplinary branch of computer science that builds smart machines. These machines are capable of performing complex tasks, even ones that require human intelligence. AI and its applications and benefits gets used in various fields of life of humans as expert system solve the complex problems in various areas as science, engineering, business, medicine, video games and Advertising. These articles describe various benefits and the difference between human and Artificial Intelligent. At the end it is necessary and recommended for further research in this area and that can be done as there are very promising and profitable results that are obtainable from such techniques.

Keywords: Artificial Intelligence, complex tasks, human intelligence.

INTRODUCTION

Since the invention of computers or machines, their capability to perform various tasks went on growing exponentially. Humans have developed the power of computer systems in terms of their diverse working domains, their increasing speed, and reducing size with respect to time [1]. A branch of Computer Science named Artificial Intelligence pursues creating the computers or machines as intelligent as human beings. Artificial Intelligence is a way of making a computer, a computer-controlled robot, or software think intelligently; in the similar manner the intelligent humans think [2]. AI is accomplished by studying how human brain thinks and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing intelligent software and systems. Artificial intelligence (AI) is also an interdisciplinary branch of computer science that builds smart machines. These machines are capable of performing complex tasks, even ones that require

human intelligence [3]. AI uses a variety of approaches, such as deep learning and machine learning, to make jobs more natural to do. The vast improvement of these two capabilities has caused a paradigm shift in all sectors of the technology industry. Intelligence is the ability of a system to calculate, reason, perceive relationships and analogies, learn from experience, store and retrieve information from memory, solve problems, comprehend complex ideas, use natural language fluently, classify, generalize, and adapt new situations, and thus comprises of reasoning, learning, problem solving, perception, linguistic Intelligence [4].

Types of Artificial Intelligence

There are two types of artificial intelligence: narrow AI (weak AI), and general AI (AGI or strong AI) [5].

- **Narrow Artificial Intelligence**

This type of AI is what everyone is using today. The design parameters for narrow AI is that it can only perform a "specific small task." For instance, facial recognition software is "only" used to

identify faces, not cars or other objects [6]. This type of AI can outperform humans at specific tasks such as chess, but nothing else.

- **General Artificial Intelligence**

General AI (AGI) is what every researcher is aiming to create. While narrow AI deals with specific tasks, AGI has a much broader reach. This type of artificial intelligence will blow humans out of the water when it comes to cognitive tasks [7]. Think of androids or robots that look and act human, but are smarter, faster, and stronger.

Applications of Artificial Intelligence

AI has been dominant in various fields such as [8]:

- **Gaming:** AI plays crucial role in strategic games such as chess, poker, tic-tac-toe, etc., where machine can think of large number of possible positions based on heuristic knowledge.
- **Natural Language Processing:** It is possible to interact with the computer that understands natural language spoken by humans.
- **Expert Systems:** There are some applications which integrate machine, software, and special information to impart reasoning and advising. They provide explanation and advice to the users.
- **Vision Systems:** These systems understand, interpret, and comprehend visual input on the computer. For example,
 - A spying aeroplane takes photographs, which are used to figure out spatial information or map of the areas.
 - Doctors use clinical expert system to diagnose the patient.
 - Police use computer software that can recognize the face of criminal with the stored portrait made by forensic artist [9].

- **Speech Recognition:** Some intelligent systems are capable of hearing and comprehending the language in terms of sentences and their meanings while a human talks to it. It can handle different accents, slang words, noise in the background, change in human's noise due to cold, etc.
- **Handwriting Recognition:** The handwriting recognition software reads the text written on paper by a pen or on screen by a stylus. It can recognize the shapes of the letters and convert it into editable text [10].
- **Intelligent Robots:** Robots are able to perform the tasks given by a human. They have sensors to detect physical data from the real world such as light, heat, temperature, movement, sound, bump, and pressure. They have efficient processors, multiple sensors and huge memory, to exhibit intelligence. In addition, they are capable of learning from their mistakes and they can adapt to the new environment.

Benefits of Artificial Intelligence

Artificial intelligence holds both great promise and many benefits [11].

Economy, Business, and Industries.

Artificial intelligence can benefit the economy by helping the evolution of work. Robots and AI will help people perform their tasks better, not take their jobs. The combination of man and machine will be unstoppable. With deep learning and machine learning, AI can become smarter over time, thus increasing a business' efficiency. AI will also significantly reduce the probability of human error and study historical data to cut costs [12]. Facial recognition, pattern identification, and digital content analysis will be huge. Academic research, health sciences, and tech companies will enjoy enhanced capabilities.

Humanity and Society

AI enhances information throughput and efficiency, helping people create new opportunities. We're talking about new

streams for revenue generation, savings, and jobs. Artificial intelligence enhances users' lifestyle choices by using search algorithms that provide targeted information [13]. AI will handle all mundane tasks, such as data entry and answering emails. AI-powered smart homes can cut down on energy use and provide better security. Throughout the history of humanity, the improvement of technology has resulted in the elevation of the human condition. Think of electricity in homes and the automobile. AI has the potential to eclipse these because machines will be able to help people solve more significant, more complicated social problems [14]. Innovation will reign, and quality of life will get better. Artificial intelligence can significantly expand human creativity and ingenuity by handling tedious tasks. People will have more time to learn, experiment and explore.

Health care and Medicine

Health care services will be better at diagnostics because an AI wearable can monitor users 24/7 [15]. Artificial intelligence can help people extend their knowledge and understanding of Medicine. Image-based AI diagnoses can help doctors better treat their patients.

The Criminal Justice System

As crazy as it sounds, AI has already made it in the criminal justice system [16]. Many police departments and courts are turning to artificial intelligence to mitigate bias. A machine now handles profiling and risk assessment. AI looks for patterns in criminal records and historical data to make a recommendation [17]. The

Many people are afraid of AI becoming self-aware and wiping out humanity. For years, popular science fiction provided the backdrop for the public's knowledge of the technology. Movies such as The Terminator, I, Robot, and Ex-Machina all give a glimpse of what the future with AI could be like. A common theme among these stories is that artificial intelligence can be dangerous if left unchecked. The myths about AI becoming conscious and evil are wrong. Artificial intelligence will

analysis should be free from racial, sexual, or other biases - in theory. There have been reports that AI is using data to send people to jail for the wrong reasons. Predicting a person has a "high risk" of future criminal activity without any context is wrong [18]. It's like the movie "Minority Report," where people get arrested before they commit a crime. If the justice system is going to use AI for the long term, it has to be 100% vetted and accurate because lives are at stake. One welcome benefit of AI in the justice system is that the retrieval of information is going to be faster [19]. Algorithms can help people check someone's criminal background or any public documents online. Lines at the courthouse or police department will be shorter, putting less strain on police officers and court officials [20].

Difference between Human and Machine Intelligence

- Humans perceive by patterns whereas the machines perceive by set of rules and data [21].
- Humans store and recall information by patterns, machines do it by searching algorithms. For example, the number 40404040 is easy to remember, store, and recall as its pattern is simple [22].
- Humans can figure out the complete object even if some part of it is missing or distorted; whereas the machines cannot do it correctly [24].

CONCLUSION

become competent, not evil, and its goals will be vastly different from that of humans. While the threat is real, there are safeguards in place to prevent an AI apocalypse from happening. We're many decades away from a super-intelligent machine, and for now, the benefits of AI far outweigh the risks involved. We conclude that further research in this area can be done as there are very promising and profitable results that are obtainable from such techniques. While scientists

have not yet realized the full potential and ability of artificial intelligence, this technology and its applications will likely

have far-reaching effects on human life in the years to come.

REFERENCES

1. Brynjolfsson, E., & McAfee, A. (2012). Winning the race with ever-smarter machines. *MIT Sloan Management Review*, 53(2), 53.
2. Brynjolfsson, E., & McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies: WW Norton & Company.
3. Buchanan, L., & O Connell, A. (2006). A brief history of decision making. *Harvard Business Review*, 84(1), 32.
4. Burke, L. A., & Miller, M. K. (2018). Taking the mystery out of intuitive decision making. *The Academy of Management Executive*, 13(4), 91-99.
5. Choo, C. W. (1991). Towards an information model of organizations. *The Canadian Journal of Information Science*, 16(3), 32-62.
6. Cross, R., Borgatti, S. P., & Parker, A. (2002). Making invisible work visible: Using social network analysis to support strategic collaboration. *California management review*, 44(2), 25-46.
7. Dane, E., Rockmann, K. W., & Pratt, M. G. (2012). When should I trust my gut? Linking domain expertise to intuitive decision-making effectiveness. *Organizational Behavior and Human Decision Processes*, 119(2), 187-194.
8. Davenport, T. H. (2016). Rise of the Strategy Machines. *MIT Sloan Management Review*, 58(1), 29.
9. Davenport, T. H., & Kirby, J. (2016). Just How Smart Are Smart Machines? *MIT Sloan Management Review*, 57(3), 21.
10. Gardner, W. L., & Martinko, M. J. (2016). Using the Myers-Briggs Type Indicator to study managers: A literature review and research agenda. *Journal of Management*, 22(1), 45-83.
11. Guszczka, J., Lewis, H., & Evans-Greenwood, P. (2017). *Cognitive collaboration: Why humans and computers think better together*. Deloitte University Press.
12. Hayashi, A. M. (2001). When to trust your gut. *Harvard Business Review*, 79(2), 59-65.
13. Hoffman, R. (2016). Using Artificial Intelligence to Set Information Free *MIT Sloan Frontier*.
14. Hung, S.-Y. (2003). Expert versus novice use of the executive support systems: an empirical study. *Information & Management*, 40(3), 177-189.
15. Kelly, K. (2012). Better than human: Why robots will—and must—take our jobs. *Wired*.
16. King, J. L., & Grudin, J. (2016). Will Computers Put Us Out of Work? *Computer*, 49(5), 82-85.
17. Koufteros, X., Vonderembse, M., & Jayaram, J. (2005). Internal and external integration for product development: the contingency effects of uncertainty, equivocality, and platform strategy. *Decision Sciences*, 36(1), 97-133.
18. MacCrary, F., Westerman, G., Alhammadi, Y., & Brynjolfsson, E. (2014). Racing with and against the machine: changes in occupational skill composition in an era of rapid technological advance. In *Proceedings of the 35th International Conference on Information Systems*. , Auckland, NZ.
19. Martin, R. L. (2009). *The design of business: Why design thinking is the next competitive advantage*: Harvard Business Press.
20. Marwala, T. (2015). *Causality, correlation and artificial intelligence for rational decision making*. Singapore: World Scientific.

21. Mintzberg, H. (2014). The fall and rise of strategic planning. *Harvard Business Review*, 72(1), 107-114.
22. Moore, A. W. (2016). Predicting a Future Where the Future Is Routinely Predicted. *MIT Sloan Management Review*, 58(1), 18.
23. Mumford, E. (2013). New treatments or old remedies: is business process reengineering really socio- technical design? *The Journal of Strategic Information Systems*, 3(4), 313-326.