

Research Paper on Artificial Intelligence & Its Applications

Shreesha R Huddar

Asst. Professor in BMS College of Commerce and Management, Bengaluru

Abstract- 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. While no consensual definition of Artificial Intelligence (AI) exists, AI is broadly characterized as the study of computations that allow for perception, reason and action. Today, the amount of data that is generated, by both humans and machines, far outpaces humans' ability to absorb, interpret, and make complex decisions based on that data. Artificial intelligence forms the basis for all computer learning and is the future of all complex decision making. This paper examines features of artificial Intelligence, introduction, definitions of AI, history, applications, growth and achievements.

Keywords- machine learning, deep learning, neural networks, Natural Language Processing and Knowledge Base System.

INTRODUCTION

Artificial Intelligence (AI) is the branch of computer science which deals with intelligence of machines where an intelligent agent is a system that takes actions which maximize its chances of success. It is the study of ideas which enable computers to do the things that make people seem intelligent. The central principles of AI include such as reasoning, knowledge, planning, learning, communication, perception and the ability to move and manipulate objects. It is the science and engineering of making intelligent machines, especially intelligent computer programs.

Rapid advances in the field of artificial intelligence have profound implications for the economy as well as society at large. These innovations have the potential to directly influence both the production and the characteristics of a wide range of products and services, with important implications for productivity, employment, and competition. But, as important as

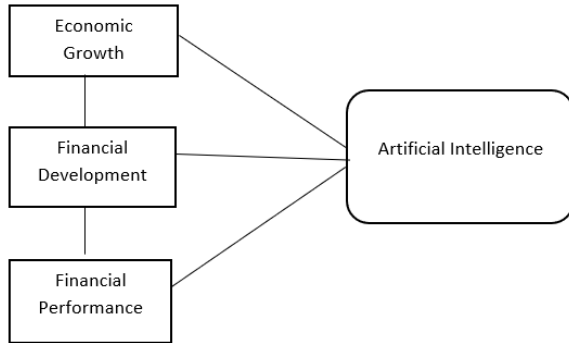
these effects are likely to be, artificial intelligence also has the potential to change the innovation process itself, with consequences that may be equally profound, and which may, over time, come to dominate the direct effect.

Artificial Intelligence is a method of making a computer, a computer-controlled robot, or a software think intelligently like the human mind. AI is accomplished by studying the patterns of the human brain and by analysing the cognitive process. The outcome of these studies develops intelligent software and systems.



This essay begins to unpack the potential impact of advances in artificial intelligence on innovation, and to identify the role that policy and institutions might play in providing effective incentives for innovation, diffusion, and competition in this area. We begin in Section II by highlighting the distinctive economics of research tools, of which deep learning applied to R&D problems is such an intriguing example. Finally, we begin to explore some of the organizational, institutional and policy consequences of our analysis. We see machine learning as the “invention of a method of invention” whose application depends, in each case, on having access not just to the underlying algorithms but also to large, granular datasets on physical and social behaviour.

CONCEPTUAL FRAMEWORK



Machine Learning:

It is one of the applications of AI where machines are not explicitly programmed to perform certain tasks; rather, they learn and improve from experience automatically. Deep Learning is a subset of machine learning based on artificial neural networks for predictive analysis. There are various machine learning algorithms, such as Unsupervised Learning, Supervised Learning, and Reinforcement Learning. In Unsupervised Learning, the algorithm does not use classified information to act on it without any guidance. In Supervised Learning, it deduces a function from the training data, which consists of a set of an input object and the desired output. Reinforcement learning is used by machines to take suitable actions to increase the reward to find the best possibility which should be considered.

Applications of AI

Artificial Intelligence has various applications in today's society. It is becoming essential for today's time because it can solve complex problems with an efficient way in multiple industries, such as Healthcare, entertainment, finance, education, etc. AI is making our daily life more comfortable and faster.

1. AI in Astronomy -Artificial Intelligence can be very useful to solve complex universe problems. AI technology can be helpful for understanding the universe such as how it works, origin, etc.
2. AI in Healthcare -In the last, five to ten years, AI becoming more advantageous for the healthcare industry and going to have a significant impact on this industry.
 - o Healthcare Industries are applying AI to make a better and faster diagnosis than humans. AI can help doctors with diagnoses and can inform when

patients are worsening so that medical help can reach to the patient before hospitalization.

3. AI in Gaming - AI can be used for gaming purpose. The AI machines can play strategic games like chess, where the machine needs to think of many possible places.

4. AI in Finance - AI and finance industries are the best matches for each other. The finance industry is implementing automation, chatbot, adaptive intelligence, algorithm trading, and machine learning into financial processes.

5. AI in Data Security - The security of data is crucial for every company and cyber-attacks are growing very rapidly in the digital world. AI can be used to make your data more safe and secure. Some examples such as AEG bot, AI2 Platform, are used to determine software bug and cyber-attacks in a better way.

6. AI in social media

Social Media sites such as Facebook, Twitter, and Snapchat contain billions of user profiles, which need to be stored and managed in a very efficient way. AI can organize and manage massive amounts of data. AI can analyse lots of data to identify the latest trends, hashtag, and requirement of different users.

7. AI in Travel & Transport

AI is becoming highly demanding for travel industries. AI is capable of doing various travel related works such as from making travel arrangement to suggesting the hotels, flights, and best routes to the customers. Travel industries are using AI-powered chatbots which can make human-like interaction with customers for better and fast response.

8. AI in Automotive Industry

Some Automotive industries are using AI to provide virtual assistant to their user for better performance. Such as Tesla has introduced Tesla Bot, an intelligent virtual assistant.

Various Industries are currently working for developing self-driven cars which can make your journey more safe and secure.

Future of AI

Looking at the features and its wide application we may stick to artificial intelligence. Seeing at the development of AI, is it that the future world is becoming artificial. Biological intelligence is fixed, because it is an old, mature paradigm, but the new paradigm of non-biological computation and intelligence is growing exponentially. The memory

capacity of the human brain is probably of the order of ten thousand million binary digits. But most of this is probably used in remembering visual impressions, and other comparatively wasteful ways. Hence, we can say that as natural intelligence is limited and volatile too world may now depend upon computers for smooth working. A artificial intelligence (AI) is truly a revolutionary feat of computer science, set to become a core component of all modern software over the coming years and decades. This presents a threat but also an opportunity. AI will be deployed to augment both defensive and offensive cyber operations. Additionally, new means of cyber-attack will be invented to take advantage of the weaknesses of AI technology. Finally, the importance of data will be amplified by AI's appetite for large amounts of training data, redefining how we must think about data protection. Prudent governance at the global level will be essential to ensure that this era-defining technology will bring about broadly shared safety and prosperity.

REVIEW OF LITERATURE

Administrative and medical processes of the healthcare organizations are rapidly changing because of the use of artificial intelligence (AI) systems. This change demonstrates the critical impact of AI at multiple activities, particularly in medical processes related to early detection and diagnosis. Previous studies suggest that AI can raise the quality of services in the healthcare industry.

Artificial Intelligence has ameliorated in prominence during the last decade. In practically every area, Artificial Intelligence has had a consequential contribution. It has grown into a tremendous technology that has revolutionized the way human beings communicate and may transform the way human beings look to the future. Nowadays, discoveries in artificial intelligence (AI) that outperform humans in some tasks generate headlines. I exhibit a spiffing updated literature-review for Artificial Intelligence. Other works offered domain-specific plus non-comprehensive, as well as shortcomings on their introduction, background information, related work, and discussion and future directions. This research intends to provide diverse AI techniques, which can be implemented to preclude cyber-assaults, the Artificial Intelligence and its uses in a variety of fields. This literature review will assist

scientists and readers in comprehending the technologies, fields, uses, and applications of AI. Furthermore, in terms of state of knowledge, introduction, background information, related work, discussion, and future directions, this literature review outperformed previous literature review publications.

Disadvantages of Artificial Intelligence

1. High Costs

The ability to create a machine that can simulate human intelligence is no small feat. It requires plenty of time and resources and can cost a huge deal of money. AI also needs to operate on the latest hardware and software to stay updated and meet the latest requirements, thus making it quite costly.

2. No Creativity

A big disadvantage of AI is that it cannot learn to think outside the box. AI is capable of learning over time with pre-fed data and past experiences but cannot be creative in its approach. A classic example is the bot Quill who can write Forbes earning reports. These reports only contain data and facts already provided to the bot. Although it is impressive that a bot can write an article on its own, it lacks the human touch present in other Forbes articles.

3. Unemployment

One application of artificial intelligence is a robot, which is displacing occupations and increasing unemployment (in a few cases). Therefore, some claim that there is always a chance of unemployment as a result of chatbots and robots replacing humans.

For instance, robots are frequently utilized to replace human resources in manufacturing businesses in some more technologically advanced nations like Japan. This is not always the case, though, as it creates additional opportunities for humans to work while also replacing humans in order to increase efficiency.

4. Make Humans Lazy

AI applications automate most tedious and repetitive tasks. Since we do not have to memorize things or solve puzzles to get the job done, we tend to use our brains less and less. This addiction to AI can cause problems to future generations.

5. No Ethics

Ethics and morality are important human features that can be difficult to incorporate into an AI. The rapid progress of AI has raised a number of concerns that one day, AI will grow uncontrollably, and eventually

wipe out humanity. This moment is referred to as the AI singularity.

6. Emotionless

Since early childhood, we have been taught that neither computers nor other machines have feelings. Humans function as a team, and team management is essential for achieving goals. However, there is no denying that robots are superior to humans when functioning effectively, but it is also true that human connections, which form the basis of teams, cannot be replaced by computers.

7. No Improvement

Humans cannot develop artificial intelligence because it is a technology based on pre-loaded facts and experience. AI is proficient at repeatedly carrying out the same task, but if we want any adjustments or improvements, we must manually alter the codes. AI cannot be accessed and utilized akin to human intelligence, but it can store infinite data.

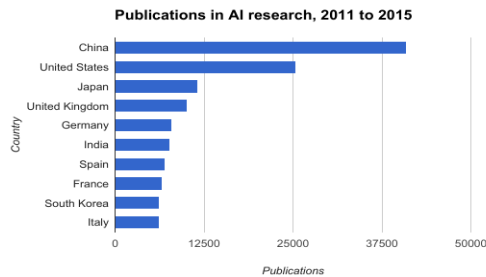
Machines can only complete tasks they have been developed or programmed for; if they are asked to complete anything else, they frequently fail or provide useless results, which can have significant negative effects. Thus, we are unable to make anything conventional.



RESEARCH METHDOLOGY

Type of Research

In this type of research used in this paper is used through google forms which is framed by 14 questions based on the real time use of Artificial Intelligence.

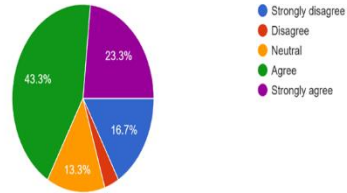


DATA ANALYSIS AND INTERPRETATION

The data is collected through google forms based on their knowledge towards Artificial Intelligence. As we got 30 responses in which it is illustrated.

1. Should there be regulations to govern the use of AI?

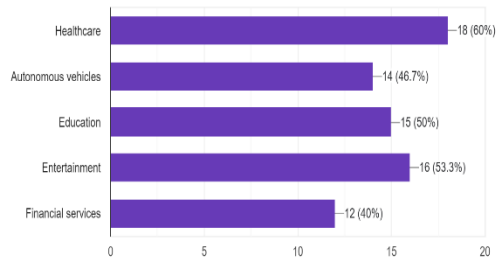
Should there be regulations in place to govern the development and use of AI technologies?
30 responses



In the first query, we can see that the regulations regarding AI should be compulsory or not. For 30 respondents, we got 43.3% who are agreeing to govern the AI. The minimum 3.3% of respondents are disagreeing for the above question.

2. In which sector does the AI is much impacting?

Which of the following AI applications do you find most beneficial?
30 responses



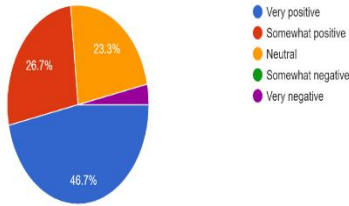
In this type of analysis, we can see that in which sector the AI technology is highly useful. The most impacted responses are in Health Sector which is 60%. During the data collection process, the Financial Sector was least responded with only 40%.

3. How AI is impacting the society?

How do you feel about the impact of AI on society?

	Somewhat positive	Very negative	Very Positive
Neutral	8	1	14

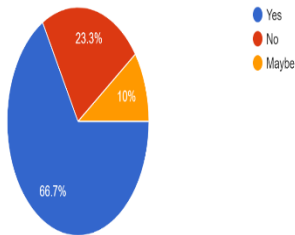
How do you feel about the impact of AI on society?
30 responses



In this type of research question, we can see the impact of artificial intelligence is there by VERY POSITIVE in nature. On daily basis, we can see that there is deliberate increase in the impact where the private as well as government organisations uses automated machines to increase the efficiency and accuracy in the work aspects.

4. Have you used AI personally like Siri, Google Assistant, ChatGPT?

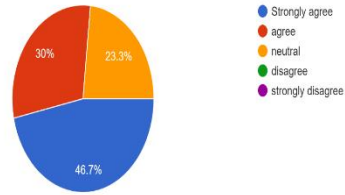
Have you personally used AI-powered applications or devices? (e.g., virtual assistants, recommendation systems)
30 responses



The usage of AI powered applications among 30 respondents are going up to 66.7%. Virtual assistants like GOOGLE, YAHOO, SIRI etc are being used by the respondents. The ChatGPT is also the part of AI powered systems where people use it for their benefits. The respondents in red marked is 23.3% where they haven't used any AI applications as they use keypad phones in which they are not aware of the virtual systems. The rest 10% of the respondents have come across the AI, but not fully used.

5. How AI helps in the Space Agencies for the outer space missions?

Does AI impact in space agencies like NASA, ISRO, ESA, LRO?
30 responses



We can see the high technology is being used in the different space agencies. So, the AI is impacting on the space research in coming and future days too. The 46.7% of the respondents feel that AI must be used in the deep space research. Some 23.3% of the respondents are neutral because of the confusion caused as it should be implemented or not. Basically, I feel that AI must be used in deep space research and exploring the moon and other planets to know their habitable stage. Our ISRO has used AI for the communication and frequency for the mission of Chandrayaan-3, as it was successfully made a soft landing based on the moon surface.

FINDINGS

1. There is a difference and biased opinion on artificial intelligence knowledge whether to be used or not.
2. It is widely used in Space agencies for the explorations.
3. At times it is bearing high cost to implement the AI technology in various sectors like government or private entities.
4. Skills, training and development is a must before using the AI. As it seeks high level of knowledge and technology.
5. As per the respondents, the AI might takeover the jobs of the people in next 10 years, since it is fully automated.

CONCLUSION

Artificial intelligence has the potential to transform all organizations. AI holds the key to unlocking a magnificent future where, driven by data and computers that understand our world, we will all make more informed decisions. These computers of the future will understand not just how to turn on the switches but why the switches need to be turned on.

Even further, they may one day ask us if we need switches at all.

Although AI cannot solve all your organization's problems, it has the potential to completely change how business is done. It affects every sector, from manufacturing to finance, bringing about never seen increases in efficiency. As more industries adopt and start experimenting with this technology, newer applications will be invented. AI will bring a change even more widespread and sweeping than the introduction of computing devices. It will change the way we transact, get diagnosed, perform surgeries, and drive our cars. It is already changing industrial processes, medical imaging, financial modelling, and computer vision. We are well on our way to tapping into this enormous potential, and as a result, the future holds better decision-making potential and faster.

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