

The Race of Artificial Intelligence and Challenges

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Abstract: *In today's era Artificial Intelligence (AI) has become an increasingly prominent field of research and development over the past few decades. In recent years, the development of AI has been accelerating, with more and more resources being devoted to the creation of increasingly sophisticated and capable AI systems. With more and more countries being in an AI arm race, companies competing and racing to be the one with the next most disruptive and transformative AI system. Artificial Intelligence (AI) 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 limited itself to procedures that are biologically observable. While no exact definition of Artificial Intelligence (AI) exists, AI is broadly characterized as the study of computations that allow for reason, perception 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 focuses features of artificial Intelligence, introduction, history, applications, growth and achievements. This paper also analyzes the current state of artificial intelligence progresses, and how the current AI race with recent trends.*

Keywords: Artificial Intelligence (AI), Literature Review, Existing Systems Machine learning.

I. INTRODUCTION

In today's world, there is 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.

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. This is branch of computer science is concerned with making computers behave like humans. Artificial intelligence includes game playing, expert systems, neural networks, natural language, and robotics. Currently, no computers exhibit full artificial intelligence (that is, are able to simulate human behavior). The greatest advances have occurred in the field of games playing. The best computer chess programs are now capable of beating humans. Today, the hottest area of artificial intelligence is neural networks, which are proving successful in a number of disciplines such as voice recognition and natural-language processing. There are several programming languages that are known as AI languages because they are used almost exclusively for AI applications. The two most common are Prolog and LISP. Artificial intelligence is working a lot in decreasing human effort but with less growth.

II. LITERATURE REVIEW

The aim of this research paper is to understand the various characteristics of AI studied. A systematic literature review is important as it can be used to provide a valuable baseline to aid in further research efforts. Artificial Intelligence (AI) has garnered significant attention across various domains due to its potential to revolutionize industries and societies. In this literature review, we delve into existing research to understand the current landscape, applications, challenges, and ethical implications of AI. Numerous studies have highlighted the diverse applications of AI across industries such as healthcare, finance, manufacturing, and transportation [1]. For instance, in healthcare, AI-powered systems assist in

diagnosis, personalized treatment plans, and drug discovery, thereby improving patient outcomes (Esteva et al., 2017). Similarly, in finance, AI algorithms analyze market trends, optimize trading strategies, and detect fraudulent activities (Sutskever et al., 2014). These applications underscore AI's potential to enhance efficiency, accuracy, and decision-making processes across sectors. While AI offers immense potential, it also raises ethical concerns and societal implications. Researchers have extensively discussed issues related to bias, privacy, job displacement, and autonomous decision-making. For example, biases inherent in AI algorithms can perpetuate existing inequalities, leading to discriminatory outcomes, particularly in areas such as hiring and criminal justice (Caliskan et al., 2017). Moreover, the widespread adoption of AI technologies raises questions about data privacy and security, necessitating robust regulations and frameworks to safeguard individuals' rights (Cavoukian & Jonas, 2020). Additionally, the automation of tasks through AI has sparked debates about job displacement and the need for deskilling and up skilling initiatives to mitigate adverse impacts on the workforce[3].

III. EXISTING SYSTEMS

Artistic AI the different algorithms that have been released with the ability to create artistic or realistic images of videos on different subjects. This type of AI first appeared with the neural network called Inception (Szegedy et al., 2015) whose original goal was to detect objects in images, but was later used as a reference to understand how convolution neural networks worked, and in particular their different convolution layers. Using the Inception network, a team from Google proposed the Deep Dream software, a program generating psychedelic and dream like images. While still used to detect elements of interest in images (mostly faces), Deep Dream uses a reverse process compared with normal detection network and will twist and adjust the image to look like something else by giving an output neuron more importance than it should have (a cat face instead of a human face for example) and will then proceed to alter the original image via gradient descent so that it matches with the purposefully wrongly activated neurons. This results in very strange images reminiscent of what can be experienced. While Deep Dream was the first neural network to generate false images, it is later networks based on generative adversarial networks that really became known to the public audience for their ability to generate the so called deep fakes: images or videos artificially[1].

“Assistant AI” category regroups all AIs models that were developed to interact with humans with the goal of helping them: Personal home assistant such as Amazon’s Alexa, Google Home, Microsoft’s Cortana, and Apple’s Siri, the many chat bots developed for support services, and obviously conversational AIs such as ChatGPT. Conversation has always been considered a difficult task as it requires to both understand a question, and producing an answer that is accurate and understandable. AIs targeted at this type of task therefore have to master language data, which have some very specific challenges, like Understanding language requires more than knowing a list of words and their semantic relationships: it also entails a basic understanding of grammar in order to properly understand a question, a prompt or a text: the tense of a verb, the presence of negations, and the grammatical role of some groups of words can completely change the meaning of a sentence. And Specific idioms and second degree humor can make a sentence all the more difficult to understand etc.

All the reasons mentioned above have made assistant AI particularly difficult to develop, and it is only recently that the first effective assistant AIs have appeared.. most assistant AIs simply relied on the detection of a limited number of keywords and expressions, and proposed pre-set answers accordingly. Most early chatbot fall under this category and -very much like early gaming AIs- belong to the family of Symbolic AI. Assistants such as Google Home or Alexa use neural networks to process the sounds they hear into instructions with words given to their algorithm. But the

“reasoning part” to interpret the instructions is similar the early chat bots and also belongs to the symbolic AI branch to decide what to do or to answer.[2]

IV.CONCLUSION

Until now we have discussed about the significant features of artificial intelligence i.e. it's benefits, technologies, it's precise and a good definition. Now we can say that making a machine or say robot is not as easy. It is difficult to make a machine like humans which can show emotions or think like humans in different circumstances. Now we have accepted that artificial intelligence is the study of how to make things which can exactly work like humans do. It is the way in which we think sensibly, act wisely, think like humans, work like humans, we know that through artificial intelligence, even computer has defeated human in chess. So we can say that reaching so far has not gone waste, somehow, it is contributing towards the advancement in the Artificial intelligence. there is no computer showing full artificial intelligence but of course of making machines like ourselves is on its path. Finally, since these systems can replace humans for many basics tasks such as drawing, programming, translation, computation, summarizing of documents, etc; we may wonder what could happen to a society where nobody practices basic skills anymore since AIs can do it better and faster. Indeed, while it may seem convenient, many of these basics skills are also a necessary basis to learn more complex skills and tasks that AI cannot do. As such, and given the lack of real creativity of these systems, there might also be a technological stagnation risk when they will have reached their limits as we have discussed them in this paper, and when there might be no human skilled enough left to feed them with higher level knowledge or skills due to an erosion of basic skills knowledge in the scientific population.

We may therefore conclude that the danger with currently emerging AI systems does not lie in their supposed intelligence, but on their short-comings as well as wrongly using them. It is difficult to predict the consequence of such systems -deployed on a global scale- reaching their limits and being used in ways that we either did not expect, or that -by design- they simply cannot handle.

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REFERENCES

- [1].Berg, M. (2023). 'Four Battlegrounds' shaping the U.S. and China's AI race.Politico
- [2].Borji, A. (2023). A Categorical Archive of ChatGPT Failures.arXiv.
- [3].Bostrom, N. (2017). Strategic Implications of Openness in AI Development.Global Policy, 8, 135–148
- [4.]Bowman, S. R. (2023). Eight Things to Know about Large Language Models.arXiv.
- [5].Artificial Intelligence: A Guide for Thinking Humans