International Journal of Interdisciplinary Innovative Research &Development (IJIIRD)
ISSN: 2456-236X
Vol. 08 Special Issue 01 | 2023

Human-Artificial Intelligence Interaction: Challenges and Opportunities

S.R.Mundale[1] ,P.G.Firke[2]
[1] Lecturer,Mechanical Engineering Department,Padm.Dr.V.B.Kolte College of Engineering,Malkapur
[2] Assistant Professor,Mechanical Engineering Department,Padm.Dr.V.B.Kolte College of Engineering,Malkapur

ABSTRACT

A multidisciplinary discipline called artificial intelligence (A.I.) aims to automate jobs that currently need human intelligence. Artificial intelligence (AI), despite not being well known, is a technology that is transforming all facets of life. In order to rethink how we combine data, analyse it, and make decisions, this article attempts to inform laypeople about AI and urge them to use it as a tool in various fields. In this post, we briefly discussed artificial intelligence (AI), its principles, and potential applications.

Keyword:-*Robotics, drones, artificial intelligence, machine learning, medical imaging, open resource, genome and protein sequences, global health*

1. INTRODUCTION

The ability of an artificial creature to use its own intelligence to solve challenging challenges is known as artificial intelligence (AI). Artificial intelligence combines physiology and computer science. Simply described, intelligence is the computational aspect of a person's ability to achieve goals in the real world. The ability to reason, picture, remember, and grasp information as well as recognize patterns, make judgment, and adjust to change are all considered to be signs of intelligence. Artificial intelligence is concerned with making computers behave more like humans while taking a small fraction of the time.

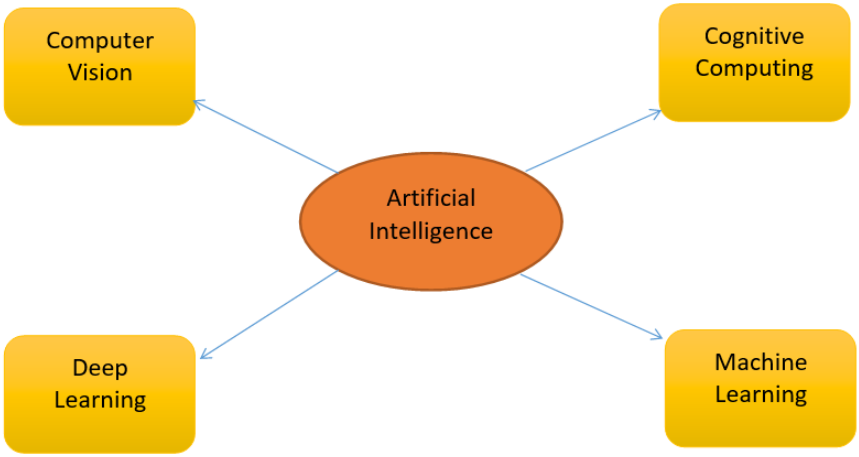
It is called artificial intelligence as a result. Pushing the limits of practical computer science in the direction of systems that are adaptive, flexible, and capable of creating their own analyses and solution strategies by applying general knowledge to particular situations is another goal of artificial intelligence.

2. OVERVIEW OF ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) refers to machine or software intelligence. Intelligence is the result of perception, analysis, and reaction. Given how much AI has enhanced human lives, artificial intelligence is a field of computer science that is fast gaining appeal. Throughout the past two decades, artificial intelligence has significantly improved the efficiency of production and service systems. Expert systems are a rapidly developing field of technology that has its roots in artificial intelligence study. In many fields, intelligent machines will eventually take the place of or supplement human abilities.

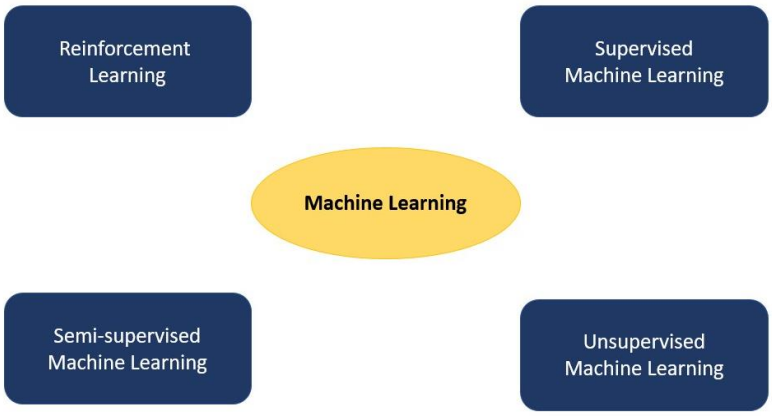
3. WORKING OF ARTIFICIAL INTELLIGENCE

According to common thinking, AI is frequently misplaced on an island with robots and self-driving cars. Yet, this approach ignores one of the most crucial real-world uses for artificial intelligence: the analysis of the enormous amounts of data generated every day. By carefully applying AI to specific tasks, insight gathering and job automation may be done at a scale and velocity that were previously unimaginable. AI systems conduct sophisticated searches through the enormous amounts of data that humans generate, interpreting both text and images to uncover patterns in complex data and taking appropriate action in response to their findings. Modern technologies have enabled computer systems that can understand human language, gain knowledge from experience, and forecast the future. Below are a handful of the sub-fields of AI.



3.1 Machine Learning from experience

Computers can automatically learn from their experiences and develop as a result of machine learning (ML), an application of artificial intelligence that eliminates the need for explicit programming. Developing algorithms that can analyze data and make predictions is the aim of machine learning. In the healthcare, pharmaceutical, and life sciences industries, machine learning is being used to enhance disease detection, medical image interpretation, drug delivery, as well as to forecast your Netflix viewing preferences.

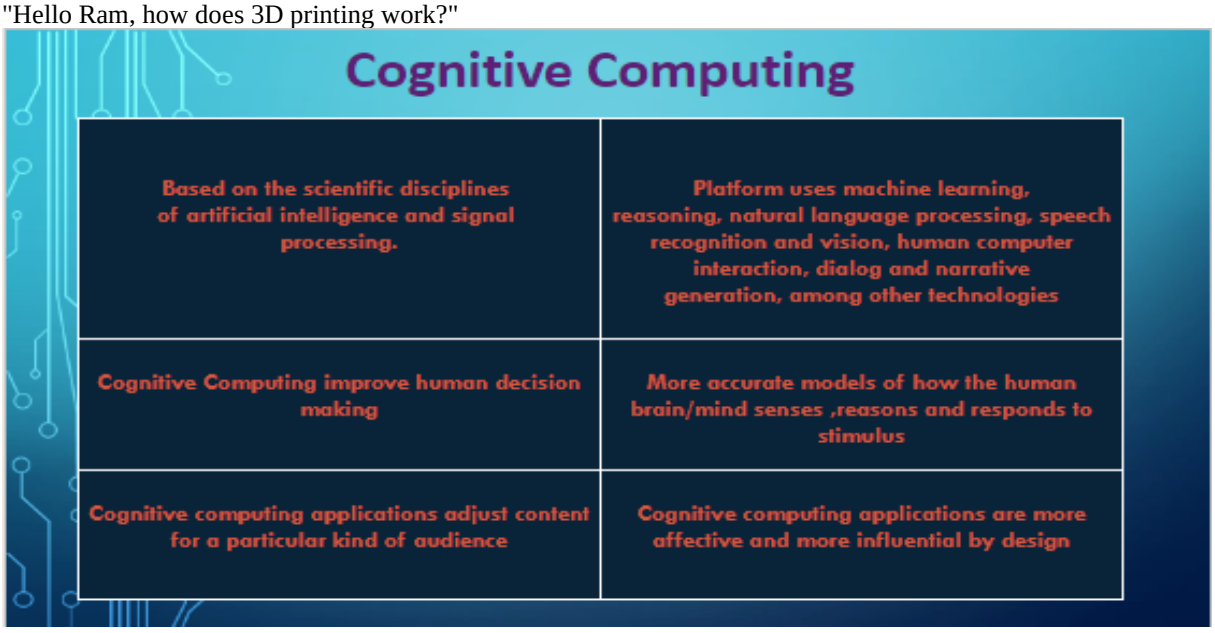


3.2 Deep Learning by Self-educating machines

Deep learning, a branch of machine learning, employs artificial neural networks that learn by studying data. Artificial neural networks are designed to look like genuine neural networks in the brain. In order to detect a facial image from a mosaic of tiles, for example, several layers of artificial neural networks work together to generate a single output from a huge number of inputs. The machines acquire knowledge by receiving both positive and negative feedback for the work they complete, therefore they require constant processing and feedback in order to grow.

3.3 Cognitive computing by making inferences from context

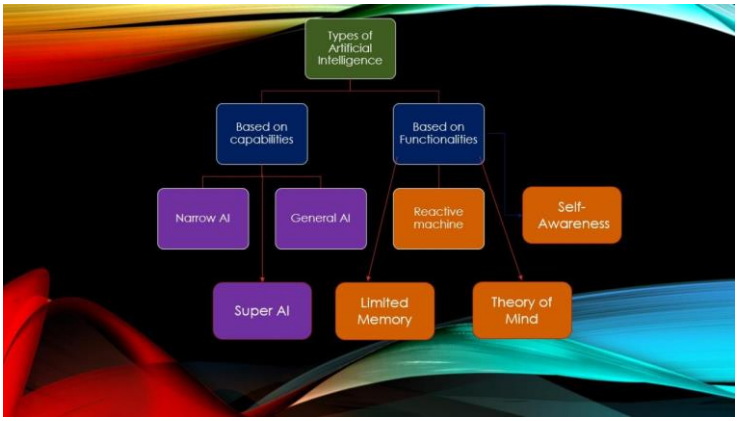
Another crucial element of AI is cognitive computing. Its objective is to mimic and enhance human-machine interaction. By comprehending spoken language and the significance of visual cues, cognitive computing aims to replicate human mind in a computer model. Artificial intelligence and cognitive computing work together to give robots human-like behavior and information-processing skills. Speech recognition is another application of deep learning that enables voice assistants in smart phones to comprehend inquiries like, "Hello Ram, how does 3D printing work?"



3.4 Computer Vision by Understanding images

Computer vision uses deep learning and pattern recognition to analyze visual content, including graphs, tables, and photos found in PDF documents as well as other text and video. Computers can now recognize, process, and interpret visual data thanks to a field of artificial intelligence called computer vision. Applications of this technology have already started to change industries like healthcare and research and development. In order to diagnose patients more quickly, x-ray images of patients are being analyzed using computer vision and machine learning.

4. TYPES OF ARTIFICIAL INTELLIGENCE



4.1 Artificial Iintelligence- Based on Capabilities

i. **Narrow Aartificial Iintelligence**:

Narrow AI is a type of AI that can perform a specific task intelligently. In the field of AI, narrow AI is the most common and currently available AI. Because narrow AI is trained for only one activity, it cannot operate outside its domain or boundaries. Therefore, it is also known as "weak AI". When narrow AI reaches its limits, it can fail in unexpected ways. Apple Siri is a great example of narrow AI, but it only performs a limited set of tasks. Playing chess, shopping recommendations in online stores, self-driving cars, speech recognition and image recognition are all examples of narrow artificial intelligence.

ii. General AI:

General AI is a type of intelligence that can perform all intellectual tasks just like a human. The goal of general artificial intelligence is to create a system that can learn and think like a human on its own. Currently, there is no system that can be classified as general artificial intelligence that can perform any job as well as a human. Researchers around the world are now focusing on creating robots that can perform general AI tasks. Since general artificial intelligence systems are still being researched, developing such systems requires a lot of work and time.

iii. Super Artificial Intelligence:

Super AI is a level of system intelligence where machines can surpass human intelligence and perform any task better than humans with cognitive abilities. This is generally the result of artificial intelligence. Some of the key characteristics of effective AI include the ability to understand reason, solve puzzles, make decisions, plan, learn and communicate independently. Super AI is still a futuristic idea of artificial intelligence. Building such systems in the real world is still a world-changing endeavor.

4.2 Artificial Intelligence - Based on Functionality

i. Reactive Machines:

The main types of AI are pure reactive robots. Such AI systems do not track memories or past experiences to make future decisions. These robots simply take into account the prevailing conditions and react in the best possible way. Reactive machines like IBM's Deep Blue system are one example. Alpha-go, developed by Google, is another example of reactive machines.

ii. Limited memory:

This type of AI, like reactive machines, has memory capabilities that allow it to use past knowledge and experience to make better decisions in the future. This category includes most of the applications that we usually use in our daily life. These AI applications can be trained using massive amounts of training data stored in their memory reference model. Example Many self-driving cars have limited memory technology. They store information like GPS location, neighboring car speeds, size/type of obstacles, and a hundred other pieces of information so you can drive like a human.

iii. Self-awareness:

This is the final stage of development of artificial intelligence, which currently exists only in theory. A self-aware artificial intelligence is an AI that has matured to the point where it is so similar to the human brain that it has achieved self-awareness. The ultimate goal of all AI research is and always will be the creation of the kind of AI that is decades, if not centuries, away from becoming a reality. Not only can this form of AI recognize and evoke emotions in the people it interacts with, it also has its own emotions, desires, beliefs, and perhaps goals. And it's AI that tech skeptics worry about. While the growth of self-awareness can accelerate our progress as a civilization, it can also lead to disaster. This is because if an AI becomes self-aware, it may have ideals such as self-preservation, which could either directly or indirectly mean the end of humanity; as such an entity could easily overpower any human brain and create advanced plans to take over. . Humanity classifying

technology as narrow artificial intelligence (ANI), artificial intelligence (AGI), and artificial intelligence (ASI) is an alternative method of classification that is more often used in engineering jargon (ASI).

iv. Theory of Mind:

While the first two classes of AI were and still are abundant, the next two types of AI are so far only an idea or a work in progress. The next level of artificial intelligence systems that scientists are actively working on is artificial intelligence of the mind. A theory of mind-level AI is capable of recognizing the needs, emotions, beliefs and mental processes of the beings it interacts with. Although AI is currently a growing business and the focus of well-known AI researchers, reaching the level of theory of mind would require progress in other areas of AI as well. Because AI computers must see humans as individuals whose brains can change under the influence of many different elements, in order to truly understand human needs, they must "understand" humans.

5. APPLICATIONS OF ARTIFICIAL INTELLIGENCE

Healthcare and Artificial Intelligence In the current generation, this is the most essential requirement for humans.
Commercial Applications of Artificial Intelligence...
Education and Artificial Intelligence...
Artificial Intelligence in Self-Driving Cars...
The use of artificial intelligence in social media…
Machine Learning for a Better Society...
Tourism and Artificial Intelligence

6. ADVANTAGES OF ARTIFICIAL INTELLIGENCE

Reducing human error
Zero risk
24x7 Availability
Digital support
New inventions
Impartial decisions
Do repetitive tasks
Daily applications

7. DISADVANTAGES OF ARTIFICIAL INTELLIGENCE

High costs
Being able to create a machine that can simulate human intelligence is no small feat
No creativity
A major disadvantage of AI is that it cannot learn to think outside the box
Unemployment
Make people lazy

CONCLUSION

Finally, it can be analyzed that artificial intelligence has benefited computer science because artificial psychology has made machines focus on philosophical arguments. AI performs tasks faster than a human, and the main purpose of AI is to create technology in an intelligent way. Artificial intelligence has been shown to be computer knowledge with human characteristics, but these computers and robots help the environment to grow and react rationally to help people. Artificial intelligence has already affected people's lives in various fields and will surely continue to do so in the future.

REFERENCES

1.Knight, W. (2017, January 04). What to expect of artificial intelligence in 2017. Retrieved November 23, 2017, from https://www.technologyreview.com/s/603216/5-big-predictions-for-artificial-intelligence-in-2017/
2.Mahanta, J. (2017, July 10). Introduction to Neural Networks, Advantages and Applications. Retrieved November 23, 2017, from https://towardsdatascience.com/introduction-to-neural-networks-advantages-and-applications-96851bd1a207
3.Mahmodey, Z. (2017, April 22). Big Data and Artificial Intelligence for Digital Business. Retrieved November 25, 2017, from http://www.immersiveauthority.com/big-data-artificial-intelligence-digital-business/
4.McFarlane. N. (2017, October 19). The UAE now has a minister of Artificial Intelligence. Retrieved November 22, 2017, from http://whatson.ae/dubai/2017/10/uae-now-minister-artificial-intelligence/
5.Sadek,A.W.,& CHOWDHURY, M.(2012, November). Artificial Intelligence Applications to Critical Transportation Issues Retrieved November 24, 2017, from https://www.researchgate.net/profile/Said_Easa/publication/273576102_Design_and_construction_of_transportation_infrastructure_httponlinepubstrborgonlinepubscircularsec168pdf/links/55097a910cf26ff55f85932b.pdf#page=14