RESEARCH PAPER ON ARTIFICIAL INTELLIGENCE

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ABSTRACT

Artificial Intelligence (AI) refers to the stimulation of humanlike intelligence in modern machines programmed to imagine and think like human beings and imitate their actions. The term can further be utilized for any machine that displays traits associated with human intellect.

Machines with artificial intelligence further get wired to embrace a cross-disciplinary strategy based on computer science, arithmetic, psychology, linguistics, and many more. Also, the supreme quality of artificial intelligence is its capacity to intellectualize and decide actions that have the best possibility of achieving a definite objective and hence continuously emerging to serve in numerous diverse industries.

Keywords: Artificial Intelligence, machines, humanlike intelligence, problem-solving, strategy

Introduction

AI (Artificial Intelligence) is a prominent branch of computer science that allows machines to imagine like humans. When human beings think, this computer software senses what is happening around them, understands what these inputs imply, and then makes a rational decision based on the data fed into them. Artificially intelligent machines are in the initial stages of starting to replicate these behaviors.

Artificial intelligence has remained the topic of immense optimism but has also experienced numerous setbacks. However, in modern times, this artificial intelligence has grown as an indispensable part of the technology sector, rendering solutions to the most challenging problems in the field of computer science.

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What is AI and the four types of AI?

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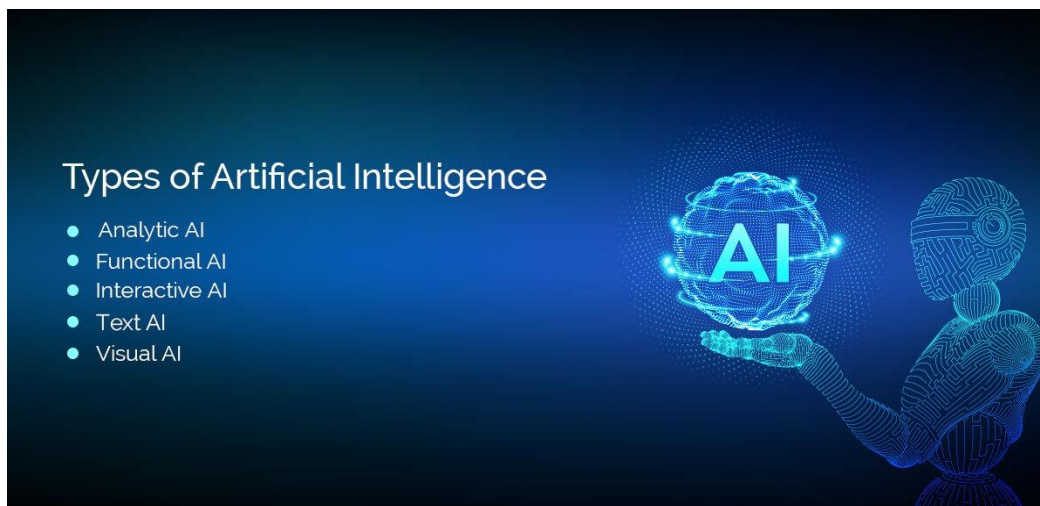
Artificial Intelligence means the aptitude or mental capability exhibited by machines. This realm of computer science has gained immense popularity in the modern world. It replicates human intelligence in computer devices that are programmed to read and imitate human actions.

As artificial intelligence technology progresses, it will hold a vital influence on the quality of life. Hence, it is evident that everyone today aspires to connect with artificial intelligence technology in any way, whether as a developer or an end-user.

Mentioned hereunder are four major types of artificial intelligence:

- **Reactive Machines**

Reactive machines are the most fundamental type of Artificial Intelligence system. This implies that they cannot form thoughts or apply prior expertise to influence present-made choices. They can solely respond to currently existing circumstances and hence, are known as reactive machines.

A present design of a reactive machine is Deep Blue, a chess-playing supercomputer built by IBM (International Business Machines Corporation) in the year 1980. Deep Blue got designed to play chess against a human opponent to beat the competitor.

Also, it could make forecasts regarding what moves it should execute and the moves its contestant might make, thus possessing an enhanced capability to foretell, choose, and succeed. A notable feature of these reactive machines is, irrespective of the era or region. These machines will perpetually run the way they were programmed.

Hence, it must not be wrong to say that there is no advancement with reactive machines and just stagnation in recurring behaviors and actions.

- **Limited Memory**

Limited memory comprises machine learning patterns that acquire insight from previously received data, collected information, or situations. Unlike reactive machines, this type of artificial intelligence learns from past events by examining activities or data furnished to them to develop experiential wisdom.

Even though limited memory mounts on observational information connected to pre-programmed data the machines previously held, this sample information is brief. Self-driving cars or automated vehicles are the perfect examples of limited memory artificial intelligence that rely on the unification of observational and pre-programmed information.

Not only do these self-driving cars observe their surroundings, but they further examine the movement of other vehicles and individuals in their vision range.

- **Theory Of Mind**

Theory of mind is a decision-making capacity equivalent to the extent of a human mind by computer software or machines. While some software presently manifest humanlike abilities,

none of them is entirely competent in handling communications corresponding to human standards.

Since one crucial element of human communication is possessing emotional capability or sounding and acting as an individual would in a conversation, it is imperative for machines with artificial intelligence to incorporate this element.

Hence these future classes of machines would entail understanding that individuals have feelings and sentiments that influence behavioral output and influence a theory of mind machine's evaluation method.

This theory of mind is a highly forward-looking type of proposed artificial intelligence that would need machines to wholly understand accelerated variations in behavioral and emotional patterns in human beings. It will also understand that individual behavior is mutable, and hence the theory of mind machines would have to be capable of acquiring the behaviors quickly.

- **Self-awareness**

Self-aware Artificial Intelligence comprises machines that possess human-level mindfulness. While this kind of artificial intelligence is not presently in existence, it is the most advanced type of artificial intelligence known to human beings.

Aspects of self-aware artificial intelligence do not just comprise the capacity to mimic humanlike movements but to think and make rational decisions for themselves. Also, self-aware AI is a progression and expansion of the theory of mind artificial intelligence.

While the theory of mind AI solely concentrates on understanding human behaviors, self-aware artificial intelligence takes it a step further by implying self-guided reactions and thoughts.

Advantages and disadvantages of AI

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The advantages of Artificial Intelligence are distinctly evident in the form of AI-enabled chat support for businesses, automatic search on search engines, intelligent foresight on eCommerce portals, and many more. However, there are many disadvantages of artificial intelligence that cannot get ignored.

Mentioned hereunder are significant advantages and disadvantages of AI.

Advantages:

- **Reduction in Manual Error**

The expression "human error" got introduced because human beings commit various mistakes. Computers, on the other hand, do not make any errors if programmed accurately. With Artificial intelligence, the decisions get made from already accumulated data applying a specific set of algorithms.

Hence there are lesser odds of errors, and it further helps businesses attain higher levels of precision.

- **Round the clock operations**

Human beings will operate for 4-6 hours per day, excluding break time. However, AI implemented machines can run round the clock without any break time or getting exhausted by performing repetitive tasks every day.

- **AI machines can make quick decisions**

While making a decision, human beings examine several factors practically and emotionally and delay the decision-making process. AI machines, on the contrary, get programmed in a way that they can make data-driven decisions quickly.

Disadvantages:

- **AI-based machines are costly.**

Given the complexity AI-based machine manages, it is apparent that AI-driven initiatives can incur huge costs. Also, designing an intelligent machine that mimics human reasoning and logic demands plenty of means and time, making it considerably high-priced.

- **Artificial intelligence is reducing job opportunities.**

AI is substituting the majority of monotonous jobs with bots. Hence, the demand for manual intervention is running down as companies look towards more risk-free and error-free work quickly. This has ended in scrapping several job possibilities that were once widespread.

Application of AI in various industries

There are plenty of reasons why Artificial Intelligence is getting a lot of attention from investors across several industries these days. Almost every business industry in the modern business sector will undergo a paradigm transformation because of artificial intelligence.

Also, for any business to prosper, it necessitates joining forces with technology in any manner. Hence, every business field would like to be part of this AI revolution and leverage its benefits. Artificial intelligence technology in modern times gets employed in every business sector, including:

- Automobile sector

- Banking sector

- Retail industry

- Marketing Sector

- Engineering Projects

- Education Industry

- The space industry, and many more.

Future scope of AI

Artificial Intelligence has already begun to expedite the human force with its applications. Various researchers determined the extent of its progression from single root AI to its subclass deep learning and machine learning and has not moved down from the limelight since its advent.

Here are some significant ways AI will widen its horizon in the approaching future:

- **Artificial Intelligence in cybersecurity**

The prospective employment of artificial intelligence in cybersecurity will help in restraining hackers and cybercriminals. Innovative AI systems like Recurrent Neural Networks can identify online fraud in the primary stages and scan thousands of transactions spontaneously to help eliminate the risk of online data theft and forgery.

- **Artificial Intelligence in data analysis**

One of the ways artificial intelligence will profit businesses in the realm of Data Analysis is to understand patterns in online data that human beings cannot. This facilitates industries to target the appropriate customers for their business products and services.

- **Artificial Intelligence in Healthcare**

Erroneous diagnoses are a significant challenge in the medical sector. Artificial intelligence can assist doctors in bypassing these mistakes by presenting them with appropriate databases and instructions. It can further examine the patients' database with related symptoms and recommend the treatment most suitable in those medical cases.

Conclusion

Artificial Intelligence (AI) owns unquestionable potential and a widespread prevalence and raising the standards and quality of work in diverse industries where it gets employed. Also, artificial intelligence is favored and implemented not only because of its innovation but also because it's cost-effective, helps people explore new horizons, and saves time.

Hence, it might not be wrong to assert that the implementation of Artificial Intelligence in any perspective will only promote any business, regardless of its operational sector.

References

http://www.amodit.com/en/AMODIT/Artificial-intelligence-elements.aspx

http://en.wikipedia.org/wiki/Artificial_intelligence#CITEREFRussellNorvig2003

https://www.nber.org/system/files/working_papers/w24449/w24449.pdf

https://workofthefuture.mit.edu/wp-content/uploads/2020/12/2020-Research-Brief-Malone-Rus-Laubacher.pdf

https://www.researchgate.net/publication/344575855_Artificial_Intelligence