ISBN: 978-93-92995-10-1

ARTIFICIAL INTELLIGENCE

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What is Artificial Intelligence?

- Artificial intelligence is the study of using computers and machines to study human intellect. Artificial intelligence also includes engineering and sciences involved in making intelligent machines, or clever computers. However, AI doesn't have to pull itself back or to be limited to biologically observable ways.
- The goal of artificial intelligence in definite in understanding intelligence and building intelligent systems.
- It is a broad field of computer and sciences that focus on development of intelligent computers capable of doing tasks.
- It can also be defined as, capability of a machine to intimate human's behaviour.

What is History of Artificial Intelligence?

- The history of artificial intelligence is a story of fantasy, demonstrations and promises.
- Over the past half century, the AI community has succeeded in building experimental machines that test hypotheses about the mechanisms of intelligent thinking and behavior.
- Although reaching a fully developed Artificial Intelligence still remains in the future, we must keep the dialogue ongoing about the implications of completing the promise.
- Classical thinkers attempted to define human thinking as the mechanical language of symbols, laying the base for today's AI.
- The field of Artificial Intelligence research was founded at a workshop held on the campus of Dartmouth College. Those who attended would become the first AI researchers for decades.

Growth of Artificial Intelligence

- The desire of creating non-biological intellect has existed for centuries, even before AI was established.
- The role of AI powered technologies in next generation healthcare technology, manufacturing and production, security and surveillance and many more is being recognized by many sectors.
- AI is thought to have ability to enhance every phase of services and sectors, even these systems are expected to save a lot of capital in upcoming years.
- Artificial intelligence has the potential to boost the capacity of capital and labour to drive economic growth.
- Artificial Intelligence can turn today's fantastic movies into realistic scenarios, it may even possible in future for robots to do police tasks.
- Importance of AI for economic growth and societal development, authorities must not only avoid stifling AI innovation, but also actively assist its continued development and applications.

Artificial Intelligence in Healthcare Appliances

- Artificial intelligence is changing the landscape of healthcare and biomedical research.
- There are many ways and techniques in which AI is playing an important role in healthcare appliances:
  ARAVIND EYECARE SYSTEM IN INDIA (for diabetic patients)
  - Diabetic Retinopathy (DR)
  - Fundus Photography
- An AI system trained on thousands of images can identify referable DR with physician-level sensitivity and specificity, according to a group of researchers from Google Inc. and other institutions.
- This technology is now combing and upgrading thus AI technology in clinical practices in numerous Eye Hospitals in India.
- For detecting moderate-to-serve-DR a technology method was published by university of IOWA which was further approved by US Food and Drug Administration (FDA).
- AI has lately re-emerged into the scientific and public consciousness, as new advances and technologies are revealed by modern companies and scientists at dizzying pace.
- As a result, AI triumphs from the 1970s through the 1990s that were formerly lauded as medical breakthroughs, such as the automated interpretation of electrocardiograms (ECGs)11, are now seen as useful but not true AI.
- Unlike the earlier AI systems, which relied totally on limitations of medical knowledge by experts and on making of robust decision rules. Recent AI research has expanded machines and ways of learning which can account for complex interaction, to recognize pattern and loop from the data.
- In diagnosis stage, AI literature analysis has a vast proportion starting from diagnosing image, genetic testing to electrodiagnosis. For example, Jha and Topol urged radiologists to acquire AI technologies during analysing diagnosing images that accommodated a lot of data information.

Artificial Intelligence in Manufacturing and Production

- Artificial Intelligence have shown their aptitude in fields such as customized product manufacturing, customized product design, customer management, manufacturing management, manufacturing maintenance, logistics, after sales service and market analysis.
- Artificial Intelligence (AI) encompasses theories, technologies, methodologies and applications aimed at enhancing human intelligence.
- Manufacturing not only includes AI, but it also includes techniques such as perception, machine learning, deep learning, reinforcement learning, decision making. Apart from this, it uses AI-enables applications like computer vision, natural language processing, intelligent robots and system recommendations.
- Incorporation of AI and industrialization of IoT brings benefits to smart and easy manufacturing. AI-developed tools upgraded manufacturing efficiency.
- Although, AI systems have their own drawbacks. For example, high-performance computing servers equipped with high end GPUs are mostly required to fasten the training process of massive data, while existing manufacturing facilities aren’t fulfilled to the stringent requirement on computing capability.

- Artificial intelligence (AI) is the riding pressure at the back of this transformation, and it's far vital that we put together for an AI-ruled future. Robots and synthetic intelligence (AI) could be appreciably extra disruptive than whatever we have got visible before. Intelligent augmentation could be the cornerstone of the simplest AI systems.

Artificial Intelligence in Security and Surveillance

- There is a slew of direct AI applications that are crucial to national security. Some major authorities have indicated that, in recent years the cyber domain represents a key potential use sector for AI.
- In October 2016, director Michael Rogers revealed that the agency sees AI as "FOUNDATIONAL TO THE FUTURE OF CYBERSECURITY"
- The influence of AI in the changing threat landscape has major consequences for information security, mirroring the broader impact of AI in the information age through bots and associated technologies.
- Progress in AI technology will have an impact on robotics and autonomous capabilities, which could have a significant impact on future conflict and the military security balance.
- AI is now in a position to ensure the monitoring of video-data flows and security-based systems and can warm up security services of suspicious and anonymous activity.
- Every work and task done on the internet leaves trade, experts can trace the e-footprints and algorithms in counter to catch the victim.
- The impact of AI on safety might be decided through the technique and the way it's far implemented. The real utility of the principle to real-global issues might be crucial. Increasing the talents and impact of clever structures and robots will boom the significance of innovative choices taken through executives withinside the zone approximately places and time of use
- AI can help agencies avoid cyber-crime that may cost them money and destroy their brand. It may be trained to recognize key phrases or topics linked with harmful content, so averting a cyber assault.
- The management of data volumes will be an essential task of future disease surveillance architectures. Many ability reassessments of fitness records contain vast volumes of data, and we wish to find emerging disease patterns in these datasets in real time.

Artificial Intelligence in Education

- Artificial intelligence plays an important role in education and it'd be too naive to think that there's no impact of it in education
- Artificial Intelligence in education includes everything from AI-Driven, step-by-step personalized instructional and dialogue systems, through AI-supported exploratory learning, the analysis of student writing, intelligent agents in game based environments and student-support chatbots to AI-facilitated tutor matching.
- Also, AIED(International Artificial Intelligence in education) can also put some shine on learning and educational practices.
- The field of AIED is derivative as well as innovative. On one hand, it brings and collects theories and methodologies from related fields such as AI, cognitive science and education. Whereas on other hand, it generates its own larges research issues.

- The primary themes in AI research are adaptive learning, personalization and learning styles, expert systems and intelligent tutoring systems, and AI as a future component of educational processes, according to a search of "AI and Education" linked terms.
- The use of AI in education has resulted in significant progress in theory and practice in the new millennium. There are various paths and scenarios for incorporating AI into educational processes, with online learning and distance education receiving significant attention.
- In education, artificial intelligence entails developing theories and models in relation to the production of artefacts in a given experimental sector.
- The use of computers to simulate parts of educational circumstances that itself entail the use of computers as educational artefacts, some of which may incorporate computational models, is an important part of artificial intelligence in education research.

Advantages of Artificial Intelligence

- Artificial Intelligence applications are utilized to simulate human intelligence for either solving a problem or making a decision. AI provide advantages of permanency, cost-effectiveness and reliability while also addressing uncertainty and speed in either solving a problem or reaching a decision.
- AI applications can give permanency in an organization when human intelligence is attached to a single person or a group of people, preventing information from being lost when the individual or group members leave or are no longer available to the business.
- Artificial intelligence's decisions are based on facts rather than emotions, which is one of its key advantages. Despite our best attempts, human decisions are always influenced by our emotions in a bad way.
- It is a one-time investment, low maintenance or labor cost and it can be deployed very easily.
- Giving it a proper model it can outcompetes natural intelligence. Also it finishes tasks faster than humans, it is less errors and more efficient.
- Artificial Intelligence applications can provide permanency that prevents the knowledge from being lost when the individual or the group members retire or are no longer available to the organization.
- The life of the knowledge encapsulated in an AI framework could be as long as the relevance of the problems and decision scenarios remain unchanged. AI also enables the development of a learning capability which can be utilized to further prolong the life and relevance of the application.
- Learning from real-world success and failure is an enabling feature of AI tools known as “reinforcement learning” and is advantageous in that it increases the reliability of the tools with their increased use in applications

Challenges or Dis-Advantages of Artificial Intelligence

- The difficulty with software development for AI deployment is that software development is sluggish and costly. There are a limited number of skilled programmers accessible to create artificial intelligence software.
- AI can be sometimes misused in leading to mass scale of destruction.
- Human’s jobs are affected and so unemployment problem is increasing.

- Machines can easily lead to destruction if the implementation of machine put in the wrong hands the results are hazardous for human beings**.**
- Making humans lazy with its application automation bulk of work.
- Human interference is getting less as AI replaces the bulk of repetitive chores and other duties with robots, which may present a serious problem within the utilization requirements. Every company is aiming to replace the least skilled employees with AI robots that can perform similar tasks more efficiently.
- The cultivation and practice of artificial intelligence and thinking ability are inseparable.
- AIs aren't built to perform creative activities. As a result, it should be obvious that AIs lack creativity and originality. They will never be able to equal the human brain, even if they can assist you in designing and building something unique.
- The results of current artificial intelligence technologies remain limited to specific intellectual areas, such as image recognition, speech recognition, and dialogue response.

Conclusion

- Artificial Intelligence is a broad branch of computer science that is focused on a machine's capability to produce rational behavior from external inputs. The goal of AI is to create systems simple that can perform tasks that would otherwise require human intelligence.
- Although AI can be a threat, either now or in the future. It is clear that it has substantial and critical benefits for humans. Using the systems that mimic human is next borderline in solving problems.
- AI is the center of a new enterprise to build computational models of intelligence. The main motive is that intelligence can be represented in terms of structures and symbols which can be programmed in a computer system.
- The combination of AI and human intelligence is definitely going to lead the development of computational and cybersecurity innovations which is for sure going to be a great initiative towards digital nation.

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