AN INSIGHT INTO ARTIFICIAL INTELLIGENCE

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What is AI?

[1]The branch of computer science which involves the study of the relationship between perception and computation is known as artificial intelligence. Programs are written in order to receive some intelligent behavior. Programming languages are considered as the most important tools in AI since these help in solving certain kinds of problems. The programs are conceived and implemented in the programming languages. [2]The branch that fills the gap between scientists of human characters and the computer scientists is known as artificial intelligence. It can also be stated as the attempt to make computers intelligent. The goal of artificial intelligence is to enable computers to accomplish tasks that humans are good at.

History of AI

[3]The birth of AI can be traced at 1942, when Isaac Asimov, an American Science Fiction writer, had published his story 'Runaround' which was about a robot evolving with the 'Three Laws of Robotics'. This story inspired many scientists in the field of AI. At roughly the same time Alan Turing, an English Mathematician developed 'The Bombe', generally considered as the first working electromechanical computer which was a code breaking machine for the British government mainly used for deciphering the Enigma code used by the German in World War 2. This machine's ability made Turing wonder about intelligence of such machines. In 1950, the article 'Computing Machinery and Intelligence' was published by him where he mentioned how to create intelligent machines and test their intelligence. This Turing Test is the benchmark even today to identify intelligence of an artificial system. The word 'Artificial Intelligence' was then coined officially in 1956 when Marvin Minsky and John McCarthy (who were scientists) had hosted the 'Dartmouth Summer Research Project on Artificial Intelligence (DSRPAI) which marked the beginning of the AI Spring. The goal of DSRPAI was to reunite researchers from other fields to create a new research area which aimed at building machines that are able to simulate human intelligence. [4]The founding father of the branch of AI was Alan Turing who was a British logician and mathematician. He had published an article 'Computing Machinery and Intelligence' which began with the question 'Can machines think?'. This article had inaugurated the philosophy of AI. He had declared that by the end of the century 'the use of general educated opinion and words will alter so much that one can speak of machines thinking without expecting to get contradicted'. In 1936, he had written (almost by accident) a paper on the logical foundations of a computer design. In the article he was mainly concerned with an abstract problem in mathematical logic and while solving it, he managed to invent in concept, the stored program general purpose computer which are nowadays known as Turing machines. During war, Turing worked as a codebreaker at Bletchley Park and this made them win the war with the help of Turing machines. This accidental discovery of an imaginary computer dominated Turing's professional life and he passionately involved to the development of real machines.

Growth of AI

[5]Due to significant investment globally from both public as well as private, there has been development, implementation and adoption of AI. Many countries have implemented national strategies to get leadership and advantages in the development of AI. This is because development in AI is considered as the crucial factor to the national growth. Such developments are likely to be adopted to the benefits of the nations. This rapid advancement and investment in AI is popularly known as 'AI race'. [6]Industries, media and political organizations showed a good interest in AI in the recent years as applications and research in the field of AI are increasing everywhere. The industries are interested in the potential applications of AI. In July 2016, a report stated that many IT giants have acquired about 140 entrepreneurial firms in AI since 2011. 200 AI related companies have raised over 1.5 billion dollars in the stock market in the first six months of 2016.

AI in Healthcare Appliances

[7]There is a great hope that AI surpasses human performance in healthcare. AI makes it possible for better detection, prevention, diagnosis and treatment of the diseases. Cancer, neurology, diabetes and cardiology use AI tools. AI is helpful in automatically detecting problems and the threats to the patient safety with high accuracy and speed. Research of AI is in process to provide a more unified healthcare delivery. [8]AI techniques have risen rapidly in healthcare , which even rose the question of whether there will be AI controlled doctors rather than human physicians in the future. This might not be possible but however it is quite possible that AI would assist human physicians which would enable them to make better clinical decisions and can even replace human judgement in few areas of healthcare like radiology. Some achievements of AI in the area of healthcare includes the increasing availability of healthcare data and unlocking clinically relevant info which is hidden in massive amount of data through powerful AI. [9]AI is beginning to be applied in healthcare since these have the potential to transform aspects of patient care, the administrative processes with the pharmaceutical organisations, provider and the payer. Research suggests that AI would be performing better than humans in key healthcare tasks. Even today, algorithms are outperforming radiologists in spotting tumours and are guiding researchers for costly clinical trails.

AI in Manufacturing and Production

[10]The application of AI in industries has enhanced quality control (eg: turbofan blades can be inspected in 3D by the manufacturer with micrometer precision),enabled predictive maintenance (eg: failure can be stopped in equipments by spotting even subtle changes with the help of networked sensors), reduced energy and material costs ,inventory optimization, product design (eg: aircraft parts were created by airbus that are much lighter than those designed by humans), improved safety, and environmental performance. [11] AI helps in analyzing ,monitoring and making better decisions rather than human operators which benefits smart manufacturing whose technologies includes industrial connectivity devices and services, big data processing capabilities and robotic systems. In this way, it changes the method in which the products are manufactured, packed, shipped and finally sold. The final goal is to build machines that have intelligence like humans in order to do the decision making process. [12] AI is being applied in the field of intelligent manufacturing which is a new manufacturing model. This facilitates the production and thus provides high quality, high efficiency, environment friendly and cost effective service for the users which improves competitiveness in the market of the manufacturing groups. AI also helps in developing new models, system architecture and technology systems in the area of intelligent manufacturing.

AI in Security and Surveillance

[13] AI has the ability to monitor the flow of video data and the data collected from large number of sensors and thus can warn about any suspicious activity to the security services. If polices have AI in high quality computer systems then their routine office work would rather be done by those computers and there can be increase in the presence of police in urban areas. Today, polices are already taking the help of robots in various activities which include disposing explosive devices, conducting search and rescue operations and also in destroying armed criminals. [14] Development of AI would impact national security in three areas which are information superiority, economic superiority and military superiority. In information superiority, AI would enhance capabilities for the creation, analysis and collection of data while in the case of economic superiority, progress in AI would result in an industrial revolution. In the case of military superiority, advances in AI will enhance the affordability of existing capabilities as well as produce new capabilities. [15] AI technologies also help militaries by making the defense leaders understand better about their own forces. These help in identifying stress on the force in various areas like when service members can suffer with low performance or have any physical or psychological injuries, when their equipments would require maintenance and when programs can suffer cost overruns or schedule delays. With this, we can say that AI has the potential to do predictive analysis and bring up the readiness of forces of the defense leaders.

AI in Education

[16] Study shows that AI is implemented in education in various forms. Using these facilities teachers are performing different administrative functions, such as grading and reviewing students assignments more effectively and efficiently, and increase the quality of their teaching activities. [17] To teachers, many of the AI systems that have been developed are mostly delivered through computers and to instructors they leave no real part to play in the use of the system. As a consequence, AI currently has little or no part of the activities in a classroom [18] There has been an increase in the interest in improving and understanding the adoption of AI techniques in the field of education in both educational institutions and government sectors. Applications and tools driven by AI technologies, is being used by educators and learners within both K-12 and university contexts. AI technologies help in providing personalized learning in order to meet the individual's needs.

Advantages of AI

[19] Simulation of human intelligent activity can be done.It organizes effectively various resources so that information data can meet the sharing and transmision needs of different users. It has an excellent reasoning and learning ability in the network intelligence. It improves the network operation management level and the efficiency of information processing. [20] It makes the network management have the ability of information processing. It manages and controls better the uncertainty information ,thus improving the network system. It shows better collaboration between all management levels. It has improved the teaching effect. [21]AI can mimic human intelligence for making decisions or solving problems. It has the advantage of reliability, permanency and cost-effectiveness while also addressing speed solving problems or making a decision. [22] The decisions of AI are based on facts rather than emotions is one of the major advantage of it because it is well known that the human decisions are affected by our emotions in a negative way. Machines containing AI do not need any sleep thus overcoming the disadvantage of tiredness in humans. [23] With the help of AI , human works are reduced since they are replaced by machines, thus making them focus on others works. AI is like a cheap labor with which our work will be done fast and the profit gets increased.

Challenges or Dis-advantages of AI

[24] It was predicted that AI would destroy 5 million jobs in the upcoming five years. Some gains in energy , resources and time-savings will be nullified by AI. AI increases the competitive pressure. If fallen in wrong hands, hackers and terrorists get the ability to manipulate and access through security holes in the network protocols. [25]. Disadvantages of AI is that since the equipments are expensive, it is not easy to develop the machines. Also it costs tons of money and time to create , repair and rebuild. Robotic repair can scale back time but that rather costs extra money and resources. [26] Limitation of AI search methods is that they never guarantee to reach the optimal solution. Also when using such methods to solve a problem, it is difficult to gain true insight into the problem such as when using mathematical programming methods. Sensitivity analyses cannot be done quickly which is an important example of this limitation. [27] Disadvantages of AI include lack of creativity in responses, unable to explain the reasoning and logic behind a certain decision. In current stage ,AI cannot predict when there is no possible solution to a particular problem. Malfunctioning of AI machines can lead them to produce wrong solutions to problems which justifies that blind reliance on AI can lead to problems.It can also cause large scale destruction if it is given in the hands of wrong person. [28] There are few main disadvantages of AI which are stated as follows. If a program is sometimes mismatched, it would do opposite to what is actually mentioned in the command. AI affects human jobs due to which the problem of unemployment increases. Since AI lack human touch, it makes the younger generation to become lazy in doing their work and depend on technology.

Conclusion

From the above insight we can conclude that AI is going to dominate the upcoming generation. It is currently being used in every fields with development simultaneously and will continue to be used everywhere. Just like other things, AI has its own advantages and disadvantages but the advantages seem to be dominating over the disadvantages as there is a lot of improvement in it over time. Thus, there is no doubt that it will make a great impact on the society as everyone will almost completely depend on AI in their daily lives in the upcoming future.

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