ISBN: 978-93-92995-10-1

ARTFICIAL INTELLIGENCE-A BOON OR A CURSE?

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What is Artificial Intelligence

[1] The science and engineering of making intelligent machines, especially intelligent and innovative computer programs is artificial intelligence. [2] It is a field within computer science that is attempting to build enhanced and latest generation intelligence into the computer system, which does not need the aid of human beings or any other external agent to complete the given task.

History of AI

[3] In the history, the beginnings of artificial intelligence are traced back to philosophy, fiction, and imagination. Early inventions in electronics, engineering, and many other disciplines and many other new ideas have influenced artificial intelligence. Some early milestones include work in problems solving, knowledge representation, and inference as well as programs in language understanding, translations from one to other, theorem proving, associative memory, solving complex problems and knowledge-based systems. [4] Until the mid-1980s, researchers believed that an intelligent system capable of doing high-level reasoning and tasks was necessary for both perception and action. This traditional model in view lead to the creation of AI.

Growth of AI

[5] Artificial Intelligence is considered the fourth industrial revolution. Artificial Intelligence with the help of big data has transformed all the industries around the world. Artificial intelligence refers to the simulation of human intelligence and ideas into computational systems so that the systems think like intelligent beings and mimic the actions of intelligent entities. [6] Artificial intelligence as a factor of competitiveness growth is beginning to be widely used by leading companies today. The introduction of artificial intelligence into the national economy system is enormous and cannot be limited to individual companies. Introduction of artificial intelligence into the national economy system would build a model of extended reproduction, errorless system, without disturbances between different sectors of the economy. Thus, the necessity of artificial intelligence in various fields lead to the growth of AI.

AI in Healthcare Appliances

[7] AI a well-known field in computer science as enhanced the human life in many aspects. AI has recently overcome human performance in several domains and there is a great hope in healthcare too. AI may allow for better prevention, detection, diagnosis, and treatment of disease. Major diseases that use AI tool include cancer, neurology, cardiology and diabetes. [8] AI, by virtue of their wide applications in personal electronic devices and in monitoring health, pressure sensors are another way of usage of the advanced science and technology present in modern society. Flexible pressure sensors based on organic materials, which sense the pressure or bp of a human, have emerged highly due to the promising applications of artificial intelligence in systems or appliances, such as wearable health care devices -wristwatches, mobile bp monitors etc. [9] The applications of AI technology in medical also include assisting medical robots and devices. For example, telerobots

can facilitate the communication between patients with medical professionals; assistive walking devices can help with manoeuvring, walking, standing, or sitting; and animal-like robots can communicate with and entertain the patients. AI Robots can also be used in surgery as assistant surgeons. The AI robots can be of great use for surgeons and doctors during a typical operation, as minimal errors and mistakes are done by the robots. Artificial intelligence has reached new heights in clinical cancer research in recent years.AI is applied to help in cancer diagnosis and prognosis, given its accuracy level, which is even higher than that of general expert.AI applied in clinical cancer improved this area and contributed a lot to improve human health. AI technology can help improve cancer diagnosis and prognosis, and continue improving human health in the coming future too. Artificial intelligence(AI) and related technologies are increasingly predominant in business and society, and are beginning to be applied to healthcare. These technologies have the capacity to transform many aspects of patient care, as well as administrative processes within provider, payer and pharmaceutical organizations. There are a number of research studies suggesting that AI can perform as well as or better than humans at some key healthcare tasks, such as diagnosing a disease. Today, algorithms and programs are already outperforming radiologists at spotting malignant tumours, cancer and guiding researchers in how to construct associates for costly clinical trials. Surgical robots (equipped with AI) were initially approved in the USA in 2000, provide 'superpowers' to surgeons, doctors improving their ability to see, and diagnose, create precise and minimally invasive incisions, stitch wounds and so forth. Important decisions are still made by human surgeons. Common surgical procedures using robotic surgery include gynaecologic surgery, prostate surgery and head and neck surgery.

AI in Manufacturing and Production

[10] Over the past few decades, intelligentization, supported by artificial intelligence technologies, has become an important trend for industrial manufacturing that accelerated the development of smart manufacturing. In modern industries, standard AI has been supported with some more attributes such that yielding of products has become the technical core of smart manufacturing. With AI-powered machines manufacturing, remarkable improvements in many aspects of production from manufacturing processes to end product logistics has been possible. [11] AI, advanced computing and deep learning methods have begun to find applications in manufacturing systems for automatic visual inspections, fault detection, imperfect products and maintenance, the major problems in manufacturing have been overcome by AI. [12] In current scenario, Artificial Intelligence has great influence on production processes. Research on AI has seen wonderful growth in recent years. We find that organizational factors, such as digital skills, data, company size, R&D intensity, have the greatest impact on the adoption of AI in manufacturing and in production. Also, in order to gain new insights into the interplay of new technology adoption and global production strategies and ideas, AI is being utilized and adopted for maximum purposes. [13] Adopting AI in manufacturing and services operations will ensure accuracy and precision in the process and will avoid delays with faster change in operations when required and cause minimal errors. It will also predict risks and demands based on data available to ensure best production. The process of manufacturing can be made smarter, easier and environmentally sound, thus avoiding mishaps also making the task hassle free. The use of AI in the factories can increase productivity and produce good quality products, along with ensuring a good safety framework. AI is widespread across all the sectors of the manufacturing and production industry, there has been drastic transformation in some parts of the industry with companies growing, developing, adopting, and using AI technologies and

solutions into their processes and production - including electronics, heavy electricals, automobile and also in agriculture. The services sector has seen significant usage of AI specially the IT sector. At the same time there are number of 'sector neutral' companies that develop AI technologies that can be applied to manufacturing goods and services. Machines equipped with AI are now being used in production units in India that manufacture electronic goods, appliances, mobile phones etc. The use of intelligent systems such as AI is now helping the sector in avoiding the hectic process of manual testing with the help of IoT and detection mechanisms. AI is also integrated into final products as robotic appliances, machines, user interfaces, and virtual assistants. For example, ASIMoV's Robotics' manipulator is used for assembling and in delivery of products. Gridbots, a company has also developed robots such as the High-Performance SCARA Robot23, which can be utilized for activities that require high speed, accuracy and precision, which is especially needed in the manufacturing of electronics. Another interesting start upthose aids in the field of electronics is Helpforsure24, that uses an AI powered chatting bot that automatically solves electronics maintenance and repair issues. For an example, Panasonic, the Japanese manufacturing company, has opened a 'Technopark' in Jhajjar in the state of Haryana. It focuses on manufacturing air conditioners and washing machines whose production and testing process is automatically controlled by artificial intelligence bots. The AI technology is used in agriculture production also. The agricultural manufacturing industry in India is of two sectors. The heavy agricultural machinery sector primarily manufactures machines such as tractors and tractor driven equipment, while the light agricultural machinery sector is involved in manufacturing smaller tools like motorized tillers, pumps, and harvesters and other small tools. Initiatives equipped with AI technology are mainly focused on enabling data driven agriculture through technologies such as image recognition, drones, machine learning, sensors, driverless tractors, and chatbots - for monitoring, for detecting of abnormalities or defects, undertaking tasks like spraying pesticides at correct situation, and predicting and forecasting growth and price. There are many start-up companies using AI in agriculture sector by using AI driven analytics to improve crop production in agriculture. Even though the adoption of AI technology in agriculture can result in more efficient farming and greater yields, there are challenges that have been identified. One of the major challenges is to access robust data, this huge data cannot be accessed easily due to lack of power and connectivity in fields and technical capacity to deploy the technology in fields.

AI in Security and Surveillance

[14] AI is used in image processing to detect theft and motion of thieves in CCTV footage, without the use of real-time sensors. This system concentrates on object detection. The security personnel can be notified about the suspicious committing burglary using Real-time analysis of the movement of any human from CCTV footage and thus gives a chance to avert the same.[15] Artificial intelligence technology is rapidly multiplying around the world. Amazing developments keep emerging from the onset of deepfake videos that blur the line between truth and falsehood, to advanced algorithms that can beat the best players in the world in multiplayer poker. Many businesses harness AI capabilities to improve analytic processing, city officials use AI to monitor traffic congestion and oversee smart energy metering. [16] With the advancement of science and technology, AI, the combination of the unmanned aerial vehicle (UAV) and camera surveillance systems (CSS) is currently a hopeful solution for practical applications related to security and surveillance operations. Security cameras(cctv) and video surveillance systems have become very important security systems for ensuring safety and security of the general public. The detection of high-risk situations through these systems are still performed manually by humans in many cities.

The lack of manpower in the security sector and a limited performance of human may result in delay in detecting dangers, threats, risks for the public. In response, various start-ups have developed real-time and automatic solutions for identifying risks based on surveillance videos. The main aim of this work is to develop a minimal cost, efficient, and artificial intelligence-based solution for the live detection and recognition of weapons in surveillance videos under different situations. This system was developed based on TensorFlow and was initially tested with a 294-seconds video which showed weapons within 5 categories, handgun, shotgun, automatic rifle, rifle, and submachine gun. As per the established standard values of 0.50 and 0.75, the system achieved a precision of 0.8524 and 0.7006, respectively.

AI in Education

[17] Artificial Intelligence is a booming technological domain that is capable of changing every aspect of our social interactions and activities. In education, AI has begun producing new teaching and learning methods that are now undergoing testing in different contexts. AI technology can help education systems by using data to improve educational equality and quality in the developing world. The future of higher education is intrinsically linked with developments of new innovative technologies and computing capabilities of the new intelligent machines. In this field, advances and improvements in artificial intelligence open new possibilities and challenges for teaching and learning in higher education, with the capacity to fundamentally change governance and the internal systems of institutions of higher education. AI favours collaborative environments and intelligent tutoring systems to support teachers and improve education systems. [18] AI has been extensively adopted and used in education, particularly by educational institutions, in diverse forms. Using artificial intelligence, instructors are able to perform different administrative functions, such as reviewing and grading student's assignments more effectively and efficiently, and achieve higher quality in their teaching activities, improving the present education scenario. Artificial intelligence is currently progressing at a rapid pace, and this already impacts on the nature of services within higher education. For example, universities already use an initial form of artificial intelligence technology, IBM's supercomputer Watson. This provides student advice for Deakin University in Australia at any time of day throughout 365 days of the year. Even though it is based on algorithms that are suitable to fulfil repetitive and relatively predictable tasks, Watson's use is an example of the future impact of AI on higher education. This is changing the structure and quality of services and the structure of its workforce. A supercomputer that is able to provide feedback at any hour is reducing the need to employ the same number of staff previously required for the same function. [19] Human learning is promoted by applying artificial intelligence to education. Information technology including artificial intelligence contributed a lot to education. Various technologies have been invented and developed to make it easier for students to learn and create an environment where teachers can more easily teach. An application of AI, a technology called learning analytics was developed.

This is a technology used for statistically analysing student's historical data obtained by digital learning, etc. and discovering the characteristics of the student.

Advantages of AI

[20] The major advantages of artificial intelligence are that its decisions are based on facts rather than emotions. Even after our extreme efforts, it is a known fact that human decisions are always affected negatively by our emotions. Another advantage is easier spreading of knowledge. Once an artificial mind is trained for something, it can be easily copied and transferred to others reducing the

time wasted in otherwise passing on knowledge to other humans through training. [21]AI also offers to achieve accuracy with a higher precision and this consequently disables the human errors. Indeed, the AI technology error is very rare compared to human errors. Also, unlike human, AI are programmed to run for long hours. AI could bring changes to the fast-food industry. AI will soon start to affect every dining experience including preparing the meal, taking orders and delivery. The innovation in digital technology enables the customer to experience a non-stop service from the fast-food industry. [22] Artificial intelligence (AI) has reached new heights in clinical cancer research in recent years.AI is applied to help in cancer diagnosis and prognosis, given its accuracy level, which is even higher than that of general expert.AI applied in clinical cancer improved this area and contributed a lot to improve human health. AI technology can help improve cancer diagnosis and prognosis, and continue improving human health in the coming future too. [23] Robots will be the brains of the coming future education process. Various reports and surveys aim to clarify the current development trend of the application of artificial intelligence in modern education system by analysing the innovation progress of the combination of artificial intelligence technology and contemporary education. This is of great significance for better use of artificial intelligence to build a future oriented high technology education system. [24] Artificial intelligence (AI) technology can adapt to rapidly changing dynamic environments and provide multiple task requirements for resource allocation, computational task scheduling. AI technology, computing and storage resources are placed on the network to provide real-time data processing and also provides more efficient and intelligent services.

Challenges or Dis-advantages of AI

[25] Some of the major disadvantages of Artificial Intelligence (AI) technology in our daily lives are as follows.

- Sometimes AI technology can be misused leading to mass scale destruction.
- Program mismatch sometimes done opposite to the given command.
- Human jobs are affected.
- Unemployment problem increased furthermore.
- Creativity is solely depended upon programmer.
- AI technology lacks the human touch.
- Younger generation becomes lazy and depend upon machines for even small task.

[26] It’s not easy to develop machines as the equipment is too expensive. Can cost tons of cash and time to create, build, and repair. Robotic repair can occur to scale back time and humans wanting to fix it, but that'll cost extra money and resources. [27] AI technology is unable to explain the logic and reasoning behind a certain decision. Lack of creativity in responses. AI cannot know when there is no solution to a particular problem. Any malfunction while running can lead to the AI producing wrong solutions and since it cannot explain the logical reasoning behind its answer, blind reliance on AI can lead to big problems. [28] The great minus is bugs and small errors which cost a lot further. When you assign complex tasks to artificial intelligence, do not forget that any machine or technology can fail. A small error in the calculations or tasks can become a root cause for a huge number of consecutive problems. This can also lead to loss of important data, which is available to machine. In addition to all these disadvantages, there is a fear that robots will replace people in coming future. Artificial intelligence technology can enslave us and begin to rule the world. [29] Advances in the field of artificial intelligence (AI) in recent years have led to more exciting capabilities, but also raised concerns about dangers. A major concern is about super-intelligent AI agents with the initiative and motivation to attack humans. Existing AI tools are

already being used extensively by cybercriminals to enhance the efficiency of their attacks. AI is also used against other AI systems, in stealing confidential data or in corrupting the operation of AI algorithms or in hacking the user's system to achieve the goals of the attacker.

Conclusion

In the last few years AI has significantly developed and is utilized in every aspect of our life. It has drastically improved in last decade and is being utilized in every sector. AI has been used in various sectors and it proved to be a good aid. The AI technology is used in manufacturing and production processes, in health care, in agriculture and in various fields. AI technology is also of great use in education, in collecting data, processing and verifying. There are many advantages and uses of AI tech, it plays an important role in our lives too, it is used in surveillance systems, managing our work, in mobile phones, in wearable tech as watches. AI technology is also used in health care, it is used in diagnosing, predicting diseases, also used in surgeries as robots. AI has many advantages and uses, given its uses there as many disadvantages of AI too. AI being a powerful weapon, when used for personal agenda can lead to mass destruction. When this AI tech falls into wrong hands it can lead to large scale destruction and can be so dangerous as a nuclear weapon. There are many other disadvantages of AI, as AI tech is penetrating into every sector of life it leads to unemployment too, also being an artificial mind, errors and mistakes are bound to happen which cost a lost further. Blind reliance on AI can get us into trouble. There are as many advantages and disadvantages of AI, but what makes use of it depends upon the user. AI has the potential of aiding in small task of our daily life to large scale destruction when fallen into wrong hands, it solely depends upon the user. AI can be simultaneously be a boon or curse, it depends on what one makes use of it. In the near future there is a lot of scope for AI. This high-tech AI can be of great use if one decides to use it properly and efficiently.

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