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ARTIFICIAL INTELLIGENCE

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What is Artificial Intelligence ?

[1] The term artificial intelligence refers to the fast computers we use, big and small machines which are used to imitate human intelligence to make our work easier and faster with much less labour work. It also involves softwares which gives us our desired results faster . [2] The intelligence or we can say problem solving capability shown by artificial things such as robot managers in hotels made by humans embedded with mechanisms which solve the problems according to situations can describe the very meaning of artificial intelligence.

History of Artificial Intelligence

[3] In history this vast growing sector was mainly based on fiction and imagination and this was not wrong to think that who would have thought that big computerised machines and more compatible robots will become part of modernisation. Earlier milestones in this field were theorem proving and helping in translation and providing associative memory. [4] In the 1940s when programmable digital computers were made it gave the idea to a handful of aspiring scientists to make an electronic brain based on the essence of mathematical reasoning. Some think that John Mccarthy coined this term for the first time but it was used way before which was shown in Vannevar Bush seminal work.

Growth of Artificial Intelligence

[5] Artificial intelligence is now used in many sectors. In medical, financial, educational, it has also contributed to the economy of nations and the production of big companies. [6] We can see that in healthcare AI has shown great productivity in research of medicines and surgeries including robotics. In management we can see robotic workers(as receptionists) also to keep big datas which are accessible easily and also help in matters of cyber securities . Examples of its growth can be seen that now we are able to minimize traffic jams because of sensors that sense road conditions. Now we can also make calls with the help of wristwatches and use them as mini phones.

Artificial Intelligence in Healthcare Appliances

[7] There are wide applications of AI in healthcare starting from organizing patient routes to providing better treatment tactics. In the case of AI they are not bothered by the number of patients and stretch work hours. For providing right diagnosis AI uses arithmetic algorithms along with using data science from the human body. By using AI for drug discovery this process which was expensive and tedious earlier has now become cheaper and quicker. [8] In healthcare appliances AI has played a significant role in the development of flexible pressure sensors. These sensors have advantageous properties with great flexibility and compatibility in large areas processing techniques. Pressure sensors have yet another wonderful application named mobile biomonitoring which can be used for medical diagnosis. [9] We would never have guessed that science would develop so much that we would be able to see robotic surgery as an achievement of AI in the healthcare field. This robotically assisted surgery was developed to improve the capacity of the surgeons performing open surgery. The surgeons use computer-controlled robotic arms for assistance and its end factors. The best benefit of using these computerized techniques is that the surgeons need not be available during the surgery rather they can be anywhere in the world.

Artificial Intelligence in Manufacturing and Production

[10] AI has been of great help in manufacturing systems which are automated visual inspections, maintenance and fault detection. People are making efforts to use this science in works like production scheduling and material handling. AI holds a good potential in manufacturing semiconductors. [11] The manufacturing industries are a strong pillar of a nation's economy and support many livelihoods. Deep fusion of information communication technology and product related expertise is enabling a game changing transformation in manufacturing approaches. Developed countries such as the US have drafted many policies for intelligent manufacturing. Such an example is "Industrial Internet" in 2012 to connect people , data , intelligent equipment to enable smart and fast decision making. [12] In case of India as it is an agrarian country most of its revenue comes from agriculture sector with the advancement of latest technologies and their usage will foster it's growth. With the help of AI and ML systems farmers can make packaged commodities and storage more effective, with lower wastage, and it can also provide intelligent data about the crops to facilitate smart inputs.

Artificial Intelligence in Security and Surveillance

[13] Now in this developing world there is also a growing need for advanced security systems. AI has proved its importance by providing various intelligent softwares and machines. Basic examples are CCTV cameras which are used for surveillance and also by using AI and Deep Neural Networks the VCA softwares are being trained to identify and distinguish between various objects.[14] In law enforcement the face recognition software is of great use to identify the criminals from their past records.This feature has made their work faster and they are able to collect such vast data with great ease. In this field machine learning techniques can be used for regeneration and to compare two video backgrounds and to help forensic teams for identifying vehicles. We can say that Artificial Intelligence is the coming evolution in video analytics.Video monitoring softwares which is growing with time also plays an important role in the military [15] To facilitate surveillance facilities AI helps in detecting if a person is entering a restricted area or if there are any unusual behaviors and it reports it. AI uses the surveillance data to ensure that the person has paid for the parkings. Countries like the US and China have developed millions of surveillance cameras and are leading in this field. China is supplying AI based technologies to at least 60 countries.

Artificial Intelligence in Education

[16] In education AI has provided benefits to both teachers and students. Now the student can learn from a teacher while they are in their homes and also in the cases when they are travelling via phones or laptops. There were times when students had to buy a decent bundle of books but now we can download study materials in our phones and laptops and can access them anytime , this has also been a good benefit for students. For any information they can access google or other platforms for solving doubts or to understand topics for free. [17] There are also paid platforms where we can prepare for different competitive exams and get guidance from teachers with good qualifications . Some of these platforms are unacademy , byjus, and vedantu. These types of platforms are of great benefit for students and for people with good qualifications who are looking to teach the students. [18] The areas in which AI has been applied in the education field are robotics video conferencing audiovisual files content development. Also in administrative tasks such as reviewing students' work, grading and providing feedback to the students.In this pandemic we have seen various

examples like zoom meeting and many more where educational institutions have taken online classes and these are good examples in which students are taught virtually and their study materials have been provided as soft copies like pdfs. In some countries people are also trying to use robots as teachers which is an ongoing project. It will take time but steps are taken to try to incorporate them in smart classes.

Advantages of Artificial Intelligence

[19] AI has provided benefits in a vast number of sectors such as healthcare, education, management, and security. In healthcare AI can help researchers to collect vast data from various resources. One example is that a medical research body like Childhood Cancer Data Lab is trying to develop useful software for medical practitioners. [20] In education students have experienced many benefits like they can study anywhere just they need their smartphones free or paid. They have the freedom to choose their favourite teacher so they can feel comfortable and have access to study materials whenever they want. This also helps teachers as it increases requirements for good teachers who can teach on such platforms in their homes and also with animations and different methods more creative interaction can be made between students and teachers. [21] As one's business grows they need better technology and systems for maintenance security and production for their buisnesses. AI integrated systems provide this better quality and this also results in reduction of human error for management. In the pharmaceutical sector they can use this technology for drug discovery data analysis and retailers can use this to strengthen their marketing methods. [22] Security is very important for anyone whether it can be physical or virtual(on digital media) whether it can be for a person or any organisation. With this we have heard the word CYBERSECURITY a lot of times. AI plays an important role to make it easier and the benefits it provides in cybersecurity are, to be able to maintain large amounts of data and to detect threats that are designed as routine activities for big or mid sized firms. One more good feature is that AI cybersecurity can learn over time. That means over time AI solutions learn about regular traffic and can spot deviations from the norm. [23] Artificial Intelligence can also be useful for law enforcement and crime solving. One of the basic examples is to store the details of criminals and their DNA in such an efficient system that can be used to match it in the future. AI systems can also help authorities to find if any goods are being illegally transported outside the country. Face detection softwares are also widely used in police work and are very useful for identifications. Surveying scenes of crime can be done using AI cameras.

Challenges of Artificial Intelligence

[24] As AI has provided us so many benefits we might not be able to look at the cons that also comes with AI. In the field regarding manufacturing and education where AI has provided such benefits it has also raised problems such as depletion of job requirements for people as these works are now done by machines and also these machines are not easy to build, they require equipment which are expensive and thus adds extra pressure on manufacturing costs. Now as students can get any answer they want just by searching they have become lazy and completely dependent on their devices like mobile phones. There are also many questions on the credibility of E-learning like it may negatively impact socialization skills for the students as these skills are important and also they fail in providing real life experience which is an important factor. [25] As AI has provided many benefits in healthcare there also are some limitations as even though it is used, human surveillance is

still required. As in surgeries robots perform logically but sometimes because of unusual problems it can endanger patients life. There can also be inaccuracies in medical diagnosis because of some portions of missing data, also it may result in job depletion. According to a World economic forum report AI will result in the displacement of 75 million jobs by 2022 which is a growing number and increasing problem. [26] In business also there are some limitations of AI as there is a shortage of skilled people with adequate training to effectively operate AI solutions. Another big reason is cost, as the latest smart technologies can be complex and it will add to the cost to operate them and their maintenance to be on par with the competition. There are also some measurements that are needed to be taken in businesses like customer privacy and technological complexity as these can be in constant danger if not provided with right security and maintenance. [27] In agriculture there are challenges faced by farmers using new AI technologies. Because of lack of experience on using such complex systems and there are high number of those who believe that these technologies are not for agriculture sector and many have no experience in operating simple technology also, therefore in developing countries it is important for the tech companies to provide training and information to these farmers to do business in agriculture sector. There are also security issues since there are no clear policies; these can lead to legal issues and cyber attacks. [28] As science and technology is progressing different nations are trying to incorporate use of AI in military training and warfare but there are some challenges in using these technologies like reduction of the strategic stability, AI also fails in doing multitask on battlefield or we can say that at present there is no technology that can identify enemies and at same time use favourable method according to the situation. One more big problem is that the AI systems are unable to explain why they made their decision because it is important to know as for legal and moral purposes and in the end they are also in danger because of poor data or small mistakes in security of such systems.

Conclusion

I think that many of us have been experiencing benefits of AI in our lives either by knowing it or not. Some examples are taking online classes, watching large scale production of various products by computed machines.

Introduction of AI has definitely no doubt helped us in many ways making our work easier, efficient. But the problem arises when it comes to the labour class or the people who cannot enjoy this luxury. They work in these industries but because of AI now if the people keep losing their jobs then this new world with science dreams is not giving benefits to all equally. Also to use AI in different sectors there is a need for people to be trained , so who is going to do that as in companies employees are expected to learn these machine learning and languages beforehand . It is predicted that in the coming years millions of people will lose jobs so introducing AI machines , robots can be efficient or money saving but it will harm working class people in many ways.

There are some challenges in using this on which people are working to incorporate more advanced technology which will come with time, maybe not today but researches are going on how to make it more safe and easy to work with. There is a need to solve the unemployment problem and training the people in the right way on how to use these AI system rest flaws can be taken care one by one as human science proceeds.

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