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ARTIFICIAL INTELLIGENCE: A THROUGH DISSECTION

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What is Artificial Intelligence?

[1] Artificial intelligence is the process and mechanism of making intellectually comparable machines, especially smart computer programs. It is comparable to the utilization of computer to understand human intelligence but does not use any naturally observable methods.

[2] Artificial intelligence is also the study of how machines work like human beings using mental capabilities by using computer programmed models. The word 'artificial' means synthetic or manufactured or made by humans and the word 'intelligence' means the capability to use one's head. The occurrence of the word intelligence however in this case makes it seem like as if the AI is a technique to for generating lots of clever thoughts but in reality the aim of artificial intelligence is to generate the mental capabilities of the general average human being.The term AI arose because of the belief that machines would one day be able to think and act like human beings especially in their decision making capabilities.

History of AI

[3] The commencement of artificial intelligence was because of philosophy, fiction and imagination. Early advancements in electronics, engineering and fields have affected AI.Some early achievements include work in solving problem questions, work in learning, representing knowledge, interference in addition to programs which are used to display translation, associative memory, theorem proving, language understanding and lastly knowledge based systems.[4]Artificial intelligence was assumed to have originated in 1956 in partial due to the famous Dartmouth college conference that had taken place in that year but in reality the beginning of AI was in the previous year(1955) when the first AI system(Logic Theorist) was designed by Allen Newell, Herbert A.Simon and implemented by Clifford Shaw at Carnegie Mellon University. The system had nearly solved and proved up to 40 theorems right.

[5] AI has also been based upon on possibilities, fiction and fantasies. From robots and artificially beings such golems in mythology, Frankenstein, mechanical animals and dolls were all inspiration for the development of AI and its advances. It was only in this century that the AI community has been able to conduct experiments and build experimental machines that test theories and hypotheses about these AI machines based on these fantasies.

Growth of AI

[6] Artificial intelligence is one of the main drivers of the industrial era and a key factor in the integration of upcoming technologies such as graphic processing unit, I.o.t, cloud computing and more.[7] The most asked questions nowadays to experts are about the growth of artificial intelligence in the next decade and the specific applications of AI in the future. Others questions asked include: "How will human-technology co-evolution be around the year 2040?" Well experts expect the rate of change to between incremental to extremely impactful and also expect AI efficiency in the workplace to be increased. AI is also expected to be incorporated into more human endeavors.Many are expecting AI driven systems to further improve the dimensions of their work, home and daily lives over the next decade.

[8] Also AI opportunities will be targeted at innovative, human inclusive approaches and further integration of AI based robotic technology to various industries and companies the world. AI is also expected to revolutionize the way new companies arise and compete in the coming decades.

AI in Healthcare Appliances

[9] The healthcare environment is realizing the value of AI powered equipment for the next upcoming younger generation. There is a lot of belief that AI can bring advances to any already existing processes in the healthcare sector. In addition to this the utilization of AI has proven to be more cost effective and is one the driving factors for its implementation.

[10] Before AI systems can be used in the healthcare sector, they have to be "trained" through data clinical data including screening, diagnosis, treatment assignment and more, so that similarity and associations between subjects and possible outcomes. These data exist in the form of demographics, notes and electronic readings from medical instruments, physical examinations, images and clinical laboratories.

[11] Medical applications of AI include: Diagnosis Aid:AI has proved to be way more effective at diagnosing compared to even the most experienced human doctors in some studies for example in identifying diseases like skin cancer. This is because doctors depend on their sensory organs, lab data and symptoms given by the patient.AI systems however just input of all these data variables into a model and use this to diagnosethe patient.

Health Monitoring: Patients no longer have to be in the vicinity of a hospital and instead can use wearable technologies using AI like fitness gadgets for tasks like monitoring their health.

AI in Manufacturing and Production

[12] Smart production systems need unique solutions to increase the maintenance and quality while manufacturing as well as reducing costs and this is where AI driven technologies are utilized. These technologies include: IOT, AR, cloud computing, embedded systems and more which are ready to produce new industrial products.

[13] The application of AI in intelligent manufacturing is evaluated on 3 main aspects: application technology, industry and practical application effect. In application technology, capacity of the infrastructure, single applications, synergy applications, and business development are taken into account. The industry evaluation is highly dependent on how well the manufactured product performs. Finally for the application effect its evaluation focuses mainly on how to increase product efficiency and economic and social benefits.

[14] How Can AI Be Applied in Manufacturing?

Many manufacturing applications are well suited to these advantages of AI. For example:

- Quality inspection: In the restricted area of a manufacturing plant, and AI can be used to carry out multiple inspection tasks quicker, more precisely, and efficiently than a human ever could.
- Optimizing supply chains: AI can be used to access specific and precise data.
- AI can maintain way more equipment than a human at the same time
- AI does not need to be watched by a human and can work by itself.
- AI can be used security and Software

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AI in Security and Surveillance

[15] There are a broad variety of uses of AI in security; these areas include cyber security, Information security, economic and financial tools of statecraft defense,intelligence, homeland security, diplomacy and development. [16] There are multiple areas of use of AI in cybercrime including: intrusion detection and prevention, "Denial of Service(DoS) detection, computer worm detection, spam detection, zombie detection, malware classification and forensic investigations". AI techniques such as Heuristics, Data Mining, Neural Networks, and AISs, have also been applied to new-generation anti-virus technology ICT also plays a vital role in policy design, decision, implementation, and ultimate productive services. The primary task of this is to explore the role of artificial intelligence (AI), machine learning (ML), and deep reinforcement learning (DRL) in the evolution of AI in aspects such as security

AI in Education

[17] The utilization of Artificial intelligence in the field of education has been undergoing research for decades. This field researches learning wherever it happens form traditional classrooms to workplaces to improve formal education and lifelong learning. It combines AI along with learning sciences (anthropology, education, psychology, neuroscience, linguistics and also sociology) to upgrade the adaptive learning environments amongst other features to make the education field more personalized, relative, flexible, interactive and extremely effective. The scientific goal of AI is to make a digital model which is precise and uses explicit forms of educational, psychological and social knowledge which are often left implicit. In simple terms AI is used to open the 'Black Box of Learning' which essentially gives the learners a deeper more fine grained understanding of learning of a concept actually works.

[18] AI can now be used in many other fields due to the rise in the multimedia and information technologies as well as the internet for example teaching. Radical changes have now been made to the traditional teaching process which has enabled multiple schools to recognize e-learning as having high prospects to change people in terms of education, skills and performance-wise which has created more opportunities. for the upcoming generations and the learners of today.

[19] AI had always been considered as an advance in the education field and one of the popular forms of using AI in the education field from the past decades have been in the form of robots. Examples include 'Lego minds storm kits', Ozobots and Cubelets.

Advantages of AI

[20] Artificial intelligence is mainly used to solve problems with the objective of eliminating blindly worked areas which cannot be fixed by traditional time consuming methods.

[21] Some advantages of AI include permanency with which it operates, increased reliability in comparison to a human and cost-effectiveness.

[22] Another advantage is that the use of AI in addition to other technologies makes machines which makes choices and works in response to its programme only unlike a human who analyzes many factors both emotionally and practically.

[23] Other advantages of AI include:

- Finishes task faster than a human
- AI can easily finish stressful,difficult and complicated tasks unlike a human who is affected by a lot of factors.

- AI can multitask and various tasks can be carried out at the same time without any problem whatsoever.
- AI has a high success rate in comparison with the other methods available to the general public.
- There are very few errors and defects when using AI excepting the errors in programming of the artificial intelligence code.
- AI does not take too much space.
- AI has a small size

[24] Last but not least, the function of the AI is infinite.

Limitations of AI

[25]A major limitations of AI is that since it is essentially a 'black box of Learning' made from variables based on training data of scenarios, there may be issues for AI to act in different or unexpected scenarios.Another limitation is that AI are not guaranteed to reach the optimal solution for any problem and that It is often very hard to gain insight into the problem and the nature of the solution. A third limitation associated with the use of AI methods to solve a given problem stems from the fact that, for several AI methods, there is currently little guidance on how to decide upon the best values to use for a given method's tuning parameters.

AI also is only as good as the programming used to create it. A fourth limitation is that AI needs parameters and it may be difficult to determine the best parameters to receive optimum results for the required criteria.

[26] Artificial intelligence algorithms are also prone to being bias in data as they are made based on programs and the programs could be influenced by the programmer based on his environments.

[27] Another limitation is that at the moment AI has limited applications for example only I.T based applications such as data analysis, predictions etc.

It may not be easy to develop the machines because the equipment are expensive.

[28] Artificial Intelligence systems and equipment may be expensive.

People observing AI see them as very one-sided — capable of powerful processesbut totally incapable of acting emotionally or sentimentally.

[29] Since AI is essentially incapable of feeling it cannot respond to/act on unexpected situations [30] in-addition to that also requires a constant power supply to function at the present moment in time.

[31]More Disadvantages include:

- Creativity is solely dependent on the programmer
- AI lacks the humans finish/touch on it
- The increased use of AI means that the dependency on the technology is greater
- AI development can lead to an increased array of lost jobs and also increases the unemployment problem.
- AI embedded machines are only able to execute the tasks they are designed or programmed to do nothing new.
- AI embedded programs have a chance to crash and give irrelevant incorrect outputs which might be a serious setback depending on the circumstances or situation.

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Conclusion

The use and growth of AI is at an all-time high and continues to grow day by day AI has unlimited potential and the potential to be the best assistant and a vital tool to humans in many aspects of daily life such as healthcare, manufacturing, development etc, but at the same time can also lead to their downfall as the use of AI can lead to losses of jobs for example. Also the realm of AI has not been explored fully and yet remains to be explored completely. The overuse of AI can prove to be catastrophic as it may make humans lazy and lead to loss of vital skills and so extreme precaution should to be taken while using AI.Despite having all the potential in the world AI has also proven to be dangerous because if fallen into the wrong hands can lead to potential disasters. AI also has varying disadvantages such as being dependent on the programmer which may make it less effective in the real world and also it relies on models therefore it can as ineffective as well.So in conclusion, AI should be used considerately and not overused as AI is like a wave it has its highs and lows therefore can be blessing or curse at times

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