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ARTIFICIAL INTELLIGENCE

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Introduction

This Article focuses on the basic insight towards the world of Artificial Intelligence – its growth, history and applications. The findings published here may comprise of debatable concepts even today. The article aims towards understanding the capabilities of AI, its pros and cons along with various applications in multiple fields of occupations and research across the globe. Moreover, it highlights some of the features, capabilities with potential to improve and shortcomings of AI that have been overlooked in the recent years.

What is AI?

[1] Artificial Intelligence revolves around the concept of building highly intelligent machines, capable of performing tasks which utilize human understanding and decision making. However, the scope and limitations of this concept may exceed the scope of biological observations.[2] Artificial Intelligence focuses on the learning aspect of machines. That is, the activities and decisions of humans can be recreated with great precision and accuracy through patterns and observations.

History of AI

[3] The foundation of AI was based upon looking into the capabilities of machines and understanding their limits. However, as exploration continued, it was found that the opportunities were endless and that such complex machine learning gave way to greater opportunities. Thus, further research was put in towards Artificial Intelligence.[4] During the initial stages of software development, a software engineer, Alan Turing created a testing mechanism to detect and classify software as 'intelligent' via the 'Turing Test'. The testing involved criteria wherein mimicry of human behavior was observed in various machines and hence, were termed 'intelligent' accordingly. This paved the way towards the development and research of Artificially Intelligent software. Initially, the understanding of AI slightly varied from the now globally accepted concept. A program or code was considered Artificially Intelligence provided it had the means to give users the information they needed. However, further development and research in the field has brought about a new meaning wherein AI involves providing users asked information and learn from repeated/unique actions on its own over time.

Growth of AI

[5] The growth of Artificial Intelligence in the industry solely depends upon its growth in the economic sector. Moreover, further research and development can only be made into AI if said machines are capable of contributing a significant amount to the economic section and therefore attaining profit. Thus, it is noticeable that tech corporations, electronic retailers invest a great deal towards Artificially Intelligent devices – capable of providing users required information and services at their convenience.[6] Although AI has reached great heights and has produced significant results. With further insight into attaining greater means of recreating human behavior and decision-making along with computational capabilities exceeding that of humans, AI can reach even greater heights. Moreover, investments and development in the field of Artificial Intelligence and applied fields, multiple job opportunities, research fields and innovations are yet to come in the near future.

Artificial Intelligence in Healthcare Appliances

[7] The management of various medicines, their abundance, doses and requirements is an extremely difficult and time-consuming process. Thus, AI is utilized to great extents in the medical field to keep track of large-scale data and increase efficiency in diagnosing ailments and procuring the appropriate ointments. [8] Ailments and their treatment often differ greatly in the minds of different doctors and can thus raise questions regarding the availability of different medicines and thus, the most efficient approach towards curing it. AI allows storage and manipulation of data so as to ensure that resources are never wasted. [9] The benefit AI provides in the medical field is that it can be made fast and efficient by making it a deliberately dedicated software for medicine. That is, the software is permitted to store data only for diseases, medicines and availability of ingredients. This prevents confusion and set-backs often faced by humans due to interferences by concepts learnt in different fields and their logical applications.

Artificial Intelligence in Manufacturing and Production

[10] AI has been setup in manufacturing industries and factories to facilitate periodic inspections, fault detection and maintenance. Further initiatives have been taken in the manufacturing department to enable AI machines to understand and thus make the traditional human method of approach towards manufacturing with machine level decision making abilities. [11] AI has significantly contributed to the manufacturing department seeing that the technology enables machines to use human knowledge with machine level precision, environmental information and make high-quality, cost-efficient products for consumption. [12] AI is not directly implemented into manufacturing industries once available. Instead, it is setup with equipment to ensure that it is dedicated towards the allotted task and thus, completes its tasks efficiently. AI in manufacturing industries is augmented with larger databases and state-of-the-art management infrastructure and technology. Moreover, AI can also be used to build initial prototypes to which, further upgrades and augmentations are added as deemed fit.

Artificial Intelligence in Security and Surveillance

[13] Implementation of AI in security and surveillance aspects can be of great deal because of the benefits AI provides in terms of data management and correlation. Criminology involves attaining clues and correlating them with data that is observed and inferred on different locations and at different timings. This time consuming and confusing process can be solved quickly with the help AI in the most efficient ways possible, that is, storage of required data, assistance in criminal analysis and independent management of separate databases corresponding to different cases. [14] Although AI seems to be a good alternative from human resource for security and surveillance due to the absence of various limitations such as exhaustion and distractions, it could be the very reason of compromise for others' security. Misuse of AI, if any, could lead to an invasion of privacy of any individual. Future development in AI could potentially make simple AI machines able to infiltrate or compromise information with little investment due to availability of advanced but highly vulnerable AI implemented devices. [15] To protect one's cyberspace, a person or organization attacks the other. Here, implementation of AI to combat invasion of cybercrime can be extremely beneficial as it decreases the number of stakeholders required to combat a security breach. Updating a software to keep check of all sorts of malware and also enabling it to approach issues with a human mindset can allow AI in security departments to come up with new and unique solutions too. This allows AI to surpass any human shortcomings and hence, locate threats and act upon it immediately.

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AI in Education

[16] Artificial Intelligence utilizes various means of calibrations and scales to measure human proficiency in learning, understanding and resource gathering. This allows machines to be implemented in the education sector – capable of imitating human means of teaching with superior data management and efficient teaching methods.[17] The progress of the education department has moved beyond the traditional memorizing of concepts and formulae towards understanding the value of significant competencies such as critical thinking, metacognition and collaborative skills. This provides AI the golden opportunity to help develop in recreation/imitation of human competencies and thus, can be an asset for the education sector via utilization by means of E-learning, catalogues, libraries, databases and much more.[18] Implementation of Artificial Intelligence can be highly beneficial especially for software programming/ coding related engineering. This is so, because these machines can be used to learn syntax, keywords and other functions from various languages (XML, C++, DHTML, MATLAB, etc) and enable rookie coders to perform their programming with ease as they can seek assistance for their codes when in need. Furthermore, this AI could be upgraded beyond current capabilities, that is, autocorrect mere errors or even form its own means of debugging and program compiling/interpreting.

Advantages of Artificial Intelligence

[19] There are occurrences where moral values, ethics and other factors affect a person's decision making. Here, AI can be used to understand consequences of various choices and factors, thus, allow users to choose the most efficient in decision in debatable instances.[20] AI allows easy and convenient transfer, storage of data, which cannot be replicated among humans. Moreover, the machines to which data is transferred can be configured to recreate human behavior/practices that were recognized and learnt by the former machines. .[21] AI allows easy management of databases in intensive data management related occupations (example: Libraries). Machines can recognize and learn patterns and automatically become capable of categorizing and keeping check of data. Moreover, it can learn to provide suggestions, pre-requisites and other convenient formalities via long-term usage and pattern recognition. [22] AI allows users to dwell deep into understanding and making progress in content/document analysis. This is highly beneficial in educational and research related departments wherein Natural Language Processing can be utilized to distinguish common and informal dialects and language with formally accepted means of communication for research/academic publishing. This also allows AI to interpret common phrases and metaphors from common speech, thus, learning more about human cognition and behavior.[23]AI has proven to be highly beneficial in E-learning. Programs which can recognize cognitive and competence related development adapt to users' progress in E-learning and can provide the required material to individual students after analyzing their development. Furthermore, this allows the AI to learn more about student progress, analyze their academic development and is able to plot the academic progression throughout their study session.

Disadvantages of Artificial Intelligence

[24] Although AI has its great benefits and provides convenience for rookies, employers and other occupations, further development and progress in this department may lead to job substitution by AI, that is, people may lose their jobs because these machines are able to perform the same task more efficiently. Thus, drastically affecting the human resource availability. [25] Since AI has the

capability of recreating human behavior and understanding, it is extremely crucial to ensure that AI does not fall into the wrong hands. The reach that AI has in today's world can be misused very easily to create mishaps, potentially leading to problems that could greatly impact the general public. In addition to this, it could also be used to infiltrate corporations and facilities to attain information that may lead to potential compromise of multiple private firms or even the safety of a country.[26] Although AI makes tasks easy and convenient, the programming and effort done to create specific task-based AI involves a lot of complex procedures, pattern-based programming and recognition. This requires a great amount of time, resources and investment. However, if the program/product comprises of setbacks, limitations or defects, it could lead to loss of funds and affect the economic functioning of firms and facilities. [27] Artificial Intelligence comes in many kinds of programs and applications with varied applications in different fields. However, the use of AI in the programming of social media apps and related features has made AI conducive to social media addiction. The youth of today spends the vast majority of their times on social media and video games. This affects the social and creative aspects, thus, affecting their overall viability as an asset/human resource in the future. Moreover, the reliance on Artificially Intelligence machines has proven to make people lazy and unwilling to take efforts. This drastically affects the quality of human resource for the multiple sectors in development for all the countries across the globe, thus, also affecting the potential that AI can achieve for the coming future. [28]One of the biggest vulnerabilities of AI is the requirement of active connections – a source which allows the program to continuously process data and learn new things. The absence of an information pool for AI to treat as source along with possible threats such as cyber-attacks via third party software (hacking, infiltrating) may render AI useless in certain scenarios. This leads to greater investment to ensure that cyber-attacks do not compromise important data. Ultimately, making the development process very expensive.

Conclusion

The number of opportunities across the globe at present for implementation/application of AI are at an all-time high and will increase exponentially. From simple web-browser search engines to complex part manufacturing machines, AI has undoubtedly provided convenience in performing tasks in the vast spectrum of jobs, occupation and research fields across the globe. Although AI is extremely reliant as is in the present generation, further investment, research and developments in the field of Artificial Intelligence could potentially improve upon its shortcomings and thus, work on matters which have been overlooked. Further allowing the rise of new occupations and research.

Overall, it is blatant that the applications of AI discussed here contribute barely nothing compared to the vast spectrum of possible opportunities to implement AI in the present generation of technology and electronics. The capabilities of AI to learn patterns, human behavior, cognition and competencies give way to a future wherein the highly advanced human race is accompanied by AI in all walks of life. Albeit, the thought of a future where humans have to put in significantly less effort to achieve their goals may be intriguing, it also raises concerns regarding employment, human resource and its quality. Further investigation may occur to ensure that a delicate balance is attained in this matter, possibly through the assistance of AI.

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