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Artificial Intelligence

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Abstract – In the near future, intelligent machines will take the place of humans in a number of fields. Artificial intelligence, or AI, is the mimicking of human intelligence processes by machines, especially computer systems. These processes comprise learning, reasoning and self-correction. Artificial Intelligence is quickly becoming a popular discipline in computer science because to its numerous benefits to human life. In the previous two decades, artificial intelligence has substantially improved the performance of production and service systems. Artificial intelligence research has given rise to the rapidly growing technology known as expert systems. Expert systems are widely employed these days to solve complicated issues in several sectors such as science, engineering, business, medicine, and weather forecasting, and Artificial Intelligence application areas are having a significant impact on various fields of life. The quality and efficiency of regions that use Artificial Intelligence technologies have improved. This paper gives an overview of the technology and its applications.

Nomenclature – Artificial Intelligence (AL), Machine Learning.

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1. INTRODUCTION

Artificial intelligence has become the important part of human life and changing this life tremendously.AI has not even changed the life style but it also affected a variety of domains of life like education, health and safety. Artificial Intelligence is helping people to get education, to drive safety, to enjoy various games, to get better medication etc. Its many applications can be seen in schools and colleges, hospitals, public transit, and private residences. Artificial Intelligence is being developed by technology tycoons, researchers, and governments to make it more helpful and practical in numerous areas of life. Big companies like Yahoo, Google spend a lot to find out the new applications of Artificial Intelligence so as to innovate and offer services to people. AI has changed the life style of people and the way they use technology. Artificial Intelligence can be felt in smart phones, GPS, video games etc. This article presents the facts and applications of Artificial Intelligence mentioned in various research articles and reports. It further elaborates the changes made by Artificial Intelligence in various domains of life. It is important to understand the meaning

2. LITERATURE REVIEW

Artificial Intelligence Applications

Machine learning techniques are frequently utilised in applications such as digital image processing (image recognition)[5], large data analysis[4], speech recognition, medical diagnosis, statistical arbitrage, learning associations, classification, and prediction, among others. Artificial Intelligence will continue to play an increasingly important role in a variety of fields. [1]

3. CHALLENGES

Artificial Intelligence has revolutionized life, but it must be implemented in accordance with proper and relevant policies, as it poses a number of issues [2]. For example, due to unforeseeable circumstances, driving in a congested metropolis might be a challenge for automation. Artificial Intelligence has the potential to benefit millions of people's health, but only if doctors, nurses, and patients can trust it. Teachers must take an active role in providing high-quality education. If teachers accept artificial intelligence and are trained to use it, it can be employed effectively. Apoorva et al., [6] proposed a simple neural network model which can detect whether the patient has dengue, with the preliminary CBC test report's data. The patient data was

collected from a hospital. It is observed that the system correctly classified the unseen test cases. The proposed system has a significant test set accuracy of nearly 95%.Time being the crucial factor in the treatment of dengue, the proposed system thus has the potential to help doctors to save many more lives in a short span of time.

As a future research direction, the system can be further enhanced by introducing more pattern recognition techniques for the process of classification, and the introduction of locality specific factors to build a widely reproducible model as possible.

Farzin et al., [7] proposed a Design Robust AI based Variable Structure Controller with OCTAM VI Continuum Robot. This model used variable structure controller to provide high performance. The artificial intelligence theory like Fuzzy Logic was used in order to eliminate the chattering. The controller has the acceptable performance in the presence of uncertainties. The disadvantage of this model is that the system implementation is expensive.

The Application of AI in Grinding Operation by Ahmed et al., [8] proposed an effective system for monitoring of machining processes to improve productivity and reliability. This study presents a novel approach for the continuous online monitoring of grinding operation using low cost visual and infrared imager along with sensors like AE sensor, dynamometer, accelerometer, etc. The monitoring of grinding operation is done by developing and installing a multi-sensor system. Signal processing techniques and image processing techniques are used along with Artificial intelligence. The advantage of the system is that it can reliably distinguish between normal and faulty grinding condition. The disadvantage of this model is that the lack of performance under real life conditions.

Encouraged Short Term Load Forecasting by Sumit et al., [9] presented system for short term load forecasting with the support of MAPE and MAE accuracy scale by using the time series as input pattern for neural networks. In order to eliminate the downside of Gradient Descent algorithm, the input data is trained by FFN. The GANN technique is used here for the initialization of input parameters of the neural network. The advantage of the system is that the overall performance is considerably better and the disadvantage is that the entire process is time consuming.

4. METHODOLOGY

This section outlines the activities that must be completed in order for the system to be completed. The system's development follows the standard software development lifecycle, with comprehensive designs done first before moving on to actual implementation. These are discussed in more detail in the following section.

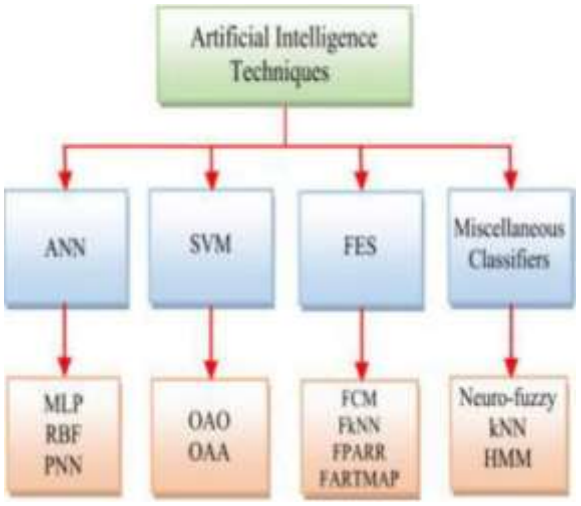

Fig.1 AI Techniques

A. ARTIFICIAL INTELLIGENCE VS. HUMAN INTELLIGENCE

Human intelligence operates in a natural way, making judgments based on cognition. Artificial intelligence, on the other hand, is based on a model that mimics human behaviour. Artificial intelligence is a man-made construct, whereas human intelligence is a natural phenomenon. Artificial intelligence is digital, while human intelligence is based on signals. Artificial intelligence (AI) is based on technology and software, but human intelligence is not. Some researchers believe that machines are just as essential and capable as humans

B. EXAMPLES OF AL TECHNOLOGY

Automation: It is the process of automating the operation of a system or process. Robotic process automation, for example, can be programmed to undertake high-volume, repeating operations that humans would ordinarily do.

Machine learning: It is a branch of artificial intelligence which allows computers to be trained directly from examples & data. Through enabling computers to perform specific tasks intelligently, machine learning systems can carry out complex processes by learning from data, rather than following per- programmed rules. Machine learning systems can now be trained on a large pool of examples thanks to increased data accessibility, and the critical capabilities of these systems have been bolstered by increasing computer processing power. There have also been algorithmic advancements within the sector, giving machine learning more strength. As a result of these advancements, systems that previously functioned at significantly lower levels than people can now do better than humans at certain activities.

Natural language processing: It is the computer program's processing of human — not computer — language. One of the most well-known applications of NLP is spam detection, which evaluates an email's subject line and body text to determine whether it is spam. Machine learning is used in current methods to NLP. Text translation, sentiment analysis, and speech recognition are all examples of NLP tasks.

Pattern recognition is a sub-discipline of machine learning that focuses on recognising patterns in data. The term is now obsolete. Robotics is a branch of engineering concerned with the design and production of robots. Robots are frequently utilised to undertake activities that people find difficult or inconsistent to complete. They're employed in automotive assembly lines.

Pattern recognition: It's a type of machine learning that focuses on recognising patterns in data. The term is now out of date.

Robotics: It is a branch of engineering concerned with the design and production of robots. Robots are frequently used to undertake activities that are difficult or inconsistent for people to complete. They're employed in vehicle manufacturing lines and by NASA to transport huge things into orbit.

5. CONCLUSIONS

The article illustrates the concept of artificial intelligence, with its various challenges and applications. The article also highlights the various examples of Artificial intelligence technology such as automation, machine learning, natural language processing, pattern recognition & Robotics etc.

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