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**ARTIFICIAL INTELLIGENCE WITH ITS APPLICATIONS
AND WAYS OF ACHIEVING ARTIFICIAL
INTELLIGENCE**

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ABSTRACT

Artificial intelligence is a branch of computer science that aims to create intelligent machines. It has become an essential part of the technology industry. Research associated with artificial intelligence is highly technical and specialized. Knowledge engineering is a core part of AI research. Machines can often act and react like humans only if they have abundant information relating to the world. Artificial intelligence must have access to all of them to implement knowledge engineering. Initiating common sense, reasoning and problem-solving power in machines is a difficult and tedious task. Machine learning is also a core part of AI. Deep Learning without any kind of supervision requires an ability to identify patterns in streams of inputs, whereas learning with adequate supervision involves classification and numerical regressions. Classification determines the category an object belongs to and regression deals with obtaining a set of numerical input or output examples, thereby discovering functions enabling the generation of suitable outputs from respective inputs.

KEYWORDS: *Artificial Intelligence, Machine Learning, abundant information, Deep Learning, Intelligent Machine.*

INTRODUCTION

Artificial Intelligence is a way of making a computer, a computer-controlled robot, or a software think intelligently, in the similar manner the intelligent humans think. AI is accomplished by studying how human brain thinks and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing

intelligent software and systems. Artificial Intelligence System and machine perception deals with the capability to use sensory inputs to deduce the different aspects of the world, while computer vision is the power to analyze visual inputs with a few sub-problems such as facial, object and gesture recognition. Robotics is also a major field related to AI. Robots require intelligence to handle tasks such as object

manipulation and navigation, along with sub-problems of localization, motion planning and mapping. Mathematical analysis of machine learning algorithms and their performance is a well-defined branch of theoretical computer science often referred to as computational learning theory.

1.1 WHAT IS ARTIFICIAL INTELLIGENCE USING HUMAN BEHAVIOR AND MACHINE LEARNING

Artificial Intelligence is nothing of capability of machine to intermediate talent of human behavior. Artificial Intelligence is achieved by making a human brain by understanding how it thinks, how it learns and works for a problem. The theory of development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision making and translation between languages.

Artificial intelligence is a science and technology based on disciplines such as Computer Science, Biology, Psychology, Linguistics, Mathematics, and Engineering. A major thrust of AI is

in the development of computer functions associated with human intelligence, such as reasoning, learning, and problem solving. Out of the following areas, one or multiple areas can contribute to build an intelligent system. An Artificial Intelligence is intelligence using by machines, rather than humans or other animals. The fields of AI research define itself as the study of "Intelligent Agents": any device that perceives its environment and takes actions that maximize its chance of success at some goal. Artificial intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans and other animals. In computer science AI research is defined as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals. Colloquially, the term "artificial intelligence" is applied when a machine mimics "cognitive" functions that humans associate with other human minds, such as "learning" and "problem solving".

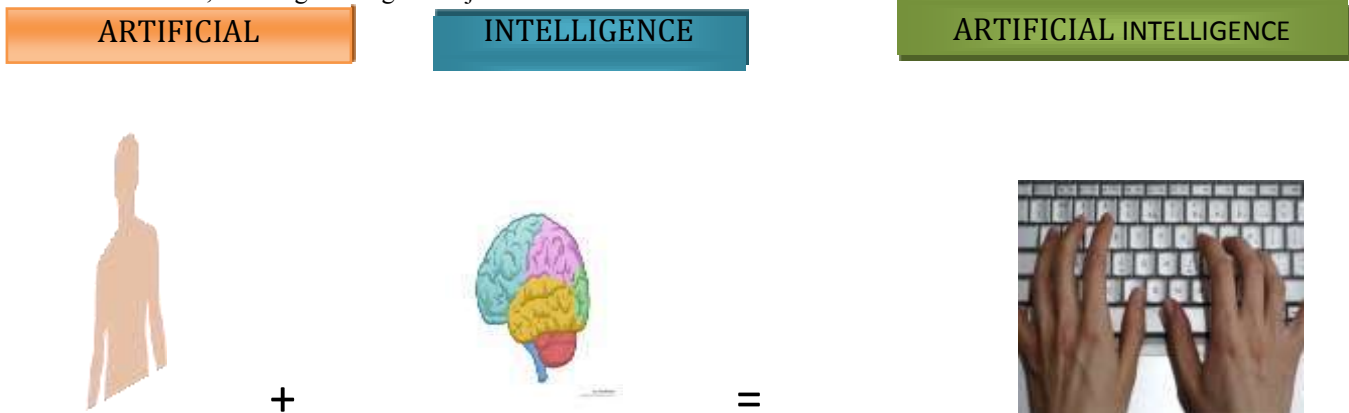


Figure:- Artificial Intelligence

An Artificial Intelligence is intelligence using by machines, rather than humans or other animals. The fields of AI research define itself as the study of "Intelligent Agents": any device that perceives its environment and takes actions that maximize its chance of success at some goal.

1.2 ADVANTAGES OF ARTIFICIAL INTELLIGENCE

- 1) **Less Error:-** As decisions are taken on previously gathered information and certain algorithms, without the interference of humans, so errors are reduced and the chance of reaching accuracy with a greater degree of precision is a possibility.
- 2) **Faster Decisions:-** Using Artificial intelligence, decisions can be taken very fast. For example, we all have played Chess game in Windows. It is nearly impossible to beat CPU in hard mode because of the A.I. behind that game. Because it took the best possible step in very short time according to the algorithms used behind it.
- 3) **Daily Applications:-** In today's era, A.I. is used in many applications just like Apple's Siri, Windows's Cortana, Google's O K Google. Using these type of applications we can communicate with our device using our voice. Which makes our work easy? For example, in recent android phones if we want

to search for a location then all we have to do is say “OK Google where is Agra”. It will show you Agra’s location on Google map and best path between you and Agra.

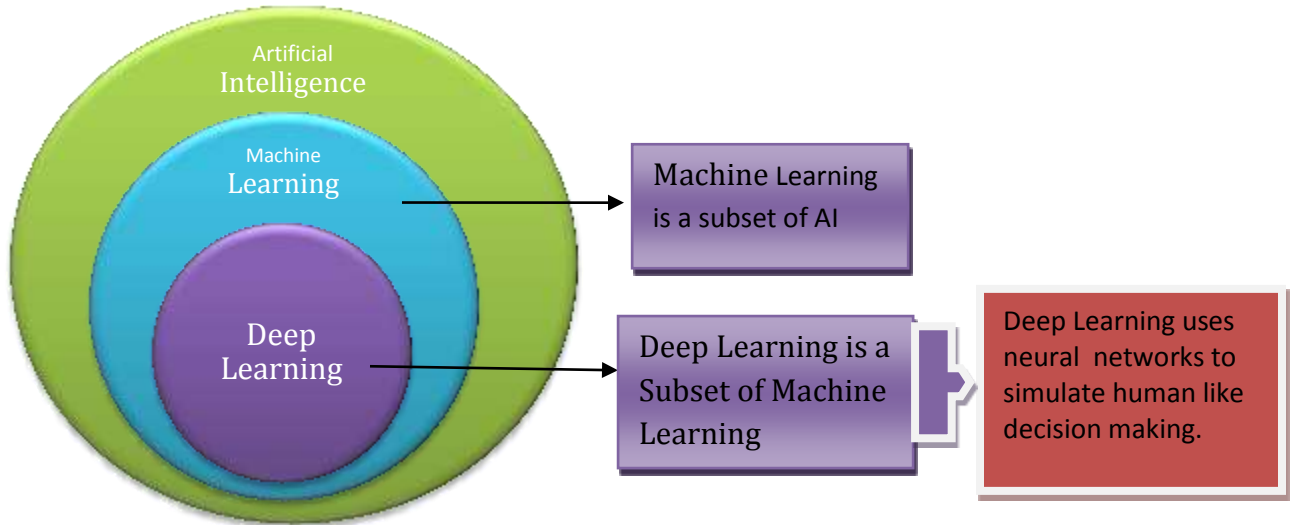
- 4) **No Emotions:** The complete absence of emotions makes machines to think logically and take right decision where in humans emotions are associated with moods that can affect human efficiency. Complete absences of emotions make machines to take right decisions.
- 5) **Digital Assistants:** Some of highly advanced organizations uses digital assistants to interact with users which saves need of human resource. Digital assistant also used in many websites to provide things that user want. We can chat with them about what we are looking for.
- 6) **No Breaks:** Unlike humans, machines can work 24*7 without any break. Humans need a break after work to regain their speed and freshness whereas machines can work for long hours without getting bored or distracted.
- 7) **Medical Applications:** Increasing the integration of A.I. tools in every day medical applications could improve the efficiency of treatments and avoid cost by minimizing the risk of false diagnosis. AI has begun transforming the field of surgical robotics wherein it has enabled the advent of robots that perform semi-automated surgical tasks with increasing efficiency. A.I is not going to replace Doctors, it will help them by providing the relevant data need to take care of patient (such as history of aortic aneurism, high blood pressure, coronary blockages, history of smoking, prior pulmonary embolism, cancer, implantable devices or deep vein thrombosis). Otherwise this information would take long time to collect.
- 8) **Taking risks on behalf of humans:** In various situations, Robots can be used instead of Humans to avoid the risks. Such as Robots can be programmed to explore Space because metal body can suffer in different situations but the human body can not. In Military forces Robots can be programmed to defuse a bomb, so the error will be reduced and can save human lives. Complex machines can be used for exploring the ocean floor and hence overcoming the human limitations.
- 9) **Public Utilities:** Self-Driving cars, which would greatly reduce the number of car crashes. Facial recognition can be used for security. Natural language processing to communicate with humans in their language.

1.3 DISADVANTAGES OF ARTIFICIAL INTELLIGENCE

1. **High Costs:** The hardware and software need to get updated with time to meet the latest requirements. Machines need repairing and maintenance which need plenty of cost.
2. **Unemployment:** The increasing number of machines leading to unemployment and job security issues. As machines are replacing human resources, the rate of people losing their jobs will increase. Because machines can work 24*7 with no break, which is more beneficial of industries instead of working with people who needs break and refreshment. Machines do their work as they programmed to do without any error while error can be occurred from humans.
3. **Can’t think out of box:** Robots can only do the work that they are programmed to do. They cannot act any different outside of whatever algorithm or programming is stored in their internal circuits. And when it comes to a creative mind, nothing can beat a human mind. A computer can’t think differently while making or drawing something. The thought comes from the emotions and experience which machines cannot. So machine can’t think out of box whereas thousands of new thoughts and ideas come into a human mind.
4. **Can’t feel Compassion and Sympathy:** There is no doubt that machines are much better when it comes to working efficiently but they cannot replace the human connection that makes the team. Machines cannot develop a bond with humans.
5. **Highly dependent on machines:** In today’s generation, most of the people are highly dependent on Applications like Siri. With so much assistance from machine, if humans do not need their thinking abilities, these abilities will be gradually decreased. In future with the heavy use of application of artificial intelligence, human may become fully dependent on machines, losing their mental capacities.

NOTE:-These are some advantages and disadvantages of Artificial Intelligence. Some people also say that Artificial intelligence can destroy human civilization if it goes into wrong hands. But still none of the A.I. application made at that scale that can destroy or enslave human .So we should not consider this as disadvantage of Artificial intelligence.

Subset of Artificial Intelligence



2.1 ARTIFICIAL INTELLIGENCE WITH DEEP LEARNING

Deep learning (also known as deep structured learning or hierarchical learning) is part of a broader family of learning methods based on learning data representations, as opposed to task-specific algorithms. Learning can be supervised, supervised or unsupervised. Deep Learning architectures such as deep Neural Networks, deep belief networks and recurrent neural networks have been applied to fields including computer vision, speech

recognition, natural language processing, audio recognition, social network filtering, machine translation, bioinformatics, drug design and board game programs, where they have produced results comparable to and in some cases superior to human experts. Deep learning models are vaguely inspired by information processing and communication patterns in biological nervous systems yet have various differences from the structural and functional properties of biological brains (especially human brain), which make them incompatible with neuroscience evidences.

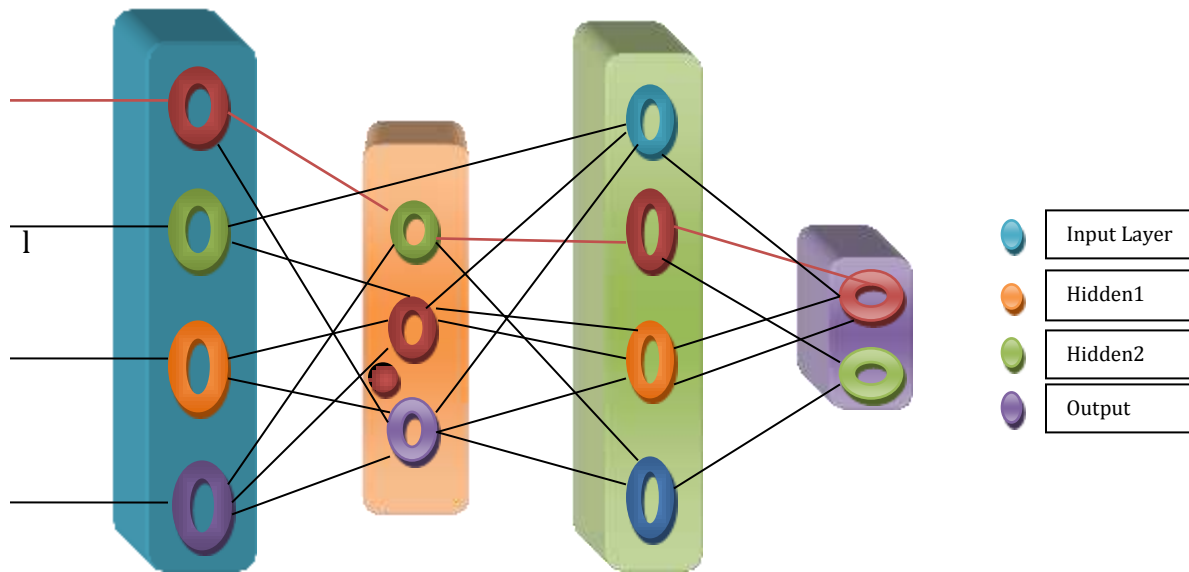


Figure:-Deep Learning

Deep Learning uses Deep Networks which are nothing but Neural Networks with multiple Hidden Layers. Deep learning was inspired by the structure and function of the brain, namely the interconnecting of many neurons. Deep Learning is basically Machine Learning. There are multiple layers to process features, and generally, each layer extracts some piece of valuable information. For example, one neural net could process images for steering a self-driving car. Each layer would process something different, like, for example, the first could be detecting edges for the sides of the road. Another layer could be detecting the lane lines in the image, and another possibly other cars.

2.2 ARTIFICIAL INTELLIGENCE WITH MACHINE LEARNING

AI and machine learning are about automating the ineffable. They're about explaining yourself using examples instead of instructions. This unlocks a huge class of tasks that we couldn't get computers to help us with in the past because we couldn't express the instructions. Now all of these tasks become possible—machine learning represents a fundamental leap in human progress. It is the future and the future is here! Machine learning (ML) is a category of algorithm that allows software applications to become more accurate in predicting outcomes without being explicitly programmed. The basic premise of machine learning is to build algorithms that can receive input data and use statistical analysis to predict an output while updating outputs as new data becomes available. The processes involved in machine learning are similar to that of data mining and predictive modeling. Both require searching through data to look for patterns and adjusting program actions accordingly.

Many people are familiar with machine learning from shopping on the internet and being served ads related to their purchase. This happens because recommendation engines use machine learning to personalize online ad delivery in almost real time.

3.1 CONCLUSION

An Artificial Intelligence working with Deep Learning and Machine Learning technology are technology and one side of the life that always interest and surprise us with the new ideas, topics, innovations, products etc. Artificial Intelligences is still not implemented as the films representing it (i.e. intelligent robots), there are many important tries to reach the level and to complete in market, like sometimes the robots that they shoe in TV. Nevertheless, the hidden projects and the development in industrial companies. At the end, we have been in the research through the Artificial Intelligence, military, ethics of AI, and the three rules of robotics. This is not the end of AI, there is more to come from it, who knows what the Artificial Intelligence can do for us in the future, maybe it will be a whole society of robots.

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