On Artificial intelligence

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Abstract— Artificial intelligence (A.I) refers to the information about the language being transmitted to the machine. It results in more intuitive and faster solutions based on algorithms. It is a multidisciplinary field whose goal is to automate activities that nowadays require human intelligence. Recent successes in A.I include computerized medical diagnosis and also in our day to day life activities such as washing machines, video cameras, etc. A.I can also be applied to bring a revolutionary shift in the agriculture sector. It has enabled the farmers to yield better products with fewer resources and also enhanced the quality of the products. It matters how we accept it and use it in a positive manner. Its problem solving approach has shown the whole world how much it can be effective in providing solutions. This explains that A.I is applied in numerous fields at present and in future and I have given substantial evidence to support my opinion of favoring the A.I.".

Keywords— Artificial intelligence, Intuitive, Multidisciplinary, Human Intelligence, Substantial.

I. INTRODUCTION

Artificial intelligence is sometimes called machine intelligence. 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.

It is a way of making computers or software think intelligently in the similar manner the intelligent humans think. It is accomplished by studying how the 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 is the science of mimicking human mental faculties in a computer. Artificial intelligence is a new electronic machine that stores large amounts of information and processes it at very high speed.
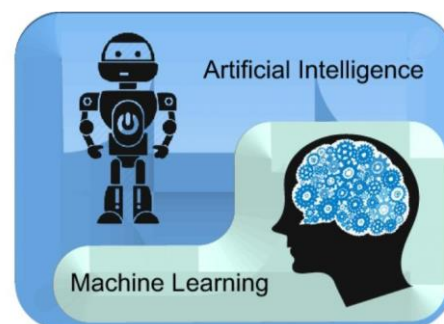
II. ADVANTAGES OF MACHINES OVER HUMANS, AND VICE VERSA

Machines are better than humans in:
• Alertness
• Speed and power
• Sensor detection outside human range
• Routine work
• Short term memory storage
• Computation
• Simultaneous activities

Humans are better than machines in:
• Sensory functions
• Perceptual abilities (stimulus generalization)
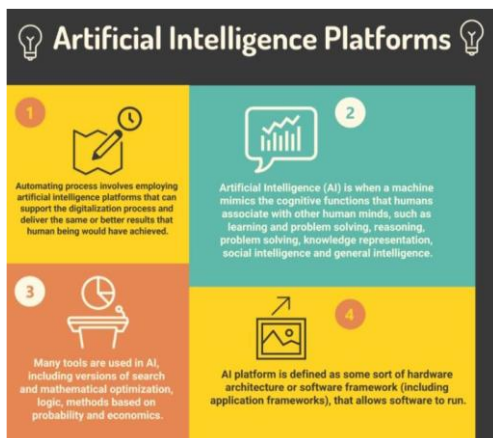• Ability to improvise
• Judgment

The Artificial intelligence system does not require to be pre-programmed, instead, they use such algorithms which can work with their own intelligence. It involves machine learning algorithms such as Reinforcement learning algorithms and deep learning neural networks.

AI is being used in multiple places such as Siri, Google's AlphaGo, AI in Chess playing, etc.

III. MACHINE LEARNING

Machine learning is about extracting knowledge from the data. Machine learning enables a computer system to make predictions or make some decisions using historical data without being explicitly programmed. Machine learning is being used in various places such as for online recommender systems, for Google search algorithms, Email spam filter, Facebook Auto friend tagging suggestion, etc. Machine learning is considered a subset of artificial intelligence.
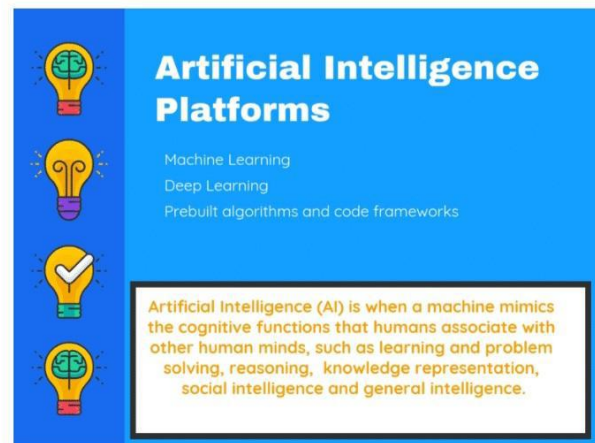

The central problems of AI include reasoning, knowledge, planning, learning, natural language processing perception and the ability to move and manipulate objects. Approaches include statistical methods, computational intelligence, soft computing and traditional symbolic AI. Many tools are used in AI, including versions of search and mathematical optimization, logic, methods based on probability and economics. An AI platform is defined as some sort of hardware architecture or software framework (including application frameworks), that allows software to run.

IV. WHAT ARE ARTIFICIAL INTELLIGENCE PLATFORMS?

Artificial Intelligence Platforms involve the use of machines to perform the tasks that are performed by human beings. The platforms simulate the cognitive functions that human minds perform such as problem-solving, learning, reasoning, social intelligence as well as general intelligence.

From SIRI and Alexa, to self-driving cars, Artificial Intelligence (AI) is progressing rapidly. Artificial intelligence today is properly known as narrow AI (or weak AI), in that it is designed to perform a narrow task such as only facial recognition, or only internet searches, or only driving a car). However, the long-term goal of many researchers is to create general AI (AGI or strong AI).

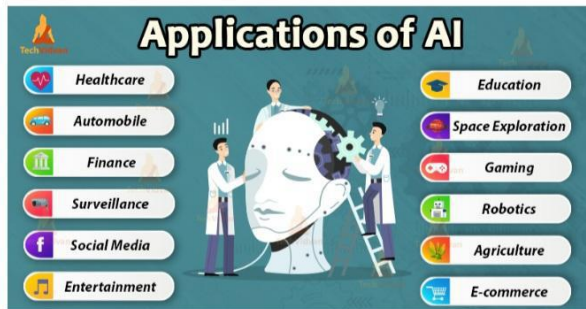## V. APPLICATIONS OF ARTIFICIAL INTELLIGENCE

1. Healthcare

A device, as common as a Fitbit or an iWatch, collects a lot of data like the sleep patterns of the individual, the calories burnt by him, heart rate and a lot more which can help with early detection, personalization, even disease diagnosis.
This device, when powered with AI, can easily monitor and notify abnormal trends. This can even schedule a visit to the closest Doctor by itself and therefore, it's also of great help to the doctors who can get help in making decisions and research with AI. It has been used to predict ICU transfers, improve clinical workflows and even pinpoint a patient's risk of hospital-acquired infections.

2. Automobile

At this stage where automobiles changing from an engine with a chassis around it to a software-controlled intelligent machine, the role of AI cannot be underestimated. The goal of self-driving cars, during which Autopilot by Tesla has been the frontrunner, takes up data from all the Tesla's running on the road and uses it in machine learning algorithms. The assessment of both chips is later matched by the system and followed if the input from both is the same. AI are often witnesses working its magic through robots producing the initial nuts and bolts of a vehicle or in an autonomous car using machine learning and vision to securely make its way through traffic.

3. Banking and finance

One of the early adopters of Artificial Intelligence is the Banking and Finance Industry. The adoption of AI in banking is constant to rework companies within the industry, provide greater levels of useful and more personalized experiences to their customers, reduce risks as well as increase opportunities involving financial engines of our modern economy. Features like AI bots, digital payment advisers and biometric fraud detection mechanisms cause higher quality of services to a wider customer base.

4. Surveillance

AI has made it possible to develop face recognition Tools which may be used for surveillance and security purposes.
As a result, this empowers the systems to monitor the footage in real-time and can be a path-breaking development in regards to public safety.
Manual monitoring of a CCTV camera requires constant human intervention so they're prone to errors and fatigue. AI-based surveillance is automated and works 24/7, providing real-time insights. Across the country, 400 million CCTV cameras are already in situ, powered by AI technologies, primarily face recognition.

5. Social media

Social Media is not just a platform for networking and expressing oneself. It subconsciously shapes our choices, ideologies, and temperament. All this is due to the synthetic intelligence tools that work in the background, showing us the posts that we might like and on that basis shows us the advertisements based on our search and browsing history. For example, recently Instagram revealed how it's been using AI to customize content for the Explore Tab.

6. Entertainment

The show business, with the arrival of online streaming services like Netflix and Amazon Prime, relies heavily on the info collected by the users.
This helps with recommendations based upon the previously viewed content. This is done not only to deliver accurate suggestions but also to create content that would be liked by a majority of the viewers. With new contents being created every minute, it is very difficult to classify them and make them easier to search. AI tools analyze the contents of videos frame by frame and identify objects to feature appropriate tags. AI is additionally helping media companies to form strategic decisions.

7. Education

In the education sector also, there are a number of problems which will be solved by the implementation of AI.
A few of them being automated marking software, content retention techniques and suggesting improvements that are required

This can help the teachers monitor not just the academic but also the psychological, mental and physical wellbeing of the students but also their all-round development. This would also help in extending the reach of education to areas where quality educators can't be present physically. For Example, Case-based simulations offered by Harvard graduate school is one such use.

8. Space exploration:

AI systems are being developed to scale back the danger of human life that ventures into the vast realms of the undiscovered and unraveled universe which is a very risky task that the astronauts need to take up. NASA is also working with AI applications for space exploration to automate image analysis and to develop autonomous spacecraft that would avoid space debris without human intervention, create communication networks more efficient and distortion-free by using an AI-based device.

9. Gaming:

AI is also playing a huge role in creating video games and making it more tailored to player's preferences. AI is employed to get responsive, adaptive or intelligent behaviors primarily in non-player characters (NPCs) almost like human-like intelligence in video games. It serves to enhance the game-player experience instead of machine learning or deciding.

10. Robotics:

With increasing development in the field of AI, robots are becoming more efficient in performing the tasks that were earlier difficult and complex too. AI in robotics helps the robots to learn the processes and perform the tasks with complete autonomy, without any human intervention. This is because robots are designed to perform repetitive tasks with utmost precision and increased speed. These benefits are expected to reinforce the market growth.

11. Agriculture:

Artificial intelligence is changing the way we do our most basic and primitive profession which is farming. The use of AI in agriculture is often attributed to agriculture robots, predictive analysis, and crop and soil monitoring. Drones are also used in spraying insecticides and detecting weed formation in large farms. AI has also enhanced crop production and improved monitoring, harvesting, processing and marketing.

12. E- commerce:

This is one of the Artificial Intelligence Applications that's found to be widely used.

Different departments of E-commerce including logistics, predicting demand, intelligent marketing, better personalization, use of chatbots, etc. are being disrupted by AI. The E-Commerce industry, a prominent player being Amazon, is one among the primary industries to embrace AI. This may experience a good use of AI with time.

E-commerce retailers are increasingly turning towards chatbots or digital assistants to supply 24×7 support to their online buyers. Built using AI technologies, chatbots are becoming more intuitive and are enabling a far better customer experience.

VI.   GOALS OF AI

To Create Expert Systems: The systems which exhibit intelligent behavior, learn, demonstrate, explain, and advise its users.

To Implement Human Intelligence in Machines: Creating systems that understand, think, learn, and behave like humans.

VII.   HISTORY OF AI

History of AI is as the following:

Year	Milestone/Innovation
1923	Karel Čapek's play named "Rossum's Universal Robots" (RUR) opens in London, First use of the word "robot" in English.
1943	Foundations for neural networks laid.
1945	Isaac Asimov, a Columbia University alumni, coined the term Robotics.
1950	Alan Turing introduced Turing Test for evaluation of intelligence and published Computing Machinery and Intelligence. Claude Shannon published Detailed Analysis of Chess Playing as a search.
1956	John McCarthy coined the term Artificial Intelligence. Demonstration of the first running AI program at Carnegie Mellon University.
1958	John McCarthy invented the LISP programming language for AI.
1964	Danny Bobrow's dissertation at MIT showed that computers can understand natural language well enough to solve algebra word problems correctly.
1965	Joseph Weizenbaum at MIT built ELIZA, an interactive problem that carries on a dialogue in English.
1969	Scientists at Stanford Research Institute Developed Shakey, a robot, equipped with locomotion, perception, and problem solving.
1973	The Assembly Robotics group at Edinburgh University built Freddy, the Famous Scottish

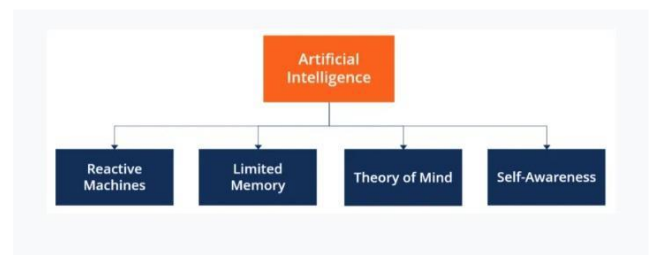|	
	Robot, capable of using vision to locate and assemble models.
1979	The first computer-controlled autonomous vehicle, the Stanford Cart, was built.
1985	Harold Cohen created and demonstrated the drawing program, Aaron.
1990	Major advances in all areas of AI: ● Significant demonstrations in machine learning ● Case-based reasoning ● Multi-agent planning ● Scheduling ● Data mining, Web Crawler ● natural language understanding and translation ● Vision, Virtual Reality ● Games
1997	The Deep Blue Chess Program beats the then world chess champion, Garry Kasparov.

VIII.   BENEFITS OF AI

1. Reliability and consistency:

An AI system makes decisions that are consistent and it's knowledge based. Therefore, it can be more reliable than a person where repetitive mundane judgements have to be made.

2. Automation:

In many applications, such as visual inspection on a production line, judgmental decision-making has to be performed repeatedly. A well-designed AI system ought to be able to deal with the majority of such cases, while highlighting any that lie beyond the scope of its capabilities. Therefore, only the most difficult cases, which are normally the most interesting, are deferred to a person.

3. Speed:

AI systems are designed to automatically make decisions that would require human reasoning and judgments or common sense. Any lack of true intelligence is compensated by the system's processing speed.

4. Knowledge archiving:

The knowledge base is a repository for the knowledge of one or more people. When these people move on to new jobs, some of their expert knowledge is saved in the knowledge base, which continues to evolve after their departure.

IX.   TYPES OF ARTIFICIAL INTELLIGENCE:

Reactive machines

These machines perceive external information and plan actions accordingly. They perform specialized duties and understand the task at hand. The machine's behavior is consistent in given repeated situations. In the 1990s, IBM developed a reactive machine named Deep Blue to play competitive chess, predicting chess moves by identifying each piece's board placement.

Limited memory

They can harness recent observations to make decisions. The machines consider observational data in reference to their programmed conceptual framework.

Theory of mind

Theory of mind machines can form thoughts and make decisions in reference to emotional context, thus they can participate in social interaction. The machines are still in the development stage. However, they may exhibit human capabilities. For example, consider voice assistant applications that can comprehend basic speech prompts and commands but cannot hold a conversation.

Self-awareness

Self-awareness machines demonstrate intelligent behavior through ideation, the formation of desires, and understanding their internal states. In 1950, Alan Turing developed the Turing Test to identify machines that could behave indistinguishably from a human being.

X.   ARTIFICIAL INTELLIGENCE'S INCREASING RELEVANCE

Artificial intelligence's growing popularity in the 21st century is largely due to the advancements in the sub-field of machine learning. Machine learning develops systems that improve upon themselves, which is accomplished through the identification of algorithms.

Some processes that machine learning optimizes include paperwork automation, forensic accounting, and algorithmic trading.

XI.   CONCLUSION

Artificial intelligence (AI) aims to develop machines that can accomplish what a human can in terms of reasoning.

The four types of artificial intelligence are reactive machines, limited memory, theory of mind, and self-awareness.

Artificial intelligence now affects productivity, employment, and competitive behaviour in significant ways..

XII.   ACKNOWLEDGEMENT

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