Importance of Artificial Intelligence and Its Role in Future Technology

Archana Vinnod Bansod
Lecturer, Department of Computer Engineering
Y. B. Patil Polytechnic Akurdi, Pune, India
archi.bansod@gmail.com

Abstract: *Artificial Intelligence - Artificial intelligence (AI) refers to the simulation or approximation of human intelligence in machines. AI is a technology that has very long history which is actively and contineously growing and changing .AI is a technology that simulate human intelligence, allowing computer applications to learn from experience via iterative processing and algorithmic training. The ideal characteristic of artificial intelligence is its ability to rationalize and take actions that have the best chance of achieving a specific goal.*

It focuses on intelligent agents, which contains devices that perceives environment and based on which takes actions in order to maximize goal success chances. In this paper, we will explain the modern AI basics and various representative applications of AI. In context of modern digitalized world, Artificial Intelligence (AI) is the property of machines, computer programs and systems to perform the intellectual and creative functions of a person, independently find ways to solve problems, be able to draw conclusions and make decisions. The recent research on AI tools, including machine learning, deep learning and predictive analysis intended toward increasing the planning, learning, reasoning, thinking and action taking ability. Based on which, the proposed research intended towards exploring on how the human intelligence differs from the artificial intelligence. In addition, on how and in what way, the current artificial intelligence is clever than the human beings. Moreover, we critically analyze what the state-of-the art AI of today is capable of doing, why it still cannot reach human level intelligence and what are the open challenges. Furthermore, it will explore the future predictions for artificial intelligence and based on which potential solution will be recommended to solve it within next decades. AI is going to add a new level of efficiency and sophistication to future technologies.

Keywords: Artificial Intelligence, Invariant Representations, Neuroscience, Strategy, Machine Learning

I. INTRODUCTION

The concept intelligence usually refers to the ability to acquire and apply various different skills and knowledge to find a solution to a given problem. Intelligence is also concerned with the use of general mental capabilities to solve, reason, and learn from different situations. Intelligence is always integrated with various cognitive functions for example language, attention, planning, memory, perception. The evolution of intelligence can be basically studied about in the last decade. Intelligence involves both Human and Artificial Intelligence. In case, critical human intelligence is concerned for solving problems, reasoning and learning. Furthermore, humans have simple complex behaviors which they can easily learn in their entire life.AI, based upon the capabilities of digital computers to manipulate symbols, is probably not sufficient to achieve anything resembling true intelligence. This is because symbolic AI systems, as they are known, are designed and programmed rather than trained or evolved. AI software designers are beginning to team up with cognitive psychologists and use cognitive science concepts.

Today's Artificial Intelligence (robotics) has the capabilities to imitate human intelligence, performing various tasks that require thinking and learning, solve problems and make various decisions. Artificial Intelligence AI is a software programs that are inserted into robots and machines, computers, or other related systems which them necessary thinking ability. However, much of the current Artificial Intelligence systems robotics and machines are near under debate as

they still need more research on their way of solving tasks. Therefore Artificial Intelligence machines or systems should be in position to perform the required tasks by without exercising errors. In addition, Robotics should be in position to perform various tasks without any human control or assistance.Recently, Artificial intelligence is reflected as the artificial representation of human brain which tries to simulate their learning process with the aim of mimicking the human brain power. It is necessary to reassure everyone that artificial intelligence equal to that of human brain which is unable to be created.Till now, we operate only part of our capabilities. As currently, the level of knowledge is rapidly developing, it takes only a part of the human brain. As the potential of human brain is incommensurably higher than we can now imagine and prove. Within human brain, there are approximately 100 trillion electrically conducting cells or neurons, which provide an incredible computing power to perform the tasks rapidly and efficiently. It is analyzed from the research that till now computer has the ability to perform the tasks of multiplication of 134,341 by 989,999 in an efficient manner but still unable to perform the things like the learning and changing the understanding of world and recognition of human faces.
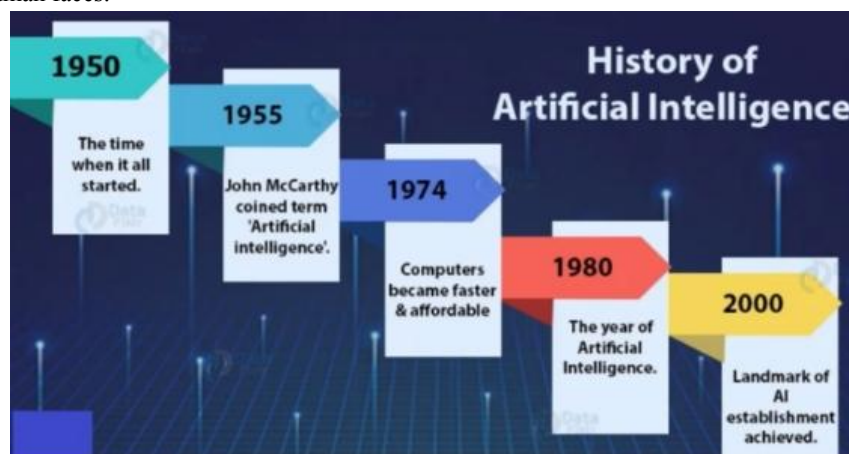

Fig.1: History of AI

A. Where Does AI Is Different From Human Brain

Artificial intelligence is the potential of computer controlled machines or robots towards performing tasks that that almost or similar to human beings. In this case, Artificial intelligence is used to develop various robots that have human intellectual characteristics, behaviors, learning from past experience, have abilities to sense, and abilities to making predications and determine meaning of certain situation. Robotics technology is heavily trending in the current life which has gained popularity in various aspects such as industries, hospitals, schools, music, military, gaming, quantum science and many others. Artificial Intelligence is an efficient means that make computers and software control robotic thinking with expert systems that significantly illustrate the intelligent behavior, learning and effectively advice users. Generally speaking, AI is basically known as the ability or potential of robotics or machines to analyze and decide, solve problems and reason. There are various innovations of Artificial Intelligence, for example robotic cars which don't require a driver to control or supervise them. In addition, artificially intelligent technology (robots) involves smart machines that process a large amount of data that a human being can't be in position to perform. By so robotics and machines are assuming repetitive duties that require creativity and knowledge base. Furthermore, Artificial Intelligence (AI) is the combination of various technologies that give chance to robotics to understand, learn, perceive or complete human activities on their own. In this case, Artificial Intelligence programs (robots) are built for a specific purpose such as learning, acting and understating whereas humans intelligence is basically concerned with various abilities of multitasking. In general, an Artificial Intelligence tool is majorly concerned with emphasizing robotics which portrays human behaviors. But however, Artificial Intelligence may fails out somewhere due to differences in human brain and computers. In brief, Artificial Intelligence has the potential to mimic human character or behaviors. Furthermore, Artificial intelligence is currently partially developed without advanced abilities to learn on their own but instead given

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commands to act on. This will be the ultimate future of artificial intelligence, where the AI machines will be recognized the human behavior and emotions and will train their kernel as per it.

B. Why Can't We Tell Today's AI Is as Clever as Human Beings

Generally, there are various ways towards building the intelligent machines that enables the humans to build the super machines and provides the intelligence to machines towards redesigning their own programming in order to increase their intelligence standards, which is usually considered as the intelligence explosion. In contrast, the shielded human hunt is basically the emotion. The breakthrough of AI technology can be more frighten the humanity in a way that machine are unable to effectively transmit the emotions. So, there can be possibility that AI can support us with the tasks and functions and logics which usually not involves the feelings and emotions. Till this time, AI machines are not able to control their processes, for which they need the intelligence and mind of humans. But AI development with same pace can lead threat to the humanity in near future, because the self-learning ability may cause the AI machines to learn destructive things, which may cause killing of humanity in a drastic way. In general, there exist various characteristics which distinguish human level intelligence with Artificial intelligence and they include the following;

Thinking ability can be both positive as well as negative at the same time because of having emotions, which are not related with AI machines. The lack of machines emotion may lead to destructive in a situation where emotions are required. Experts believes that machines would be able to think in a weak manner. In general, there are things that computers cannot do, regardless of how they are programmed and certain ways of designing intelligent programs are doomed to failure sooner or later. Therefore, most accurate idea will be to think that it is never going to make the machines have a thought at least similar to human. The lack of thinking ability of machines or robots may cause in lack of passing the behavioral tests. What was later called the Turing Test, proposed that a machine be able to converse before an interrogation for five minutes for the year 2000 and in fact, it was partly achieved. It is concluded then, that the machines can actually think, although they can never have a sense of humor, fall in love, learn from experience, know how to distinguish the good from the bad and other attitudes of the human. Artificial Intelligence: A Modern Approach dedicates its last chapter to wonder what would happen if machines capable of thinking were conceived.

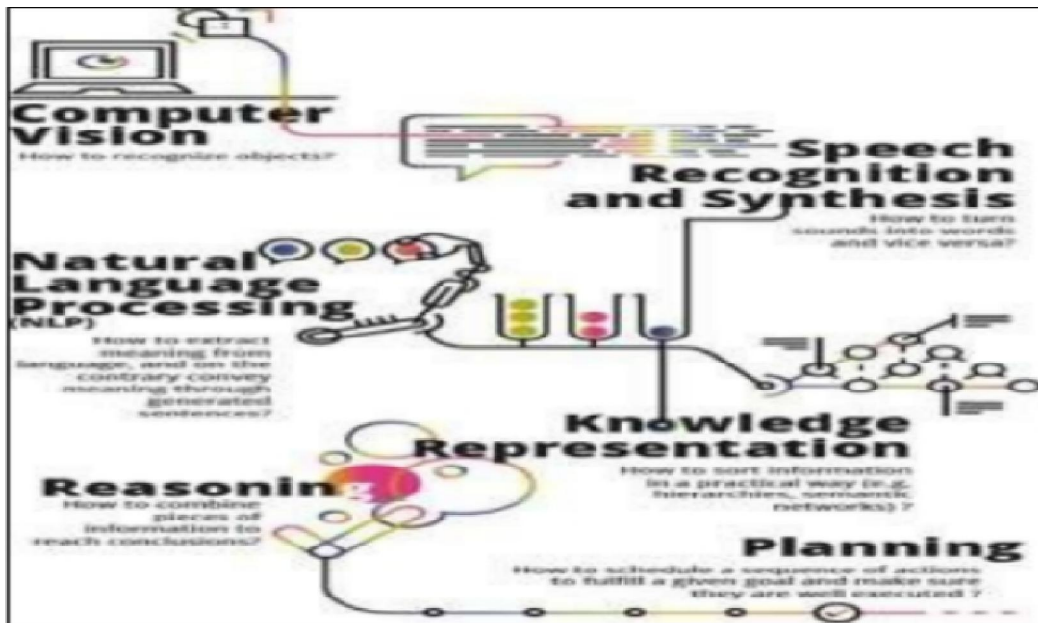## II. ABILITIES OF ARTIFICIAL INTELLIGENCE

Fig. 2: Abilities of AI

Artificial Intelligence has facilitated us all in almost every field of life and has immense scope in future for more productivity and betterment. The origin of artificial intelligence goes back to the advances made by Alan Turing during

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World War II in the decoding of messages. The term was first used in late 1950's, but it was only in the 1980s when research began to grow with the resolution of algebra equations and analysis of texts in different languages. The definitive takeoff of Artificial intelligence has come in the last decade with the growth of the internet and the power of microprocessors. "Artificial intelligence AI may be the most disturbing technology the world has ever seen since the industrial revolution" till date. Accenture's chief technology officer, recently wrote in an article published by the World Economic Forum. This field is now booming due to the increase in ubiquitous computing, low cost cloud services, new algorithms and other innovations, adds Daugherty. Developments in Artificial Intelligence AI go hand in hand with development of processor's that over time have made them start to see these technologies as intellectual, even changing our idea of intellect and forthcoming the perceptions of 'machines', traditionally un-intelligent capacities previously assigned exclusively to man. The AI was introduced to the scientific community in late 1950's by the English Alan Turing in his article "Computational Machinery and Intelligence" Although research on the design and capabilities of computers began some time ago, it was not until Turing's article appeared that the idea of an intelligent machine captured the attention of scientists. The work of Turing, who died prematurely, was continued in the United States by John Von Neumann during the 1950s .His central contribution was the idea of that computers should be designed by the human brain as a model. Von Neumann was the first to anthropomorphize the language and conception of computing when speaking of memory, sensors etc. of computers. He built a series of machines using what in the early fifties was known about the human brain, and designed the first programs stored in the memory of a computer.

III. WHAT IS MISSING TO TODAYS AI STILL TO BE CALLED HUMAN LEVEL INTELLIGENCE?

Humans are different from Artificial Intelligence machine physically in a sense that human race usually experiences the same physical features while the machines takes several forms and shapes. The trans-humanist vision analysis exhibits us to believe that brains are principally the computers. AI reports are the silicon based machines, which was controlled by using the algorithm that reinforces entire internet business.

AI believes that once the computers have adequate advanced algorithms, then they will be capable to replicate and enhance the human mind. The tests which shows how AI is distinct from the human intellectuals capacities are as follows Turing test; in order to evaluate on what intelligence means and on how the machine intelligence is different than the human intelligence, the Turing test strongly provide the essential insights to the AI field, which emphasis on how the machine simulates the human thinking. The algorithmic aspect's of AI tools must pass the Turning Tests. These algorithms won't essentially results in the AGI but may also lean towards applied artificial intelligence. The algorithm tuned through Turing process can also significantly define and passed it.
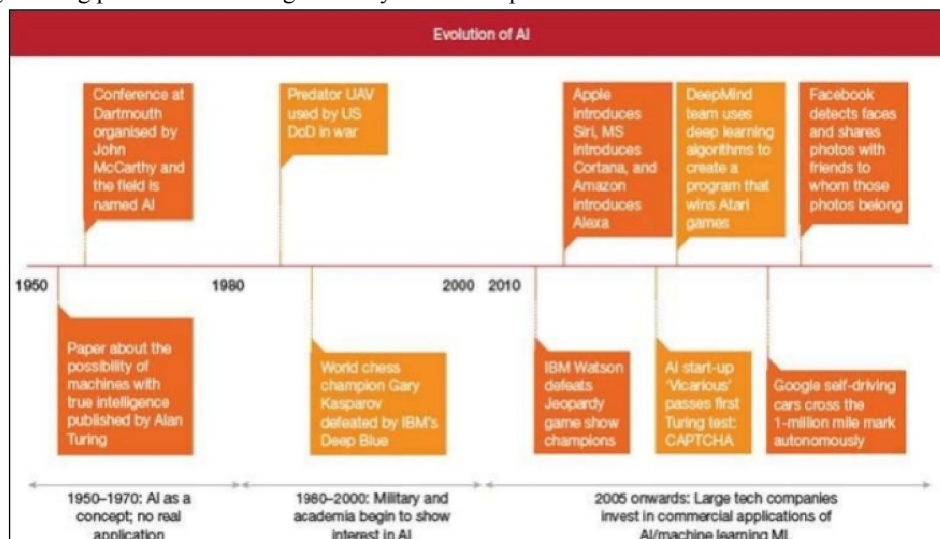

Fig. 3: Timeline Evolution Is AI

IV. WHAT ARE SOLUTION SUGGESTIONS

To reduce the destructive effects of Artificial Intelligence, it is essential to the development of symbolic approaches, which should allow us to operate with weakly formalized representations and their meanings. The success and effectiveness of solving new problems depend on the ability to allocate only essential information, which requires flexibility in the methods of abstraction. While a normal program sets one's own way of interpreting the data, which makes its work look prejudiced and purely mechanical. The intellectual tasks are solved only by the person, the analyst or the programmer, not knowing to entrust this machine. As a result, a single abstraction model is created, a system of constructive essences and algorithms. And flexibility and universality translate into significant resource costs for non-typical tasks, that is, the system from the intellect returns to brute force. Furthermost, the hybrid approaches should also be developed in order to provide the synergistic combinations of neural and symbolic models achieves a full range of cognitive and computational capabilities. For example, expert rules of inference can be generated by neural networks, and generating rules are obtained through statistical training. Supporters of this approach are believed that hybrid information systems will be much stronger than the sum of different concepts separately. Furthermore, to decrease potential threats of artificial intelligent technology, the rational risk management process that includes the potential principles.

V. APPLICATIONS OF ARTFICIAL INTELLIGENCE

The applications for artificial intelligence are endless. The technology can be applied to many different sectors and industries. AI is being tested and used in the healthcare industry for dosing drugs and doling out different treatments tailored to specific patients, and for aiding in surgical procedures in the operating room.

Personalized Shopping:

Artificial Intelligence technology is used to create endorsement engines through which you can engage better with your customers. These endorsements are made in accordance with their browsing history, preference, and interests. It helps in improving your relationship with your customers and their loyalty towards your brand.

AI-powered Assistants:

Virtual shopping assistants and chatbots help improve the user experience while shopping online. Natural Language Processing is used to make the conversation sound as human and personal as possible. Moreover, these assistants can have real-time engagement with your customers.

Education:

Artificial Intelligence can help educators with non-educational tasks like task-related duties like facilitating and automating personalized messages to students, back-office tasks like grading paperwork, arranging and facilitating parent and guardian interactions, routine issue feedback facilitating, managing enrollment, courses, and HR-related topics. Digitization of content like video lectures, conferences, and text book guides can be made using Artificial Intelligence. We can apply different interfaces like animations and learning content through customization for students from different grades. Artificial Intelligence helps create a rich learning experience by generating and providing audio and video summaries and integral lesson plans. Without even the direct involvement of the lecturer or the teacher, a student can access extra learning material or assistance through Voice Assistants. Through this, printing costs of temporary handbooks and also provide answers to very common questions easily.

Healthcare:

Artificial Intelligence finds diverse applications in the healthcare sector. AI applications are used in healthcare to build sophisticated machines that can detect diseases and identify cancer cells. Artificial Intelligence can help analyze chronic conditions with lab and other medical data to ensure early diagnosis. AI uses the combination of historical data and medical intelligence for the discovery of new drugs.

Gaming:

Another sector where Artificial Intelligence applications have found prominence is the gaming sector. AI can be used to create smart, human-like NPCs to interact with the players.

It can also be used to predict human behavior using which game design and testing can be improved. The game uses two Artificial Intelligence systems - 'Director AI' that frequently knows your location and the 'Alien AI,' driven by sensors and behaviors that continuously hunt the player.

Automobiles:

Artificial Intelligence is used to build self-driving vehicles. AI can be used along with the vehicle's camera, radar, cloud services, GPS, and control signals to operate the vehicle. AI can improve the in-vehicle experience and provide additional systems like emergency braking, blind-spot monitoring, and driver-assist steering.

Applications of Artificial Intelligence in Chatbots:

Artificial Intelligence chatbots can comprehend natural language and respond to people online who use the "live chat" feature that many organizations provide for customer service. AI chatbots are effective with the use of machine learning, and can be integrated in an array of websites and applications. AI chatbots can eventually build a database of answers, in addition to pulling information from an established selection of integrated answers. As AI continues to improve, these chatbots can effectively resolve customer issues, respond to simple inquiries, improve customer service, and provide 24/7 support. All in all, these AI chatbots can help to improve customer satisfaction.

Finance:

It has been reported that 80 percent of banks recognize the benefits that AI can provide. Whether it's personal finance, corporate finance, or consumer finance, the highly evolved technology that is offered through AI can help to significantly improve a wide range of financial services. For example, customers looking for help regarding wealth management solutions can easily get the information they need through SMS text messaging or online chat, all AI-powered. Artificial intelligence can also detect changes in transaction patterns and other potential red flags that can signify fraud, which humans can easily miss, and thus saving businesses and individuals from significant loss. Aside from fraud detection and task automation, AI can also better predict and assess loan risks.

VI. CONCLUSION

In this way, artificial intelligence can be achieved greatly discoveries and advances for humanity due to its multiple possibilities in future. Most artificial intelligence systems have the ability to learn, which allows people to improve their performance over time. The adoption of AI outside the technology sector is at an early or experimental. The evidence suggests that AI can provide real value to our lives.AI bases its operation on accessing huge amounts of informations, processing, analyzing it and according to its operations and algorithms, executing tasks to solve certain problems. Due to the new computing architectures of the cloud, this technology becomes more affordable for any organization.

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