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Review: Human Level Intelligence with AI

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Abstract: Intelligence exhibited by machines and software is called artificial intelligence. In the future intelligent machines will enhance the human capabilities in various areas. It is that branch of computer science that is becoming popular as it has enhanced our lives in many areas. Artificial intelligence has led to the rapid growth of technology known as expert systems. These expert systems are widely used in areas of science, technology and computation etc. to solve various complex problems. Artificial general intelligence is the intelligence of machines by virtue of which they can perform intellectual tasks just as human beings can perform. This paper gives an overview of this rapidly growing technology i.e. Artificial Intelligence and its various application areas. Artificial intelligence finds application in areas such as gamimg, to improve hospital patient care, to protect computer network from intruders, accounting database to solve the problems.
Keywords: Artificial Intelligence, AGI(Artificial General Intelligence), Neural networks, Expert systems.

I. INTRODUCTION

AI–Artificial intelligence[1] is the science and engineering of making intelligent machines or intelligent software. Artificial intelligence is playing an increasing role and research of management science . it is the way of making a machine or software think intelligently as human thinks. In the near future intelligent machines will replace human capabilities in various areas.[2] Intelligence of machines may be termed as artificial intelligence, when they can think about task to perform logically like humans can do.

AI is accomplished by studying how the human brain works , it is the development of intelligent machines and software that can learn, reason, gather information , communicate and manipulate while trying to solve a problems and then using these results for developing intelligent software systems .

The father of artificial intelligence John McCarthy [2] coined this term in 1956 has a branch of computer science associated with making computers think like humans. Machines are made more, smarter and useful with the help of artificial intelligence. Artificial Intelligence works with the help of artificial neurons (the constitutive units in an artificial neural network). This technology has grown to appoint that it is offering practical benefits in many areas of the replication.

Major application areas are Expert Systems, Language Processing, Speech recognition, Robotics, Gaming, Vision and scene recognition, Sensory systems and neural computing. Out of these areas Expert systems is the most rapidly growing technology which has huge impact in various areas of life. Various techniques used in artificial intelligence are Fuzzy logic, neural networks, evolutionary computing and hybrid AI. Artificial Intelligence has advantage over natural intelligence as it performs certain tasks much faster and better than human.

AI may be differentiated as Strong AI or Real AI or AGI(Artificial General Intelligence) Weak AI or Narrow AI.

A. Artificial General Intelligence(AGI)

Artificial General Intelligence (AGI) [3] is strong intelligence and also referred as human level intelligence is the intelligence of machine that could successfully perform any intellectual task that a human being can. It is a primary goal of some artificial intelligence research and a common topic in science fiction and futurism.

AGI is an emerging field that aims building of thinking machines, that is general purpose systems with intelligence[5] comparable to that of human mind(and perhaps ultimately well beyond human general intelligence). While this was the original goal of Artificial Intelligence , the mainstream of AI research has turned towards domain-dependent and problem specific solutions , therefore it has become necessary to use a new name to indicate research that still pursue the grand dream of AI.

Creating a general purpose intelligent systems is bit tedious then creating special purpose systems. AGI differs from AI in that it is unpredictably creative. AI follows a strict series of rules. Regardless of the number and complexity of those rules, there is an order, precedence and method to following them. Intelligence is taking facts (data), algorithms, and theorems and applying them to answer a question or solve a problem. It is the spark of human creativity that separates AGI (also known as strong AI) from standard AI. AGI is an intelligence model that has the data, understands situations and tasks, learns and applies new information, and makes choices that are based on a combination of what is known and what is speculated. This intelligent 'guess' portion of the process is essentially the butterfly effect of creativity. It still needs an empirical foundation of data, and decision processing algorithms of AI first as filter to prevent mere random guessing of solutions and ideas. The main barrier at the moment is a deep understanding of "structural learning",

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particularly as it relates to modeling the world and guiding action.

Machine learning has gotten quite good at "parameter learning". When a problem has been modeled by human designers, machine learning can fine tune the parameters. But how is the model created in the first place? This is "structural learning": inferring the optimal structure of the model, and changing the model when evidence disagrees with it

II. DIFFERENCE BETWEEN AI AND AGI

AI has the outcome already pre-programmed ; i.e. the domain is already known and we are simply making the decision process based upon a set of inputs that are` weighted and attaching that weights to the desired results. AI has very little chance of making an unpredictable outcome if the training process is thorough. The training process is the process that enables the developer to attach the weighted sum to the desired outcome.

Inputs-> A process that creates a summation of weights -> Outcome where the trainer decides what sets of weights equate to the desired outcome. We can do a lot with AI and we do. We have also been able to create an AI system to decide mortgage risks but I cannot “ask” that same AI system to tell me what is the best result for my web research. I would have to create and train a separate AI system with the web search domain to assist me with my web searches.

AGI on the other hand is a system where the domain is unknown and the AGI process has to figure out the correct choices. The training process is the same as teaching any animal(human) in that the developer must allow the AGI system to review the inputs and then tell it when it has a correct outcome.

Input 1->cortical correlates -> outcome

With AI , the domain is everything that we present as inputs and there are no predefined outcome. The system learns when we tells it is correct and solidifies the neuronal correlates. This requires a means to give positive and negative reinforcement and can have less than optimal results.

AGI can be setup in such a way to isolate the inputs so for instance it is recognizing specific types of images but if released into an open domain, It is impossible to prevent it from only interpreting the image domain it was taught unless you set it up to stop learning al together . This is why AGI is so difficult to work with. It’s almost an all or none proposition [6]. you can narrow the domain so the system only analyzes the image that you want it to see it can continue to learn and discriminate but you have to take those extra measures to stop it from being exposed to other domains, as well as risking turning it into narrow AI.

III. AREAS OF AI

A. Language Processing

It enables us to interact with computer systems that understand language spoken by humans[4] . It basically includes the ability to understand and respond to natural language.

B. Gaming

AI is very important for logical games such as Poker, Chess etc. AI allows problem solving and learning abilities to be used for desired performance. [7]

C. Expert Systems

AI enables to integrate machines [3] , software and information to create expert systems. These systems give reasoning and advising feature to the user.

D. Speech Recognition

Some intelligent machines are capable of recognizing and understanding language as sentences and their meanings when a human talk to it. It handles various flaws such as accents, slang, words, change in noise etc.

E. Robotic

Robots are designed to perform certain task given by humans. The robots have sensors that enable to detect physical data such as light heat, sound, etc. Robots have processor, sensor and huge memory to exhibit intelligence . Intelligent robots have the capability to adapt according to environment.

F. Vision Scene Recognition

Vision system understands visual inputs on the computer system. It find applications in various areas such as:

1) Doctor use it to diagnose patient.

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2) Spying air planes takes photographs to gather spatial information of areas.
Police use it to recognize face of criminals[7] with the stored portrait made by artist.

G. *Neural Computing*

Neural computing is used to find patterns in data. It includes pattern recognition, handwriting recognition etc.

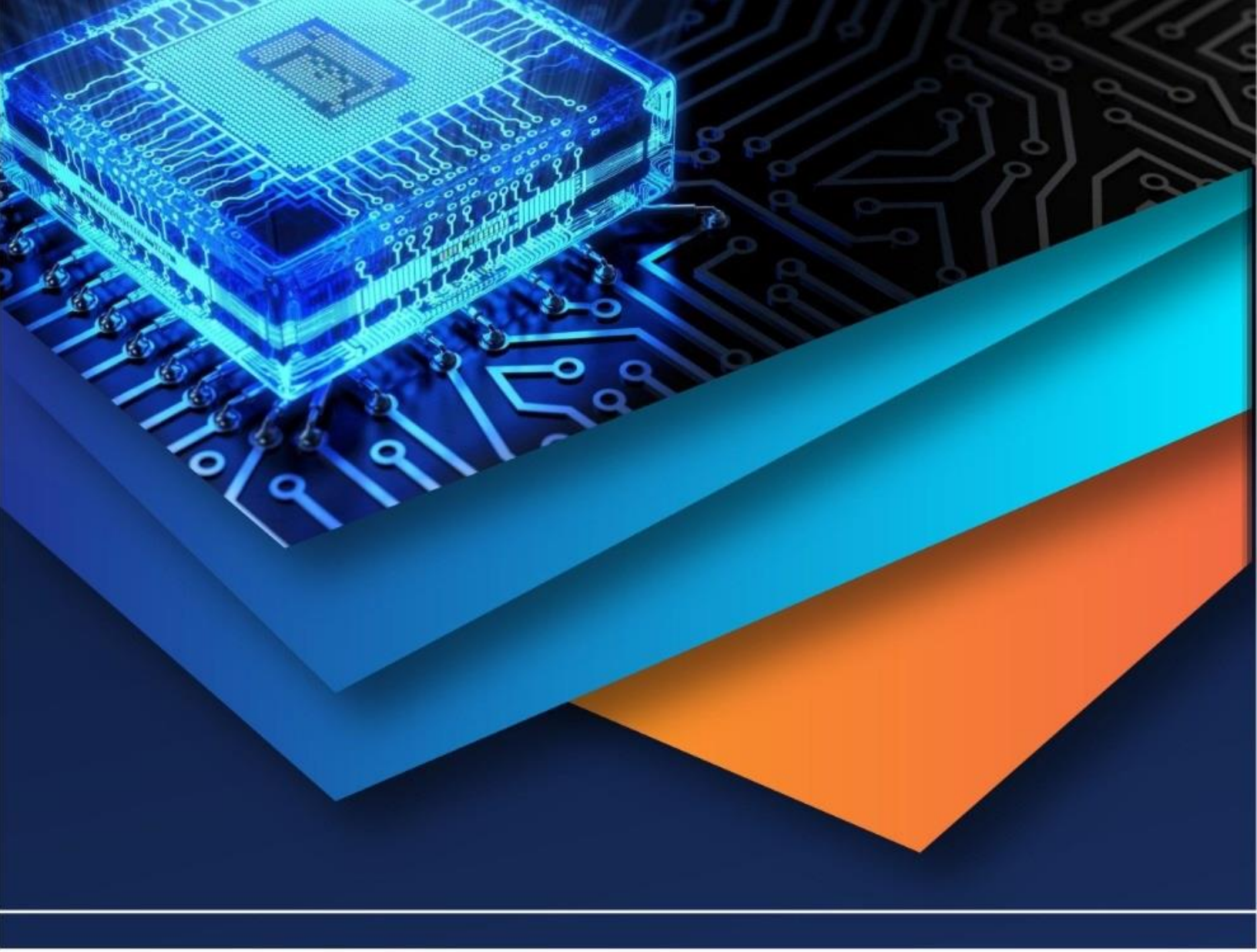
IV. CONCLUSION

The field of computerized reasoning gives the capacity to the machines to think systematically, utilizing ideas. Gigantic commitment to the different ranges has been made by the Artificial Intelligence strategies from the most recent 2 decades. Computerized reasoning will keep on playing an inexorably critical part in the different fields.This Paper depends on Human level knowledge and manmade brainpower and talked about the fundamental application territories of counterfeit consciousness.

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