# Review on Artificial Intelligence

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***Abstract-*** *This paper reviews the meaning of artificial intelligence and its various advantages and disadvantages including its applications. It also considers the current progress of this technology in the real world and discusses the applications of AI in the fields of heavy industries, gaming, aviation, weather forecasting, expert systems with the focus being on expert systems. The paper concludes by analyzing the future potential of Artificial Intelligence.*

## I. INTRODUCTION

ARTIFICIAL intelligence (AI) is defined as intelligence exhibited by an artificial entity to solve complex problems and such a system is generally assumed to be a computer or machine. Artificial Intelligence is an integration of computer science and physiology Intelligence in simple language is the computational part of the ability to achieve goals in the world. Intelligence is the ability to think to imagine creating memorizing and understanding, recognizing patterns, making choices adapting to change and learn from experience. Artificial intelligence concerned with making computers behave like humans more human like fashion and in much less time then a human takes. Hence it is called as Artificial Intelligence. Artificial intelligence can be divided into parts according to philosophy of AI.
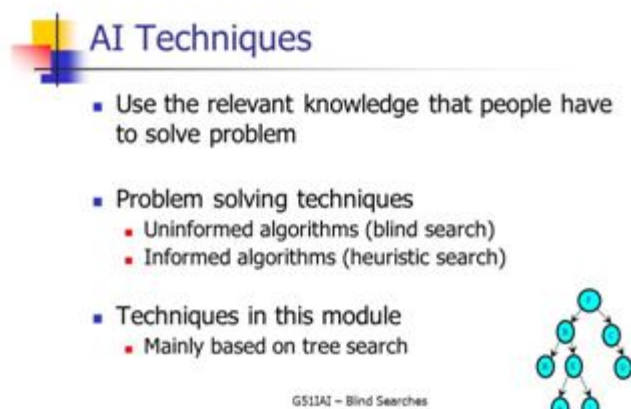
a) Strong AI      b) Weak AI



Fig 1. Overview of Artificial Intelligence

**Strong AI**

This is the newest type of artificial intelligence which makes use of human mind and tries to perform activities on its own without any external help. The main aim of this technology is to develop machines so much that they stop depending on human beings to perform different tasks and can take decisions on the spot. This is just in the initial stage, and there is a long way to go before such machines can be used, but research is being carried out on it. Currently, there are no specific examples of Strong Artificial Intelligence, but one area which makes use of this technology is the chat robots which talk to humans. Different applications provide this facility, and bots talk to humans depending on the message sent and reply back without any pre-entered algorithm to reply something specific. This field is being ignored because of Applied Artificial Intelligence, which gives instant results for the activities that are needed to be performed at that time but has a lot of scopes.

**Weak AI**

This type of intelligence has been used in different machines for a long time and therefore is a tested field, and many developments are being made in it to further improve it. It has applications in the area of computer games in which a person plays with a computer without knowing that it is not the computer which is playing the game with them, but actually, another person has added those moves with the help of an algorithm. It is based on the theory that instead of expecting machines to turn into humans, we should ask them to perform complicated tasks with the help of information and see the results. This is more used by engineers and different companies who require robots to perform a particular task. Such as collecting and placing of items on the belt. Similarly, other duties which are necessary to be completed, all the data and information related to them is entered into the machine with the help of programming, and it ends up finishing the job..

*Intelligence = perceive + Analyse + React*

Also, there is a huge different between short term memory and RAM. Short-term memory holds pointers to the long-term memory where all the information is actually stored while RAM stores data that is isomorphic to data being held on a hard disk. Also, RAM has a memory limit while there

seems to be no capacity limit when it comes to short-term memory.



Fig 2. Areas of Artificial Intelligence

**Turing Test:** The Turing test is a test of a machine's ability to exhibit intelligent behavior. The test was introduced by Alan Turing in his 1950 paper Computing Machinery and Intelligence. The original question behind this test was "Can machines think? ". The test proceeds as follows a human judge engages in a natural language conversation with one human and one machine, each of which tries to appear human. All participants are placed in isolated locations. If the judge cannot reliably tell the machine from the human, the machine is said to have passed the test. In order to test the machine's intelligence rather than its ability to render words into audio, the conversation is limited to a text-only channel such as a computer keyboard and screen." Sufficiently many interrogators are unable to distinguish the computer from the human being then it is to be concluded that the computer thinks.
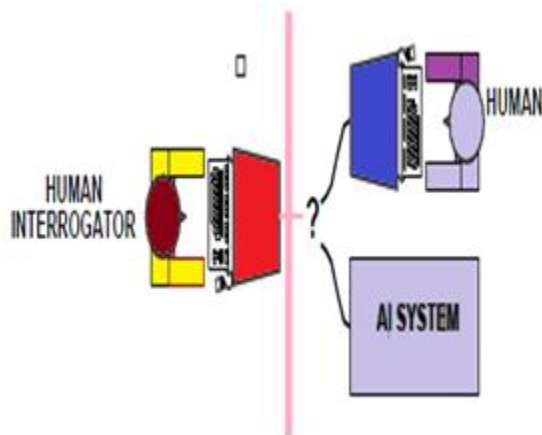


Fig 3 Turing test for checking machine intelligence

**Roots of AI**

Artificial Intelligence has identifiable roots in a number of older disciplines, particularly

- Philosophy
- Logic/Mathematics
- Computation
- Psychology/Cognitive Science
- Biology/Neuroscience

There is inevitably much overlap Example, between philosophy and logic, or between mathematics and computation. By looking at each of these in turn, we can gain a better understanding of their role in AI, and how these underlying disciplines have developed to play that role.

## II. ADVANTAGES AND DISADVANTAGES

- One of the major advantages of artificial intelligence is that its decisions are based on facts rather than emotions. Even after our utmost efforts, it is a well- known fact that human decisions are always affected in a negative way by our emotions
- Unlike humans, machines with artificial intelligence do not need any sleep, thus overcoming the inherent disadvantage of tiredness in humans
- Easier spreading of knowledge. Once an artificial mind is trained for something, it can be very easily copied to the others reducing the time wasted in otherwise passing on knowledge to other humans through training .
- Lack of creativity in responses
- Inability to explain the logic and reasoning behind a certain decision
- Current development is at a stage where the AI cannot know when there is no solution to a particular problem
- Any malfunctioning can lead to the AI producing wrong solutions and since it cannot explain the reasoning behind its answer, blind reliance on AI can lead to problems
- Lack of common sense in reasoning can also cause major problems
- It can be used to cause mass scale destruction if given in the wrong hands

All this being said, one of the most concerning problem with the development of AI is that it will soon start substituting humans in every field thus causing a high rate of unemployment, which would lead to depression, crime and poverty. Also, there are some fields that require the human touch and there is a growing sense of belief that machines will

quite possibly never be able to replace humans. The caring behavior of nurses in hospitals is one example of a job that humans feel machines will never be able to do justice to.

## III. CURRENT PROGRESS

Artificial Intelligence was created with the sole aim of mimicking or even outperforming human minds. Thus it is very important we question the fact whether it has actually been able to do so.

It cannot be ignored that the fact of AI is being used all around us especially in the fields of medicine, robotics, law, stock trading etc. It is being used in homes and big establishments. such as military bases and the NASA space station. NASA has sent out artificially intelligent robots to planets so as to learn more about their habitat and atmosphere, with the intention of investigating if there is a possibility of humans living on these planets. Expert systems

## IV. CONCLUSION

It is the function of the problem space to weight the trade-offs between the algorithms and determines which algorithm provides the best solution [9]. It can be seen from the table that the time estimate from all the searches are similar. The three exceptions are the Bidirectional, Beam and Generate and Test searches. The main reason that the Bidirectional search has a lesser time estimate is because it is simultaneously working from both ends of the problem looking for a common intermediate node. The Beam search has a time estimate of $O(nd)$ as opposed to the more common $O(bd)$. It is because the Beam Search is modified A* Search that examines on the best n branches at any node. It speeds up processing, but at the cost of assuming that a suboptimal node will never need to be travelled to reach the goal state. If that is the case the solution to the search will never be found. The memory requirement of the search algorithms are more distributed than the time estimates. In many cases a search algorithm will approach a problem Breadth First or Depth First.

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