ARTIFICIAL INTELLIGENCE

Mrs. Sonia Gupta

Assistant Professor in Computer Science

S.D.S. College For Women, Lopon (Moga),India

ABSTRACT: The aim of this paper is to introduce Artificial Intelligence. AI is the intelligence presented by machines or softwares.AI gives you wide variety of career options. It gives you chance to learn about our own brain. AI is accomplished b y 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 system. The paper includes Turing Test, Applications, Future aspects and Advantages.

Keywords: Artificial Intelligence, Knowledge, Machine, Software, Human.

I. INTRODUCTION

Artificial Intelligence is the science of automating intelligent behaviors currently achievable by humans. Intelligence is commonly considered as the ability to collect knowledge and reason about knowledge to solve complex problems. In the near Future intelligent machines will replace human capabilities in many areas. Artificial intelligence is the study and developments of intelligent machines and software that can reason, learn, gather knowledge, communicate, manipulate and understand the objects.

A. Strong artificial intelligence

It deals with creation of real intelligence artificially. Strong AI believes that machines can be made sentient or self-aware. There are two types of strong AI: Human-like AI, in which the computer program thinks and reasons to the level of human-being. Non-human-like AI, in which the computer program develops a non-human way of thinking and reasoning.

B. Weak artificial intelligence

Weak AI does not believe that creating human-level intelligence in machines is possible but AI techniques can be developed to solve many real-life problems. That is, it is the study of mental models implemented on a computer .

II. THE TURING TEST

The Turing test developed by Alan Turing (Computer scientist) in 1950. He proposed that **"Turing test is used to determine whether or not computer (machine) can think intelligently like human"**?

Imagine a game of three players having two humans and one computer, a questioner (as human) is isolated from other two players. The questioner job is to find out which one is human and which one is computer by asking questions from both of them. If the questioner makes the correct determination then the computer is considered to have artificial intelligence, because the questioner regards it as "just as human" as the human respondent. Fig.1. shows the Turing test.
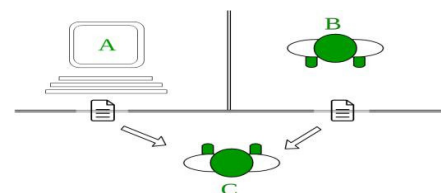

Fig.1. Turing Test

The **"**standard interpretation**"** of the Turing Test, in which player C, the interrogator, is given the task of trying to determine which player **–** A or B **–** is a computer and which is a human. The interrogator is limited to using the responses to written questions to make the determination.

III. CHARACTERISTICS OF ARTIFICIAL INTELLIGENCE

A. *Data Ingestion*

AI systems deal with voluminous amounts of data, often in excess of billions of records.

B. *Adaptive*

AI systems adapt to their environment with machine learning. They observe their results and learn to do better.

C. *Reactive*

AI systems react to the changing conditions around them. Unlike traditional applications that are more batch-oriented (you schedule them, they run, store their results, and are then shut down), AI applications continuously monitor their inputs, often from streaming data platforms, and when certain conditions apply, they invoke procedures, rules, and behaviors, or compute scores and make decisions.

D. *Forward-Looking*

AI systems don**'**t just react they often search through a space of possible scenarios to reach an effective goal. To do this, they are projecting multiple steps into the future.

E. *Concurrent*

AI systems, just like traditional applications, must handle multiple people or systems interacting simultaneously. They use techniques adopted by those developing distributed systems in the fields of operating systems and databases.

IV. APPLICATIONS OF ARTIFICIAL INTELLIGENCE

A. *Intelligent Robots*

A robot can carry out many tasks such as the production of cars in a factory. Robots can insert windscreens, paint, etc. The robot follows a control program to carry out the task given to it by a human. All these robots have sensors. These robots are NOT intelligent, they do the same thing over and over again as instructed by the control program. A sensor is a device which can detect physical data from its surroundings and then this data is input into a computer system. Examples of sensors: light, heat, movement, bump, pressure, temperature, sound. The robots will learn from their mistakes and be able to adapt to any new situation that may arise.

B. *Expert Systems*

Expert Systems are machines that are trained to have total expertise in specific areas of interest. They are developed to solve the problems in niche areas. These systems use statistical analysis and data mining to solve these problems by deducing the solutions through a logical flow of yes-no questions. An expert system is made up of 3 parts-

a) *Knowledge base*- It stores all the information, rules, data and relationships that are needed by the expert system to have total expertise in its area of interest

b) *Inference engine*- It seeks information from the knowledge base on being presented with a query, analyses it and responds with a solution or recommendation in the way a human expert would

c) *Rule*- It is a conditional statement that links the given conditions to the final solution. Fig.2. shows Expert System.
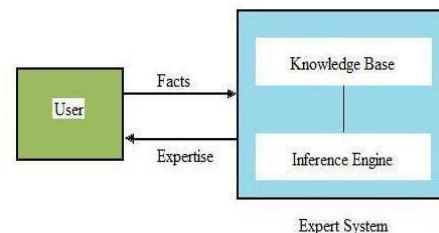

Fig.2. Expert System

C. *Game Playing*

AI plays important role in strategic games such as chess, poker, tic-tac-toe, etc., where machine can think of large number of possible positions based on heuristic knowledge.

D. *Natural Language Processing*

It is possible to interact with the computer that understands natural language spoken by humans. The goal of natural language processing was automated translation and database access.

E. *Vision Systems*

These systems understand, interpret, and comprehend visual input on the computer. For example,

a)   Doctors use clinical expert system to diagnose the patient.

b)   Police use computer software that can recognize the face of criminal with the stored portrait made by forensic artist.

F. *Speech Recognition*

Some intelligent systems are capable of hearing and comprehending the language in terms of sentences and their meanings while a human talks to it. It can handle different accents, slang words, noise in the background, change in human's noise due to cold, etc. Thus United Airlines has replaced its keyboard tree for flight information by a system using speech recognition of flight numbers and city names, which is quite convenient.

G. *Handwriting Recognition*

The handwriting recognition software reads the text written on paper by a pen or on screen by a stylus. It can recognize the shapes of the letters and convert it into editable text. There is a great need to train the computer system to recognize different human handwriting since humans all write certain letters in different ways.

V.   **ADVANTAGES**

♦   One of the major advantages of artificial intelligence is that its decisions are based on facts rather than emotions.

♦   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.

♦   A.I. and cognitive technologies help in making faster actions and decisions

♦   To err is human. Computers don't. The only mistakes they make is when you don't program them properly. AI processing will insure error-free processing of data, no matter how large the dataset. Judgment calls, however, are a different matter.

VI.   **FUTURE ASPECTS**

The use of artificial intelligence will lead to production of machines and computers, which are much more advanced than what we have today. Speech recognition systems will reach much higher levels of performance and will be able to communicate with humans, using both text and voice, in ambiguous English. There will be a great future some day for expert system applications in all aspects of health care, in both clinical and administrative areas, in improving patient care and in allocation of financial, social, and other resources. Robots in the future will be able to do everybody's work and will be faster and more efficient as compared to human beings in doing it. If one is ill, they can hire a robot nurse that will provide them with medicines at proper time. Thus it can be safely said that Artificial Intelligence is still incomplete and its future depends only and only upon the scientists solving the problem of the human brain. Till that is done, no one can make a conclusion of whether our future will be affected positively or negatively by Artificial Intelligence.

VII. CONCLUSION

We conclude that if the machine could successfully pretend to be human to a knowledgeable observer then you certainly should consider it intelligent. Furthermore there is no need to devise an algorithm in order to perform a specific task i.e. there is no need to understand the internal mechanisms of that task. They are also very well suited for real time systems because of their fast response and computational times which are due to their parallel architecture. The goal of artificial intelligence is to create computers whose intelligence equals or surpasses humans. Achieving this goal is the famous "AI problem from last decade researchers are trying to close the gap between human intelligence and artificial intelligence.

ACKNOWLEDGEMENT

REFERENCES

[1]   Puneet Wadhwa: *Artificial Intelligence*,2nd Edition.

[2]   Sunita Manro, Rajan Manro: *Artificial Intelligence*,2nd Edition.

[3]http://www.bbc.co.uk/bitesize/intermediate2/computing/artificial_intelligence/applications_of_artificial_intelligence/

[4]https://www.geeksforgeeks.org/turing-test-artificial-intelligence/

[5]http://www.ijeit.com/Vol%204/Issue%2010/IJEIT1412201504_15.pdf

[6]http://www.wtec.org/loyola/kb/c1_s1.htm

[7]http://intelligence.worldofcomputing.net/ai-branches/expert-systems.html#.WqDilR1uZ0w

[8]http://www.vssut.ac.in/lecture_notes/lecture1428643004.pdf

[9]http://www.myreaders.info/html/artificial_intelligence.html

[10]https://www.tutorialspoint.com/artificial_intelligence/artificialintelligence_overview.htm

[11]https://beebom.com/examples-of-artificial-intelligence/

BIOGRAPHY

Mrs. Sonia Gupta, MCA, Department of Computer Science & Application, S.D.S. College For Women, Lopon (Moga), India.