ARTIFICIAL INTELLIGENCE: AN APPROACH TOWARDS TECHNICAL APPLICATIONS

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Abstract— AI is the science which is used to embed human capabilities into machine. This concept was implemented in 1946 and scientists are still working on it. At the start HAL 9000 machine was invented to show emotional attachments in machine. AI is used in computational neuroscience. It is the subfield of computer science. Artificial Intelligence is becoming a popular field in computer science as it has enhanced the human life in many areas. Artificial intelligence in the last two decades has greatly improved performance of the manufacturing and service systems. Study in the area of artificial intelligence has given rise to the rapidly growing technology known as expert system. AI has many important applications such as databases, navigation, network intrusion, intelligent robots etc. Concerning the applications with databases, AI can be used efficiently to provide data security and integrity as there are various cases in which it is found that the user is suffered up to much extent in the cases of online banking transactions. In this paper we study the use of artificial intelligence in different fields, future scope for it and prior history of artificial intelligence. Also we focus on the Turing Test on Artificial Intelligence and its current status and its real time applications.

Keywords—Artificial Intelligence, Turing machine, HAL, Natural Language processing.

I. INTRODUCTION

The concept of artificial intelligence originated from the thinking, that we can implement the power of human brains into the machines. This concept is studied using artificial intelligence. The word ‘artificial’ itself implies that the attributes of the human brain are seen in machine. Artificial intelligence was first studied using Turing machine.

No one can refute a computer’s ability to process logic. But to many it is unknown if a machine can think. The precise definition of think is important because there
has been some strong opposition as to whether or not this notion is even possible [1]. The statement “machines can think” is proved by implementing various criteria on it because it can’t work unless some working strategy is specified to it. Many scientists are still working on it. In fact, we can say that the today’s technological innovations is purely based on artificial intelligence because the whole world has become machine dependent. The machine requires more knowledge, complex knowledge representation and complicated algorithms for handling mundane tasks [2].

II. EMERGENCE OF ARTIFICIAL INTELLIGENCE
The term artificial intelligence was first coined by John McCarthy in 1956 when he held the first academic conference on the subject [1].
Artificial intelligence can be viewed as the mechanical manipulation of symbols. Human thinking is transformed into machine language.
This work culminated in the invention of the programmable digital computer in the 1940s, a machine based on the abstract essence of mathematical reasoning. This device and the ideas behind it inspired a handful of scientists to begin seriously discussing the possibility of building an electronic brain [3].
1940-50 was the most important era in the development of artificial intelligence because scientists had already thought of creating artificial brain because this field had influence on variety of fields as mathematics, psychology, engineering, economics and political science.
The field of artificial intelligence research was founded as an academic discipline in 1956 [3].
This emergence of artificial intelligence introduced HAL 9000.
HAL 9000: It is heuristically programmed Algorithmic computer. It has a vital use in space which is based on hard science.
In 1968, Arthur C. Clarke and Stanley Kubrick had imagined that by the year 2001, a machine would exist with an intelligence that matched or exceeded the capability of human beings [4].
Emergence of AI has provided scientists a very big field which gives scope to work on machine learning, cognitive architecture, natural language processing, knowledge representation and reasoning, planning, and cyber field and so on.
The real time applications are social media sites like facebook. Google and other renowned IT companies are using data mining concept as the backbone. Data mining is correlated to artificial intelligence.

III. TURING TEST ON ARTIFICIAL INTELLIGENCE
“Whether or not Machines can think?” is judged on the basis of following test. This test has following criteria as:
A] Natural Language Processing: the command given to the machine should be understood by it whatever might be the language.
B] Knowledge representation: it needs to have knowledge and store it somewhere for the users to seek data easily.
C] Automated reasoning: it needs to be able to do reasoning based on the stored knowledge.
D] Machine representation: it should be able to learn from its environment.
E.g. Various search engines such as google, amazon, bing etc.

IV. WHY ARTIFICIAL INTELLIGENCE
People prefer having a mechanical slave to do things for you rather than engaging their own muscles [5].
AI had solved a lot of very difficult problems and their solutions proved to be useful throughout the technology industry, such as data mining, industrial robotics, logistics, speech recognition, banking software, medical diagnosis etc. At present, computers are adequately able to reproduce the emotional, conceptual, and intuitive abilities of humans.
There is also the possibility that AI might become malevolent. Because of this, it is important that we should envision potential future problems that may manifest when we consider how to employ wearable devices. It will be essential to enhance our technologies in order to ensure that we can use AI under human control [6].
The combination of immense Internet connected networks and machine learning algorithms has yielded dramatic advances in machines ability to understand
spoken and visual communications, capabilities that fall under the heading “narrow” artificial intelligence [7].

V. LANGUAGES IN ARTIFICIAL INTELLIGENCE

- **IPL** was the first language developed for artificial intelligence.
- **AIML** (meaning "Artificial Intelligence Markup Language").
- **Prolog** is a declarative language, is particularly useful for symbolic reasoning, database and language parsing applications. Prolog is widely used in AI today.
- **Python** is very widely used for Artificial Intelligence. Companies like Narrative Science use Python to create an artificial intelligence for Narrative Language Processing.

VI. FUTURE SCOPE IN ARTIFICIAL INTELLIGENCE

- Data security has become primary issue in computer and network systems. To keep the data safe and secure, Intrusion Detection Systems are used. Their working functionality is based in artificial intelligence. The algorithms are written to improve the performance and efficiency of the system and provide a strong protection to data in any circumstance.
- The median estimate of respondents was for a one in two chance that high level machine intelligence will be developed around 2040-2050, rising to a nine in ten chance by 2075 [8].
- Robotic technology is introduced leading to scope for engineers to develop the artificial machines following human commands.

VII. APPLICATIONS

By default robots are coined as “intelligent” as the application for its movement is used and intelligent robots can be developed by employing Artificial Intelligence [9].

Speech recognition

In the 1990s, computer speech recognition reached a practical level for limited purposes. Thus United Airlines has replaced its keyboard tree for flight information by a system using speech recognition of flight numbers and city names. It is quite convenient. On the other hand, while it is possible to instruct some computers using speech, most users have gone back to the keyboard and the mouse as still more convenient.

Understanding natural language

Just getting a sequence of words into a computer is not enough. Parsing sentences is not enough either. The computer has to be provided with an understanding of the domain the text is about, and this is presently possible only for very limited domains.

Computer vision

The world is composed of three-dimensional objects, but the inputs to the human eye and computers’ TV cameras are two dimensional. Some useful programs can work solely in two dimensions, but full computer vision requires partial three-dimensional information that is not just a set of two-dimensional views. At present there are only limited ways of representing three-dimensional information directly, and they are not as good as what humans evidently use.

Modern Games

Today’s modern games are very complicated and smart as well. Anyone randomly cannot take on computer as an opponent, play easily and win. There are different levels of computers in games, choosing a highest level computer opponent can outclass you in any of the games you play. This is all due to Artificial Intelligence as computer thinks two steps ahead of the opponent every time you play against them.

VIII. DIFFERENCE BETWEEN ARTIFICIAL INTELLIGENCE & NATURAL INTELLIGENCE

<table>
<thead>
<tr>
<th>Artificial Intelligence</th>
<th>Natural Intelligence</th>
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<tr>
<td>1)Less susceptible to errors</td>
<td>Error-prone</td>
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<td>2) Multitasking</td>
<td>Single task at a time</td>
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<td>3) Complex calculations done easily</td>
<td>Complex calculations take a lot of time and efforts.</td>
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<td>4) No creativity</td>
<td>Creative and can innovate new ideas</td>
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<td>5) Algorithms are required</td>
<td>Inborn talent imparted</td>
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IX. **ARTIFICIAL INTELLIGENCE AS A THREAT**

- **An Intelligence Explosion May Be Sudden**
  Computers are overcoming human races. In future, there will be no scope to human efforts. Everything will be done by computers or machines itself. Due to this lot more importance will be given to computers and everyone will be computer dependent.

Each improvement in AI technology increases the ability of AIs to research more improvements, but an AI may also face the problem of diminishing returns as the easiest improvements are achieved first. The rate of improvement is hard to estimate, but several factors suggest it would be high. The predominant view in the AI field is that the bottleneck for powerful AI is software, not hardware [10].

X. **CONCLUSION**

Artificial intelligence is emerged as an extra helping hand to human. It is implemented using various algorithms developed by scientists. It has completely changed the face of modern world by its tremendous applications.

There’s certainly an attitude that suggests that the technology industry and society in general, deem AI of growing importance and a vital part of our future [11].

Aspects of intelligent behavior, such as solving problems, making inferences, learning and understanding language, have already been coded as computer program and within very limited domains such as identifying diseases of soya bean plants, AI programs can outperform human experts [12].

AI has made human life comfortable by reducing human time and efforts. It has wide scope in future.

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