

# Chapter 1

## Artificial Intelligence: A Brief Review

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### ABSTRACT

*Artificial intelligence refers to the replication of human intelligence in machines that are encoded to think like humans and imitate their actions. The word may also be applied to any machine that displays qualities related to a human mind for example understanding, learning, and problem-solving. As technology advances, previous benchmarks that defined artificial intelligence become out-dated. Artificial intelligence has made its way to almost every sector and has resulted in better efficiency of the traditional processes. In this chapter, the author discusses the current applications, future prospects, and possible threats of artificial intelligence.*

### INTRODUCTION

Intelligence can be considered as the ability of a system to store and retrieve information from memory, calculate, perceive relationships and analogies, learn from experience, comprehend complex ideas, solve problems, use the natural language fluently, classify, generalize, and adapt new situations. An American developmental psychologist Howard Gardner described that Intelligence comes in multifold and is intangible mainly composed of Reasoning, Learning, Problem Solving, Perception, and Linguistic Intelligence. (tutorialspoint.com)

Computers or machines can perform several tasks and using this ability humans are controlling their power in terms of their assorted working spheres, increasing speed, and reducing size concerning time (Desai, R., 2017). John McCarthy the father of Artificial Intelligence describes it as *the science and engineering of making intelligent machines, especially intelligent computer programs*. Artificial Intelligence which is a branch of Computer Science follows making a computer or machines, a computer-controlled robot, or software as intelligent as human beings by studying the human brain and the way it thinks, learn, decide, and work to solve a problem. The results of this study make a base for developing intelligent software and system (Dinakaran, S., and Anitha, K., 2018).

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So Artificial intelligence is a science and technology-based on disciplines such as Computer Science, Biology, Psychology, Linguistics, Mathematics, and Engineering with the goals to Create Expert Systems which exhibit intelligent behavior, learn, demonstrate, explain, and advice to its users and to Implement Human Intelligence in Machines.

Broadly we can differentiate between human and machine intelligence in two ways firstly, Humans can identify the whole object even with some missing or distorted parts whereas the machines cannot, and secondly, Humans store and recall information by patterns whereas the machines recognize by a set of rules and data by using algorithms. (Desai, R., 2017)

The recent developments in the field of artificial intelligence have revolutionized and created an impact on every possible discipline. In the near future, AI would become one of the most powerful tools and along with that, it would bring some risks and security issues as well.

Through its application in the medical and pharmaceutical industry, several lives would be saved from life-threatening diseases and would also help us discover treatments with lesser side-effects.

### **SOME MILESTONES/ INNOVATIONS DURING 20TH CENTURY (Desai, R., 2017)**

- In 1923 Karel Čapek play “Rossum’s Universal Robots” in London, first use of the word “robot” in English.
- In 1943 Foundations for neural networks laid.
- In 1945 a Columbia University alumni Isaac Asimov, coined the term *Robotics*.
- In 1950 Alan Turing presented Turing Test for evaluation of intelligence
- In 1956 John McCarthy coined the term *Artificial Intelligence*.
- In 1958 John McCarthy invents LISP programming language for AI.
- In 1964 Danny Bobrow’s dissertation at MIT revealed that computers can understand natural language to solve algebra word problems correctly.
- In 1965 Joseph Weizenbaum at MIT built *ELIZA*, an interactive problem that carries on a dialogue in English.
- In 1969 Scientists Developed *Shakey*, a robot, equipped with locomotion, perception, and problem solving.
- In 1973 The Assembly Robotics group built *Freddy*, the Scottish Robot, capable of using vision to locate and assemble models.
- In 1979 The first computer-controlled autonomous vehicle, Stanford Cart, was built.
- In 1985 Harold Cohen created and demonstrated the drawing program, *Aaron*.
- In 1990 Major advances in all areas of AI such as Significant demonstrations in machine learning, Case-based reasoning, Multi-agent planning, Scheduling, Data mining, Web Crawler, natural language understanding and translation, Vision, Virtual Reality and Games were introduced.
- In 1997 The Deep Blue Chess Program beats Garry Kasparov the then world chess champion.
- In 2000 Kismet a robot with a face that expresses emotions was displayed, Robot Nomad explored remote regions of Antarctica and interactive robot pets became commercially available.

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