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Evolution and Revolution in Artificial Intelligence

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Abstract: *Artificial intelligence (AI), deep learning, machine learning and neural networks represent extremely exciting and powerful machine learning-based techniques wont to solve various real-world problems. For a primer on machine learning, you'll want to read this seven-part series that I wrote. While human-like deductive reasoning, presumption, and decision-making by a computer is still a long time away, there have been remarkable gains in the application of AI techniques and associated algorithms*

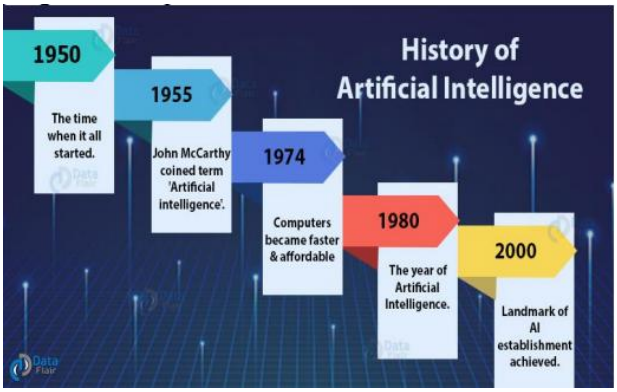
Keywords: Algorithm, Chatbots, Cluster, Cognitive Science, Machine Learning, Deep Learning, Image Recognition, Natural Language Processing, Neural Networks, Semantic Analysis, Supervised Learning, Unsupervised Learning.

I. INTRODUCTION

Artificial intelligence (AI) is defined as intelligence reveal by an artificial entity. Such a system is usually assumed to be a computer. Although AI features a strong fantasy atmosphere, it forms an important branch of computing, handling intelligent behaviour, learning and adaptation in machines. Research in AI cares with producing machines to automatic tasks requiring intelligent behaviour. Examples include control, planning and scheduling, the power to answer diagnostic and consumer questions, handwriting, speech, and face recognition. As such, it's become a science, focused on providing solutions to real world problems. AI systems are now in routine use in economics, medicine, engineering and therefore the military, also as being built into many common computer software applications, traditional strategy games like computer chess and other video games.

II. HISTORY

The intellectual roots of AI, and therefore the concept of intelligent machines, could also be found in Greek mythology. Intelligent artefact's appear in literature since then, with real mechanical devices actually show behaviour with some degree of intelligence. Modern computers became available after World War-II, it has become possible to create programs that perform difficult intellectual tasks.



- 1950 – 1960: The first working AI programs were written in 1951 to run on the Ferranti Mark I machine of the University of Manchester (UK): a draughts-playing program written by Christopher Strachey and a chess-playing program written by Dietrich Prinz.

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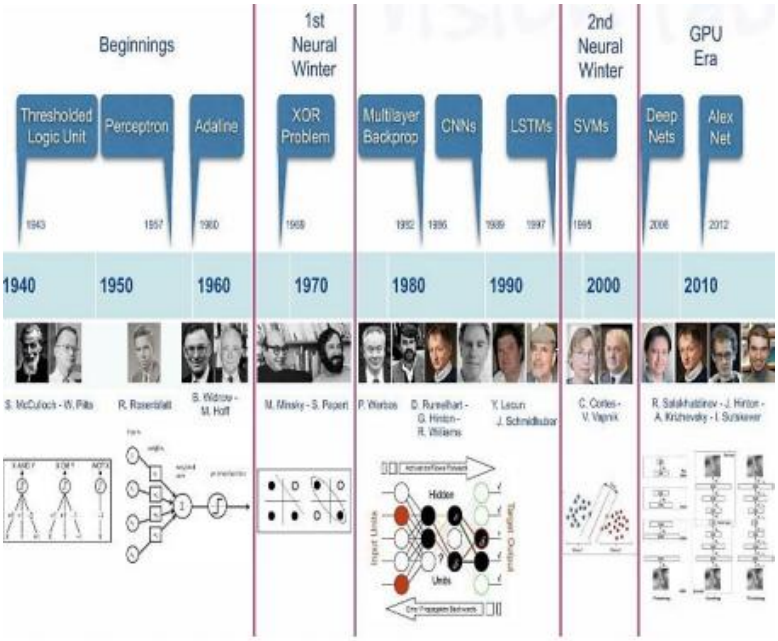
- 1960 – 1970: During the 1960s and 1970s Marvin Minsky and Seymour Papert published Perceptrons, shows limits of straightforward neural nets and Alain Colmerauer developed the Prolog computer -oriented language. Ted Shortliffe demonstrated the facility of rule-based systems for knowledge representation and assumption in medical diagnosis and therapy in what sometimes it's called the primary expert system. Hans Moravec developed the first computer-controlled vehicle to autonomously negotiate confused barrier courses.
- 1980's Onwards: In the 1980s, neural networks became commonly used network with the back-propagation algorithm, first described by Paul John Werbos in 1974. Then in 1990s marked major achievements in many areas of AI and demonstrations of various applications. Most notably Deep Blue, a chess-playing computer, beat Garry Kasparov during a famous six-game match in 1997.



III. CATEGORIES OF AI

AI divides roughly into two schools of thought:

- Conventional AI
- Computational Intelligence (CI)

A) Conventional AI

Conventional AI mostly involves methods presently referred to as machine learning, characterized by formalism and statistical analysis. This is also referred to as symbolic AI, logical AI, neat AI and Good Old Fashioned AI (GOFAI).

a) Methods Include

- **Expert systems:** apply reasoning potentiality to reach a conclusion. An expert system can process large amounts of known information and supply conclusions supported them.
  - Case based reasoning
  - Bayesian networks
- **Behaviour based AI:** a modular method of creating AI systems by hand.

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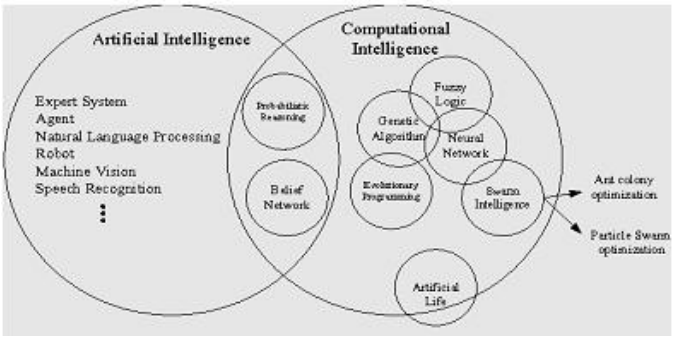
b) Computational Intelligence (CI)

Computational Intelligence involves continual development or learning (e.g. parameter tuning e.g. in connectionist systems). Learning is predicated on experiential data and is connected with non-symbolic AI, scruffy AI and soft computing.

a) Methods Include

- **Neural networks:** Systems with very strong pattern recognition competences.
- **Fuzzy systems:** techniques for reasoning under uncertainty, has been usually used in modern industrial and consumer product controller systems.
- **Evolutionary computation:** applies biologically inspired concepts such as populations, transformation and survival of the fittest to generate more and more better solutions to the problem. These methods most particularly divide into evolutionary algorithms (e.g. genetic algorithms) and swarm intelligence (e.g. ant algorithms).



IV. Typical Problems to which AI methods are Applied

- Pattern recognition
- Optical character recognition
- Handwriting recognition
- Speech recognition
- Face recognition
- Natural language processing, Translation and Chatter bots
- Non-linear control and Robotics
- Computer vision, Virtual reality and Image processing
- Game theory and Strategic planning

V. Other fields in which AI Methods are Applied

- Automation
- Cybernetics
- Hybrid intelligent system
- Intelligent agent
- Intelligent control
- Automated reasoning
- Data mining
- Behaviour-based robotics
- Cognitive robotics
- Developmental robotics

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- Evolutionary robotics
- Chatbot
- Knowledge Representation

VI. American Association for Artificial Intelligence (AAAI)

Founded in 1979, the American Association for AI (AAAI) may be a non-profit scientific society dedicated to advancing the scientific understanding of the mechanisms underlying thought and intelligent behaviour and their personification in machines. AAAI also aims to extend public understanding of AI, improve the teaching and training of AI practitioners, and supply direction for research planners and funders regarding the importance and potential of current AI developments and future directions.

VII. APPLICATIONS OF AI

- **Game Playing:** You can buy machines that can play master level chess for some hundred dollars. There is some AI in them, but they play well against people mainly through brute force computation–looking at many thousands of positions.
- **Speech Recognition:** In the 1990s, computer speech recognition reached a practical level for limited purposes. Thus, United Airlines has swapped its console tree for flight information by a system using speech recognition of flight numbers and city names. It was 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 were more suitable.
- **Understanding Natural Language:** Just getting an arrangement of words into a computer is not enough. Analysing sentences is not enough either. The computer has to be provided with an understanding of the domain the text is about, and this is currently possible only for few limited domains.
- **Computer Vision:** -The world is composed of three-dimensional objects, but the inputs to the human eye and computer's TV cameras are two dimensional. Some valuable programs can work only 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 certainly use.
- **Expert Systems:** A "knowledge engineer" discuss with experts in a certain domain and tries to represent their knowledge in a computer program for carrying out some task. So, this works depends on whether the intellectual mechanisms required for the task are within the present state of AI. One of the first expert systems was MYCIN in 1974, which diagnosed bacterial infections of the blood and advised treatments. It did better than medical students or practicing doctors, provided its boundaries were observed.
- **Heuristic Classification:** One of the most possible kinds of expert system given the present knowledge of AI is to put some information in one of a fixed set of types using several sources of information. An example is recommending whether to accept an offered credit card purchase. Information is available about the owner of the credit card, his record of payment and also about the item he is purchasing and about the establishment from where he is purchasing it (e.g., about whether there have been previous credit card scams at this establishment).

VIII. Conclusion

We conclude that if the machine could successfully develop to be a human to a knowledgeable viewer then you definitely consider it as intelligent machine. AI systems are in routine use now-a-days in various field such as economics, medicine, engineering and the military, as well as being built into many common home computer software applications, traditional strategy games etc.

AI is an exciting and satisfying discipline. AI is branch of computer science that is anxious with the automation of intelligent behaviour. The revised definition of AI is – AI is the study of machines fundamental intelligent behaviour

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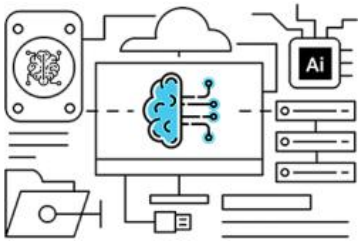
through the construction and assessment of arte facts that attempt to perform those mechanisms. So, it is concluded that it works as an artificial human brain which have an unbelievable artificial thinking power.



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