

Basic concepts of Artificial Intelligence and Machine Learning: A Review Paper

Er. Gagandeep Singh, Assistant Professor, Computer Science and Engineering, Chandigarh University, Gharuan, Mohali,

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Abstract:

Ages back it was only the humans who had their crucial role in the every sort of work. But, with the proliferating advancement in technology the science has been able to extirpate the human involvement. Artificial intelligence and machine learning, the most recent and adaptive invention, has the ability to perform the human work. During it's inception there were myraid arguments related to its validity but with the time it gained huge popularity in the world of science and technology. The review paper will glance through the various aspects of artificial intelligence and machine language

Keywords: Artificial intelligence (AI), Machine Learning

INTRODUCTION

In computer engineering world, artificial intelligence is where the machines exhibit the intelligence as that of the inherited intelligence of humans. The updated version of AI is defined as the in depth study and designing the intelligent agents. These intelligent agents are the systems that perceives the surroundings and react in a way to enhance the chances of success.

The area of AI is extremely onerous to encapsulate chronologically. Several reasons have been suggested till date for this which came up which came out with the best possible solutions.

The term AI for the very first time was used at a conference in July 1956 at Dartmouth college [9]. To witness the conference, John McCarthy along with the other connoisseurs was present there.

By the inception of 1980s, the experts analyzed the practical difficulties associated with it. But with the advancement in technology linked with computers and robots, there have been a lot of successful attempts to build the intelligent machines.

The ensuing segments will glance through the myriad basic concepts of Artificial Intelligence and Machine Learning

Literature Review

A research paper by Peter Norvig and et.al[1] demonstrated the implementation of basic perspectives of AI. They suggested that artificial intelligence is a blend of five parameters namely, reasoning, learning, perception, linguistic approach and problem solving.

Another research done by niklas[3] elaborated the supervised type of machine learning. This paper comprehended the various categories of machine language namely, as supervised, unsupervised and reinforcement. Along with it the paper gave an illustration of the implementation of AI in real life.

Severinlemaignan and et.al.[8] comprehended how the human-robot interaction is challenging the AI. This paper deals with the identification of individual and collaborative cognitive skills.

E.S Brunette et.al[9] discussed about the embodied AI. It also briefed out the agent-based AI and philosophical commentary on the same has been elaborated.

Concept of AI and Machine Learning

Artificial intelligence (AI) is a mode that enables computer-controlled robot to execute the functions or activities which are generally linked with human

intelligence. The term is generally adapted in case of all the projects besotwed with intellectual processes including the competence to reason, generalise the situation or learning from the previous experiences. Since the inception of digital computers, the technology has widely demonstrated the application of programming to perform the complicated tasks. No doubt the computers have attained a great popularity in processing speed and memory capacity, there have been no programming that can be co related with human performance. While, the AI has developed and designed the programs that have been able to achieve the same performance level as that of humans. AI Has vast range of applications in the field of medicines, search engines, voice and handwriting recognition.

“Artificial intelligence is an intellect [7] that is much smarter than the best human brain in practically every field, including computer science and linguistic logic.” this has been assumed as the most recent form of machines which are enable to perform the mechanical and muscular work of human beings. Moreover, it also has a ability to respond intellectually. There are two main variations available in AI namely the weak AI and strong AI. The weak AI works on the principle of creating the machines which are further treated as the intelligent ones. It, weak one, has clarified that the machines may inhibit the virtual abilities by opting for proper programming. The best example which is available today is online gaming as ludo. In such cases the computer has the ability to roll the dice and, then moving the key as per the score. Herein the computer has no thinking ability, but has the capability to take the steps. To the contrast, Strong AI is a stage where the computer develops in itself the ability to think and then predict the answer. The example is the humanoid named Sophia designed to behave as a human being and was built in the form of a human body.

Machine learning is conceptualized as a phenomenon where the machines develop accessibility to the data that will ease the human work. In other words, it is a capability of machines to access the real time data and then improve themselves on the basis of feedbacks. The terms of AI and ML are often clubbed together to be used in the concepts of data science and analysis. The machine learning has three basic components namely, supervised learning, unsupervised learning and reinforcement learning.

Supervised learning: This technique is more acceptable in training the neural networks. [4] It includes grasping the mapping from the set of inputs to discrete and real value target variables.

Unsupervised learning: herein no labels are required to create an algorithm. It has been defined as goal in itself ie. hidden pattern [7] and data. It is generally solved by grouping in K groups.

Reinforcement learning: here AI “agent” [8] decides how to perform in order to enhance the output efficiency. A computer based program interacts with the surroundings to win against the opposition.

Applications

The AI is the topic of research these days. Some very prevalent applications of AI include SIRI by google, alexa, Watson by IBM, many to name but a few. These all the applications based on the operating systems with digital personal assistance which have speech and gesture recognition system. This enables the intelligent system to work efficiently. To conclude, from SIRI to driving cars, AI has a proliferating use.

A lot of future researches are expected in this area. Although a high performance cars with special features as automatic driver assistance, missiles, radars and navigation systems are available, research is still expected in other fields as well. Moreover, the focus is to maintain or enhance AIs impact on

society. To attain this the motivation is required in the areas of verification, validity and security.

References

1. Peter Norvig; Stuart Russell, "Artificial Intelligence: A Modern Approach".
2. Sally Goldman; Yan Zhou, "Enhancing Supervised Learning with Unlabeled Data", Department of Computer Science, Washington University, St.Louis, MO 63130 USA.
3. NiklasLavesson,"Evaluation and Analysis of Supervised Learning Algorithms and Classifiers", Blekinge Institute of Technology Licentiate Dissertation Series No 2006:04, ISSN 1650-2140, ISBN 91-7295-083-8
4. Bing Liu, "Supervised Learning", Department of Computer Science, University of Illinois at Chicago (UIC), 851 S. Morgan Street, Chicago
5. Rich Caruana; AlexandruNiculescu- Mizil,"An Empirical Comparison of Supervised Learning Algorithms", Department of Computer Science, Cornell University, Ithaca, NY 14853 USA Dissertation Series No 2006:04,ISSN 1650-2140,ISBN 91-7295-083-8
6. ZoubinGhahramani, "Unsupervised Learning", Gatsby Computational Neuroscience Unit, University College Lond Unsupervised", "Genetic Learning Algorithms", "Reinforcement Learning and Control", Department of Computer Science, Stanford University,450 Serra Mall, CA 94305, USA.
7. Girish Kumar jha, "Artificial Neural Networks and its applications" international journal of computer science and issues 2005.
8. SeverinLemaignan, rachidAlami, "Artificial cognition for social human-robot interaction: an implementation", centre for robotics and neural systems, Plymouth, United kingdom,Science Direct, volume 247, June 2017, pages 45-69
9. Emma S. Brunette, Rory Flemmer, Claire Flemmer, "A review of artificial intelligence", School of Engineering and Advanced Technology, Massey University, New Zealand, conference paper, research gate, January 2009