International Journal of Research and Development in Applied Science and Engineering (IJRDASE)
ISSN: 2454-6844

Artificial Intelligence Vs Machine Learning Vs Deep Learning: are differ to each other in the behavioral environment

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Abstract: Artificial intelligence is imparting a cognitive ability to a machine. The idea behind machine learning is that the machine can learn without human intervention. The machine needs to find a way to learn how to solve a task given the data. Deep learning is the breakthrough in the field of artificial intelligence.

Keywords: Artificial Intelligence, Machine Learning, Deep Learning

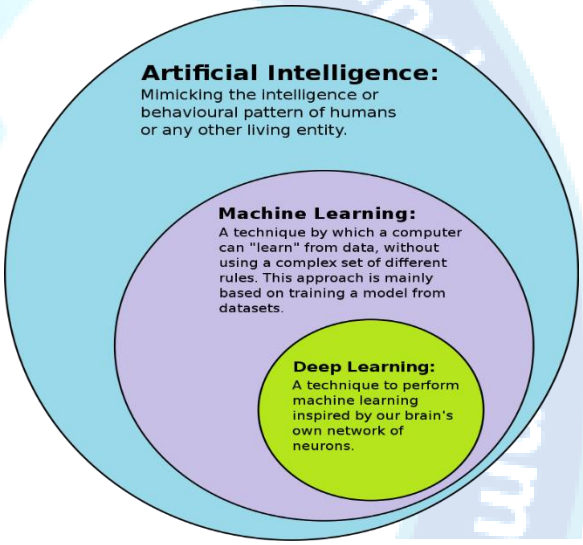
1. Introduction

Artificial intelligence is a branch of computer science in which machines are programmed and given a cognitive ability to think and mimic actions like humans and animals. The benchmark for AI is human intelligence regarding reasoning, speech, learning, vision, and problem solving, which is far off in the future.

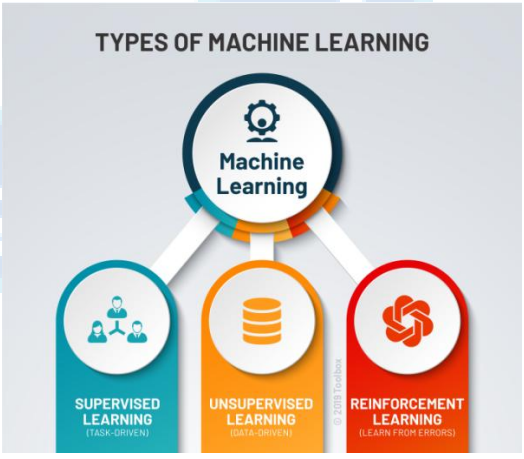
Artificial Intelligence focuses on performing 3 cognitive skills just like a human – learning, reasoning, and self-correction.

AI has three different levels

i. **Narrow AI**: A artificial intelligence is said to be narrow when the machine can perform a specific task better than a human. The current research of AI is here now.
ii. **General AI**: An artificial intelligence reaches the general state when it can perform any intellectual task with the same accuracy level as a human would
iii. **Active AI**: An AI is active when it can beat humans in many tasks



Machine Learning is naturally a subset of AI. It provides the statistical methods and algorithms and enables the machines/computers to learn automatically from their previous experiences and data and allows the program to change its behavior accordingly.



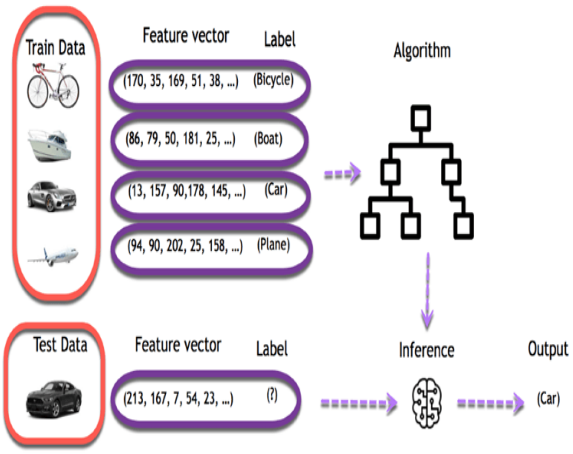
OTT platforms like Netflix and Amazon Prime use Machine Learning to recommend movies based on the user's past viewing data and it constantly improves by learning from past experiences.

Machine Learning has three different types:

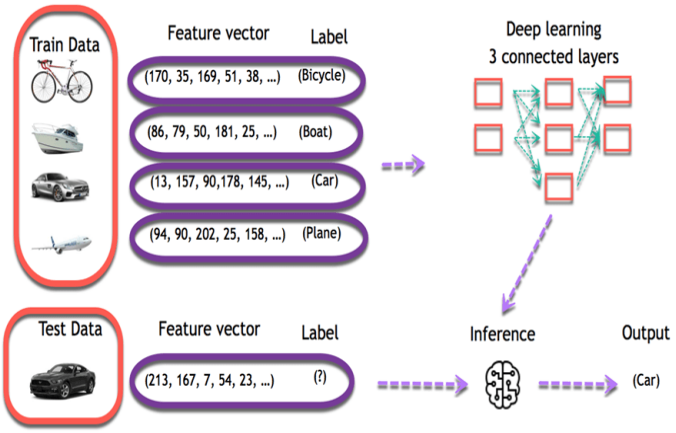
i. **Supervised Machine Learning** Supervised learning is one of the most basic types of machine learning. In this type, the machine learning algorithm is trained on labeled data. Even though the data needs to be labeled accurately for this method to work, supervised learning is extremely powerful when used in the right circumstances.

ii. **Unsupervised machine learning** holds the advantage of being able to work with unlabeled data. This means that human labor is not required to make the dataset machine-readable, allowing much larger datasets to be worked on by the program.

iii. **Reinforcement learning** directly takes inspiration from how human beings learn from data in their lives. It features an algorithm that improves upon itself and learns from new situations using a trial-and-error method. Favorable outputs are encouraged or 'reinforced', and non-favorable outputs are discouraged or 'punished'.



Deep Learning can be thought of as the evolution of Machine Learning which takes inspiration from the functioning of the human brain. Deep Learning is used to solve complex problems where the data is huge, diverse, less structured. Deep learning models are built on top of Artificial Neural Networks, which ***mimic how the human brain works***.



Deep Learning has three different popular types:

i. **Multilayer perceptron (MLP)** is a class of a feedforward artificial neural network (ANN). MLPs models are the most basic deep neural network, which is composed of a series of fully connected layers. Today, MLP machine learning methods can be used to overcome the requirement of high computing power required by modern deep learning architectures.

ii. **convolutional neural network (CNN, or Conv Net)** is another class of deep neural networks. CNNs are most commonly employed in computer vision. Given a series of images or videos from the real world, with the utilization of CNN, the AI system learns to automatically extract the features of these inputs to complete a specific task, e.g., image classification, face authentication, and image semantic segmentation.

iii. **Recurrent neural network (RNN)** is another class of artificial neural networks that use sequential data feeding. RNNs have been developed to address the time-series problem of sequential input data.

2. Conclusion:

Machine learning is a **subset of AI**, and it consists of the techniques that enable computers to figure things out from the data and deliver AI applications. Deep learning,

meanwhile, is a subset of machine learning that enables computers to solve more complex problems.

References:

[1] https://viso.ai/deep-learning/deep-neural-network-three-popular-types/20/10/2021
[2]https://www.analyticsvidhya.com/blog/2020/02/cnn-vs-rnn-vs-mlp-analyzing-3-types-of-neural-networks-in-deep-learning/20/10/2021
[3] https://www.guru99.com/machine-learning-vs-deep-learning.html20/10/2021
[4] https://www.educba.com/deep-learning-networks/20/10/2021