A Brief Introduction to Artificial Intelligence

What is AI and how is it going to shape the future

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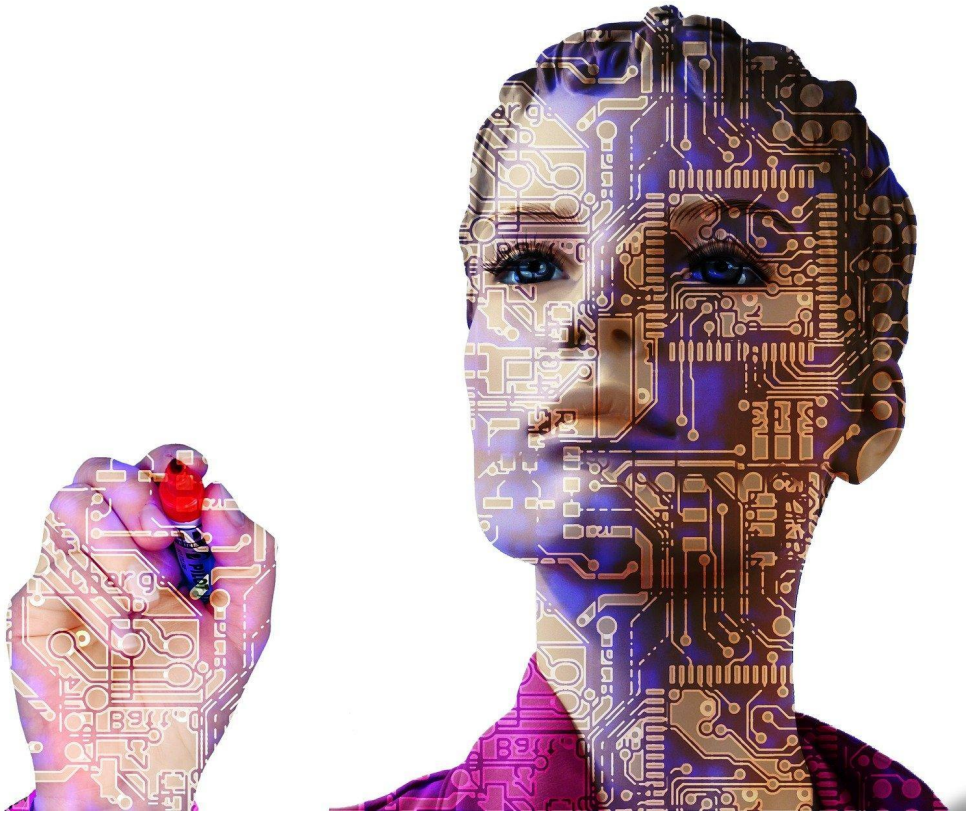
What is Artificial Intelligence?



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Generally speaking, Artificial Intelligence is a computing concept that helps a machine think and solve complex problems as we humans do with our intelligence. For example, we perform a task, make mistakes and learn from our mistakes (At least the wise ones of us do!). Likewise, an AI or Artificial Intelligence is supposed to work on a problem, make some mistakes in solving the problem and learn from the problems in a self-correcting manner as a part of its self-improvement. Or in other words, think of this like playing a game of chess. Every bad move you make reduces your chances of winning the game. So, every time you lose against your friend, you try remembering the moves you made which you shouldn't have and apply that knowledge in your next game and so on. Eventually, you get better and your precision, or in this case probability of winning or solving a problem

improves by a noteworthy extent. AI is programmed to do something similar to that!

Artificial Intelligence vs Traditional Robotics

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When we hear the word “Robot”, an image of a metal box with creepy eyes and speaking in a mechanical voice pops into our head. I mean that’s what we have been watching in television for years, isn’t it? And to a certain degree we are right. Traditional robotics has been perceived by pop culture as an arena that creates humanlike machines to work for us as saviours and sometimes as super-villains bringing in a cascade of tyranny into the human world. However, real life robots aren’t as humanlike as we want them to be, yet. They are programmed in a specific way to only execute tasks that it has been programmed to perform.

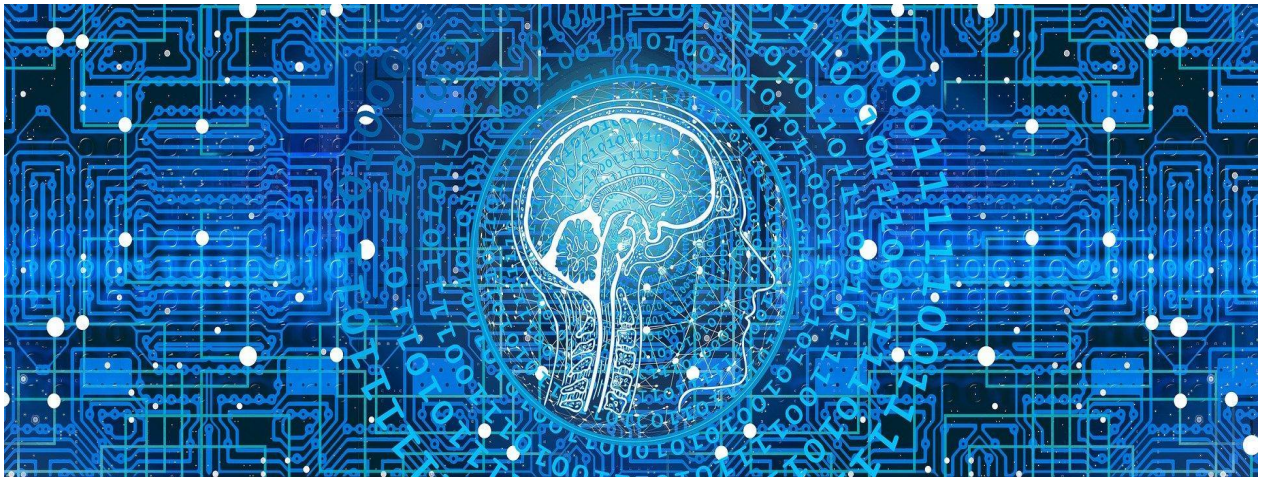
Imagine a self-driving car that has been designed to drive you on its own according to where you instruct it to take you. Now for a traditional robot, the car is going to go through the exact road that it was programmed to select for a certain destination by its creators, possibly without the knowledge of traffic and cause accidents. However, a human driver would have chosen the shortest path or check which paths have the least traffic today and would be the most convenient path for that particular destination. That is the exact humanlike creative thinking the traditional robots lack! They are fixed in their own “not so smart” way and are largely dependent on the program they are built on and the instructions that they are being given. If a certain instruction doesn’t coincide with their program, the robot won’t even be able to run, let alone going the extra step of being creative. This is the limitation of traditional robots Artificial Intelligence is being developed to overcome. Unlike the conventional “bips and bops”, a good AI will simulate the

complicated and intuitive sense of thinking and problem-solving abilities of the human mind.

A Brief History of AI

The concept of Artificial Intelligence is not as modern as we think it is. This traces back to as early as 1950 when Alan Turing invented the Turing test. Then the first chatbot computer program, ELIZA, was created in the 1960s. [1] IBM deep blue was a chess computer made in 1977 beat a world chess champion in two out of six games, one won by the champion and the other three games were draw. [2]
In 2011, Siri was announced as a digital assistant by Apple. [3]
Elon Musk and some others founded OpenAI in 2015.[4][5]

Artificial Intelligence vs Machine Learning vs Deep Learning



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Up until now in this article we were discussing about Artificial Intelligence as a process that is going to help machines achieve a humanlike mental behaviour. AI is a vast and growing field which also includes a lot more subfields like machine learning and deep learning and so on. Machine learning is in a nutshell the concept of computers learning to improve their predictions and creativity to resemble a humanlike thinking process using algorithms. Machine learning involves a number of learning processes such as:

Supervised learning: Supervised learning is a process where our machines are designed to learn with the feeding of labelled data. In this process our machine

is being trained by giving it access to a huge amount of data and training the machine to analyze it. For instance, the machine is given a number of images of dogs taken from many different angles with colour variations, breeds and many more diversity. So that, the machine learns to analyze data from these diverse images of dogs and the "insight" of machines keep increasing and soon the machine can predict if it's a dog from a whole different picture which was not even a part of the labelled data set of dog images the machine was fed earlier.

Unsupervised learning: Contrary to the supervised learning, the unsupervised learning algorithms comprises analyzing unlabelled data i.e., in this case we are training the machine to analyze and learn from a series of data, the meaning of which is not apparently comprehendible by the human eyes. The machine looks for patterns and draws conclusions on its own from the patterns of the data. Important thing to remember that the dataset used in this instance is not labelled and the conclusions are drawn by the machines.

Reinforcement learning: Reinforcement learning is a feedback dependent machine learning model. In this process the machine is given a data and made to predict what the data was. If the machine generates an inaccurate conclusion about the input data, the machine is given feedback about its incorrectness. For example, if you give the machine an image of a basketball and it identifies the basketball as a tennis ball or something else, you give a negative feedback to the machine and eventually the machine learns to identify an image of a basketball on its own when it comes across a completely different picture of a basketball.