Good morning everyone! Today we will talk about AI and machine learning.

For a start ML and AI are the hot topics in every trending article since 2017 and rightfully so it is much like how internet emerged as a game changer in everyone’s life.

First let’s talk about what is AI. If we divided the word.

The definition of Artificial is made or produced by human

While intelligence is the capacity to learn and solve problems.

When we combine this together, we get Artificial Intelligence

A machine that can solve and act like humans

AI is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans.

Some of the activities computers with artificial intelligence are designed for include:

* Speech Recognition - youtube cc
* Facial Recognition - facebook profile picture
* Weather / Temperature Recognition-
* Pattern Recognition -

Let’s have a discussion to the core of an AI. If we have an AI Robot and put it in a field despite of the variation in lightning landscape and dimensions of the field the AI Robot must perform as expected, this ability to react appropriately to a new situation called generalized learning.

The robot now is at a crossroads one that paved the other one is rocky, the robot must determine which path to take based on the circumstances, this now portrays the AI robot reasoning ability.

After a short stroll the robot now encounters a stream that it could not swim across, using the plank provided as an input, the robot is now able to cross the stream, so our robot uses the given input and finds the solution for this for problem. This is now the problem solving.

These 3 capabilities make the robot artificially intelligent.

In short AI provides machines with the capability to adapt, reason and provide solutions.

The AI has been around since 1950’s

Alan Turing even publish a landmark paper which he speculated about the possibility of creating machines that think. Then in 1956 in the Dartmouth Conference, scientists debuted and persuaded the attendees to accept “Artificial Intelligence” as a name of the field. The Dartmouth conference was the moment that AI gained its name, its mission, its first success and its major players.

Eventually, the AI winter period comes, for 60 years AI stops growing then after 60 years the AI winter was stop, its been made possible because of key breakthroughs

The first breakthrough is access of better cheaper graphics processing units GPU’s. AI software needs a lot of processors running at the same time, now GPU’s are affordable and available enough that they can be clustered together to build AI software.

The next key is big data. It played a major role in making AI a reality. In order to live, AI needs education, big data is like a university where AI can study and grow. By collecting and absorbing data AI learns at an incredible pace.

The final key to AI is better algorithms, because of algorithms AI learn and react more quickly, algorithms optimize results making the AI faster and smarter.

With these 3 key breakthrough AI trends on the way, AI will continue to improve our lives in more ways than we ever thought

The following are the subfields of an AI

First we have neural networks. Eg. Brain modeling, time series prediction, classification

Vision object recognition, image understanding

Robotics intelligent control

Expert systems decision support systems

Speech processing speech recognition

Natural language processing machine translation

Planning scheduling, game playing

Machine learning

So next we will talk about the machine learning.  
When we say machine learning it is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

If programming is automation, then machine learning is automating the process of automation.

Writing software is the bottleneck, we don’t have enough good developers, so we let the data do the work instead of people. Machine learning is the way to make programming scalable.

This the representation of how traditional programming work and machine learning

[pic]

Key elements of machine learning, nowadays there are tens of thousands of machine learning algorithms and hundreds of new algorithms are developed every year.

Types of learning

Supervised learning: training data includes desired outputs.

Unsupervised learning: training data does not include desired outputs.

Semi-supervised learning: training data includes a few desired and undesired outputs

Reinforcement Learning: rewards from a sequence of actions. AI types like it, it is the most ambitious type of learning.

Supervised learning is the most mature, the most studied and the type of learning used by most machine learning algorithms.

Regardless of learning style or function, all combinations of machine learning algorithms consist of the following:

Representation

Evaluation

Optimization