

## Artificial Intelligence: Future of technologies

Artificial intelligence (AI) gives machines the ability to learn from experience as they take in more data and perform tasks like humans. Computers with these advanced technologies are trained to complete human-like tasks by processing data and recognizing the patterns within it.<br/>

For a long time, we were trying to replicate our thought process by putting in a lot of different rules in computers by programming them. A set of logical rules that were programmed and we thought that if we have enough of those rules then we could come up with AI (Artificial Intelligence). This turned out to be a terrible way forward.

Instead we needed an algorithm that could look at a lot of data and learn from the data. Machine learning is an idea of marrying algorithm and statistics. Deep learning is subset of Machine Learning. We build these algorithms that have lots and lots of numbers that we don't know how those numbers are set and we set them using data. Innovation in deep learning has been setting these knots by using more and more complex models.

Tech companies' heavy investments in AI are already changing our lives and gadgets, and laying the groundwork for a more AI-centric future.

The current boom in all things AI was catalyzed by breakthroughs in an area known as machine learning. It involves "training" computers to perform tasks based on examples, rather than by relying on programming by a human.

A technique called deep learning has made this approach much more powerful. For most of us, the most obvious results of the improved powers of AI are neat new gadgets and experiences such as smart speakers, or being able to unlock your iPhone with your face. But AI is also poised to reinvent other areas of life. One is health care. Hospitals in India are testing software that checks images of a person's retina for signs of diabetic retinopathy, a condition frequently diagnosed too late to prevent vision loss. Machine learning is vital to projects in autonomous driving, where it allows a vehicle to make sense of its surroundings.

Let us try to breakdown basic building blocks of AI:

- Data (and lots of it): A data can come in any form. It can be structured data or an unstructured like videos, images etc. or semi structured like files. Machine learning or Deep learning needs lots and lots of data.
- Data Ingestion and underlying infrastructure: To capture the data we could rely on high performing tools like kafka and stream the data into a Big Data systems like Hadoop which are capable of handling any forms of data

- Data Analytics using Machine and Deep Learning techniques: For analyzing the data, we could make use of python libraries like numpy, pandas, seaborn and matplotlib to come up with the attributes/factors that tend to impact data when value changes
- Scalable and Robust Computing Solution: Once these factors are determined, we would want them to run against lots and lots of data so that a machine can learn from its own experiences. In order to do that, tools like Apache Spark comes handy. These tools have special built in abilities to retain data in memory and iteratively execute them against the algorithms
- Preparation of Training Data Set: A training data set is prepared which we need to feed to machines or computers to match against the test data set. Generally the ratio of training to test data set is 80:20
- Prescriptive Analytics: Once our predictive model yields outcome of more “True Positives” then we move onto Prescriptive analytics phase where determined factors are precisely the one that caused problems.

This way a more narrow down approach to a problem with the help of machine learning provides better solution to the problems.