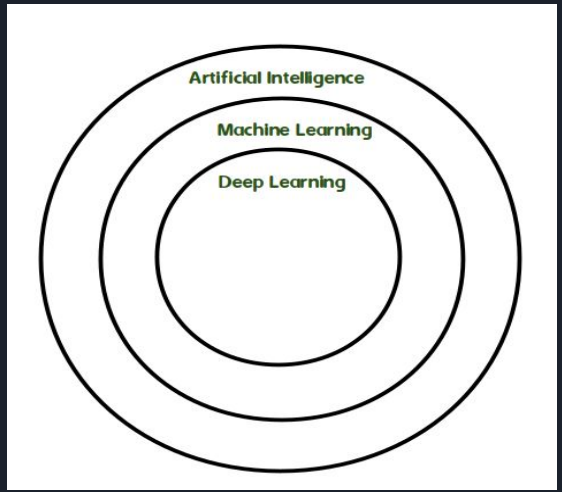
Introduction to Deep Learning

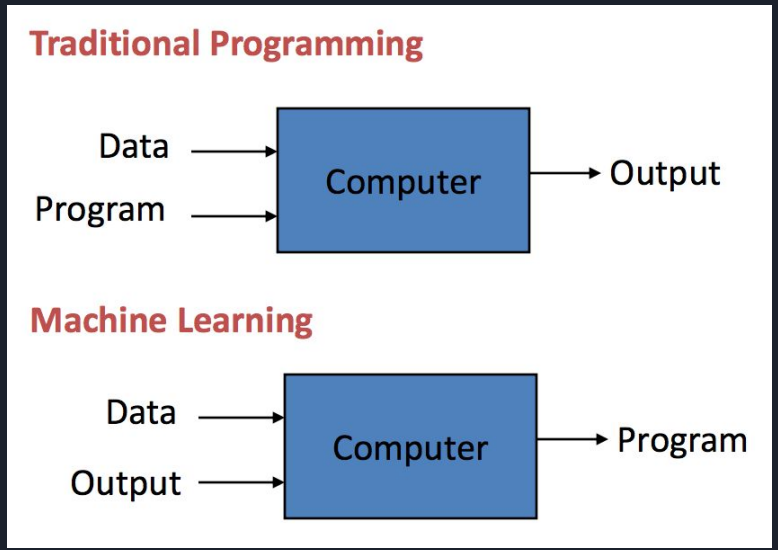
Introduction (Artificial Intelligence)

In AI we try to create machines which can imitate humans during work i.e. their intelligence and logic.



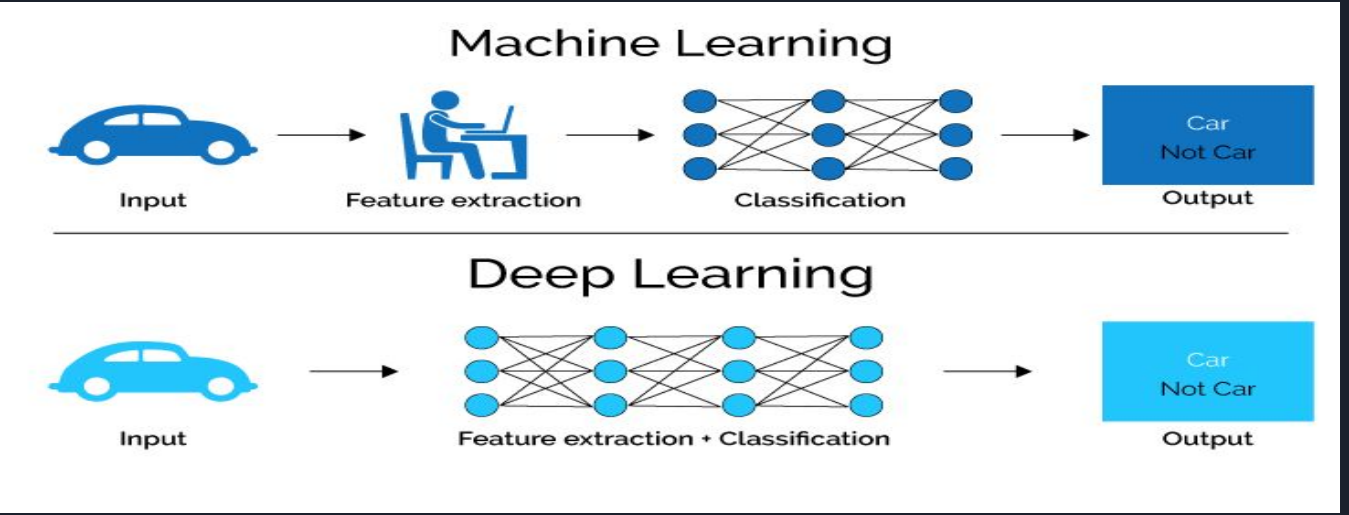
Introduction (Machine Learning)

Acquiring knowledge, by extracting Patterns from the raw data. This capability is known as **Machine Learning**.



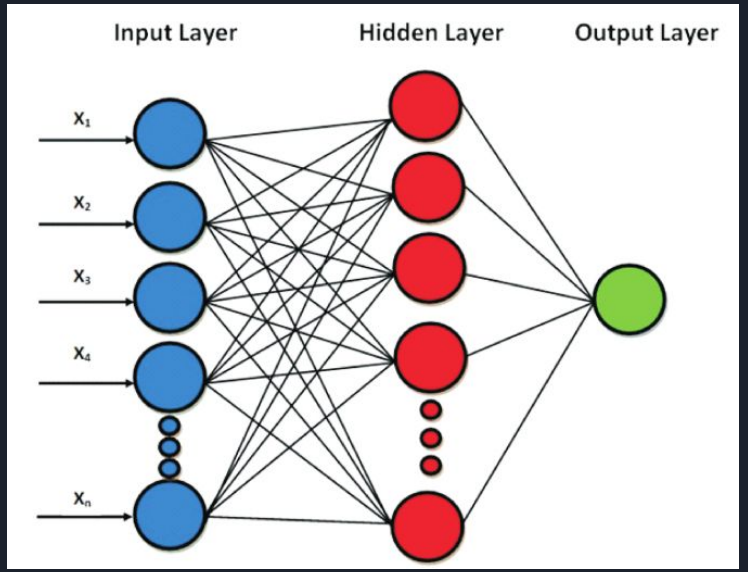
Introduction (Deep Learning)

Deep Learning is a branch of machine learning which is completely based on artificial neural networks.



Introduction (Neural Network)

Simple Neural Network

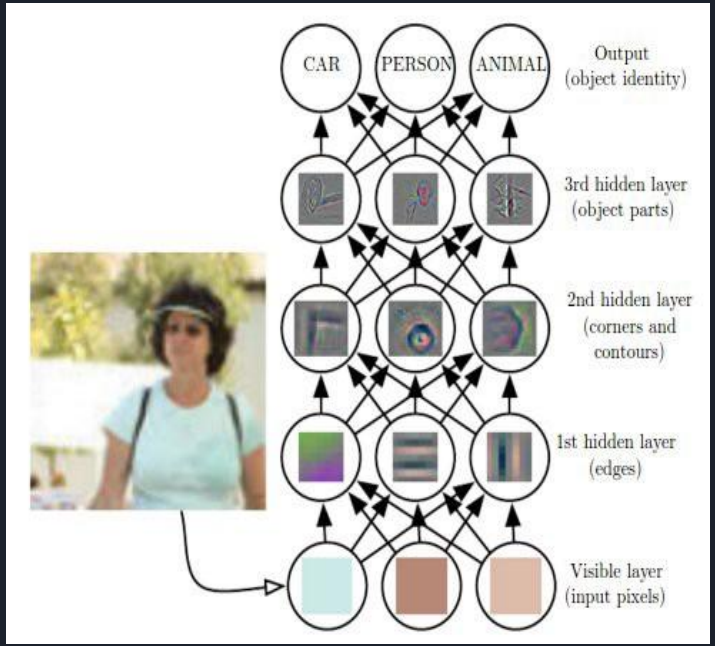


Introduction

Index	Number of rooms	Price ($)
1	3	20000
2	4	25000
3	3	21000

Introduction (Neural Network)

Example:



Introduction

MACHINE LEARNING:

Works on small amount of Dataset for accuracy.

Dependent on Low-end Machine.

Divides the tasks into sub-tasks, solves them individually and finally combine the results.

DEEP LEARNING

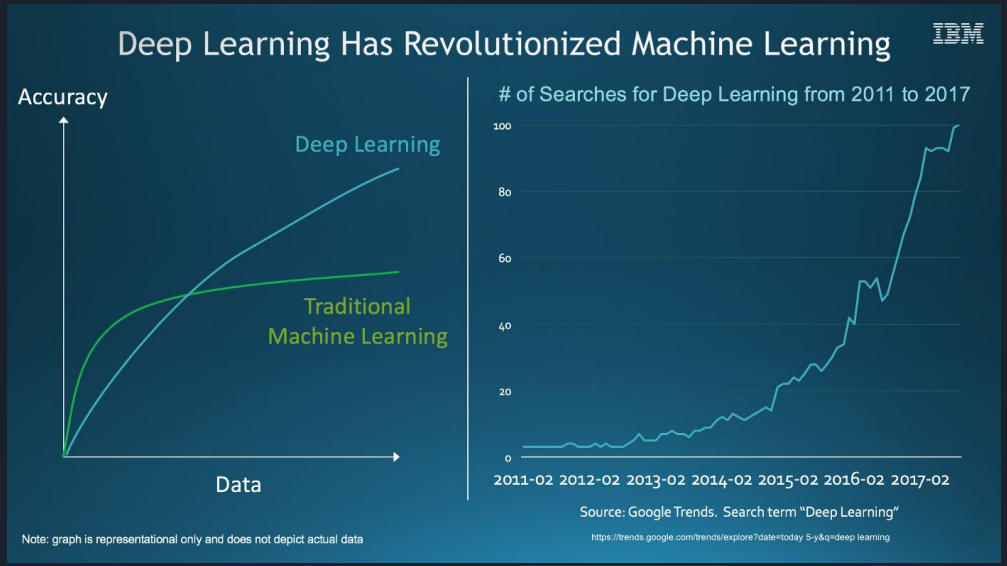
Works on Large amount of Dataset.

Heavily dependent on High-end Machine.

Solves problem end to end.

Why deep Learning become popular ?

AlexNet competed in the ImageNet Large Scale Visual Recognition Challenge (**ILSVRC**) in 2012, won the competition by achieving a significant improvement in accuracy Compared to traditional approcahes.

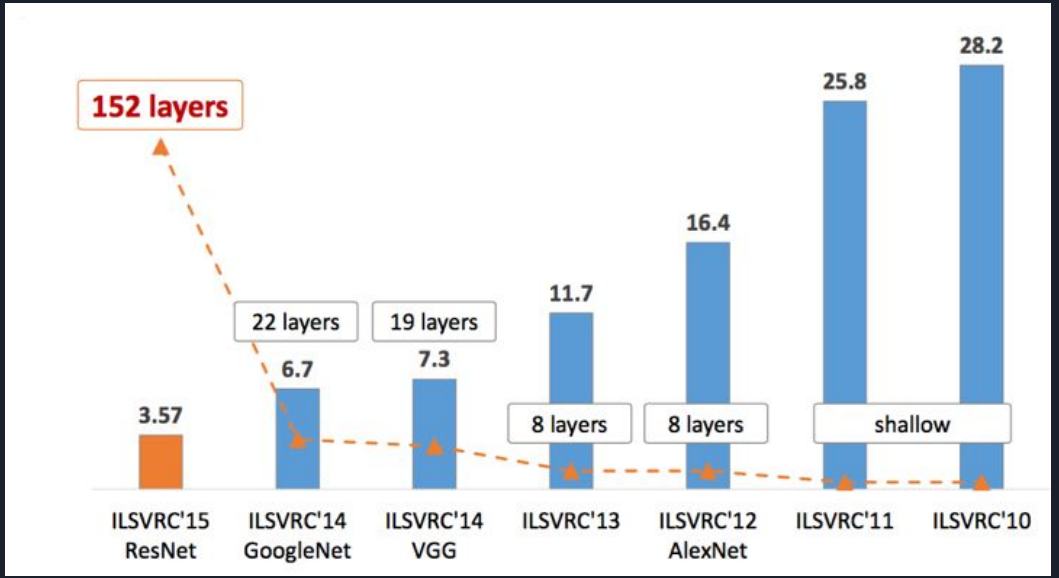


Why deep Learning become popular ?

Human error for

this challenge is around

5%.



Applications of Deep Learning

1. Real Time Multi Person Pose Estimation: used in animation
2. Real time analysis of behaviour: Anomaly Detection
3. Automatic Machine Translation
4. Self Driving Cars
5. Robotics
6. Recommendation Systems: Like movie recommendation, Youtube videos recommendation
7. Face Recognition System: Like Facebook is using for automatic tagging on a picture

There are a lot other applications.

http://www.yaronhadad.com/deep-learning-most-amazing-applications/

Which Libraries to use?

Prerequisite:

- Python

Deep Learning Libraries:

- Pytorch
- Keras