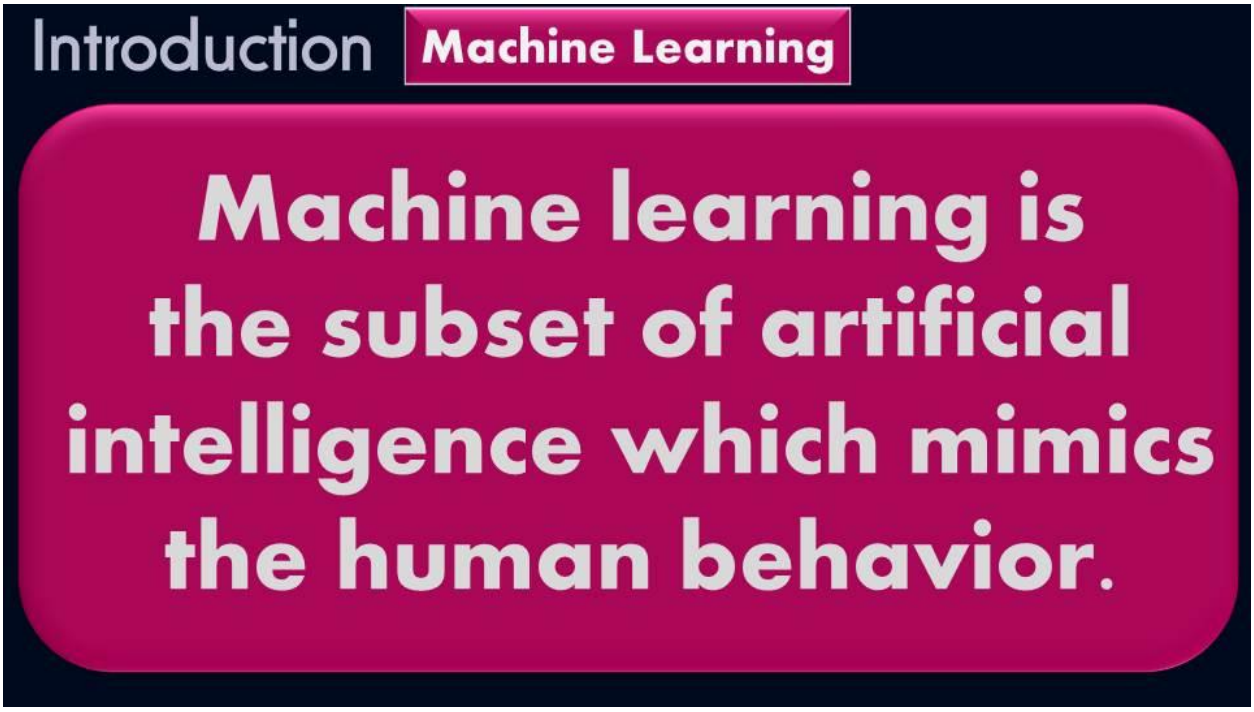
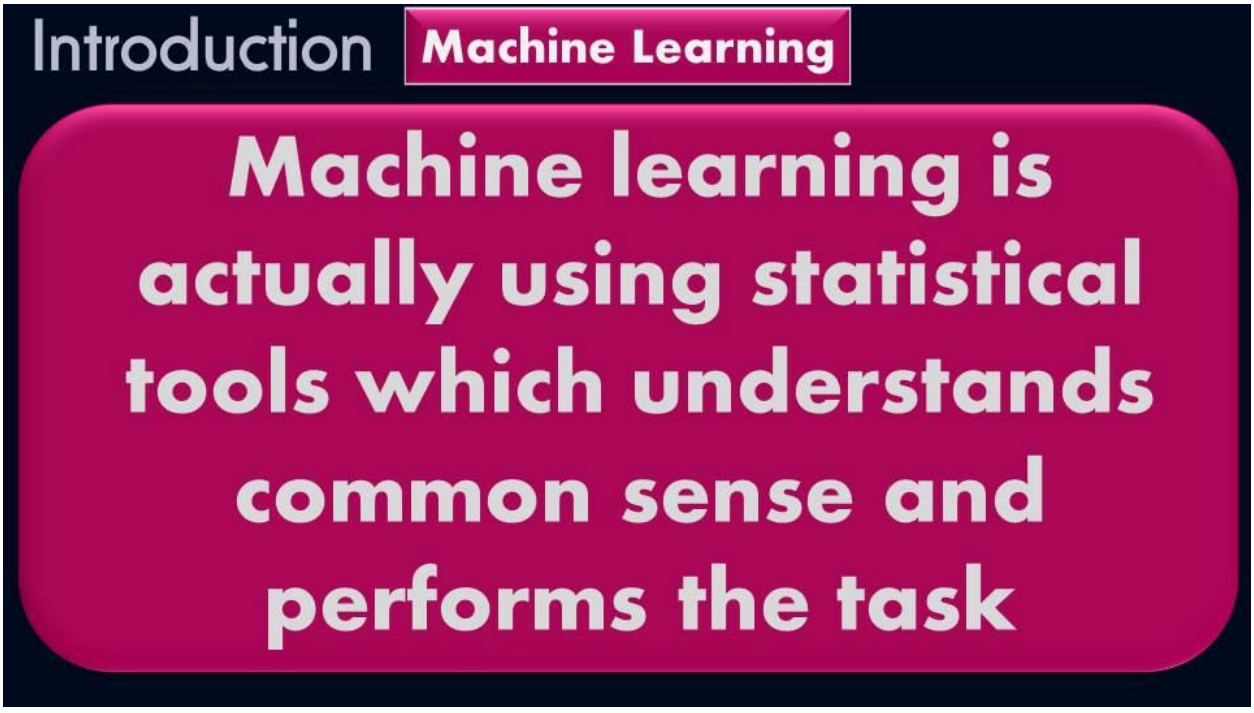
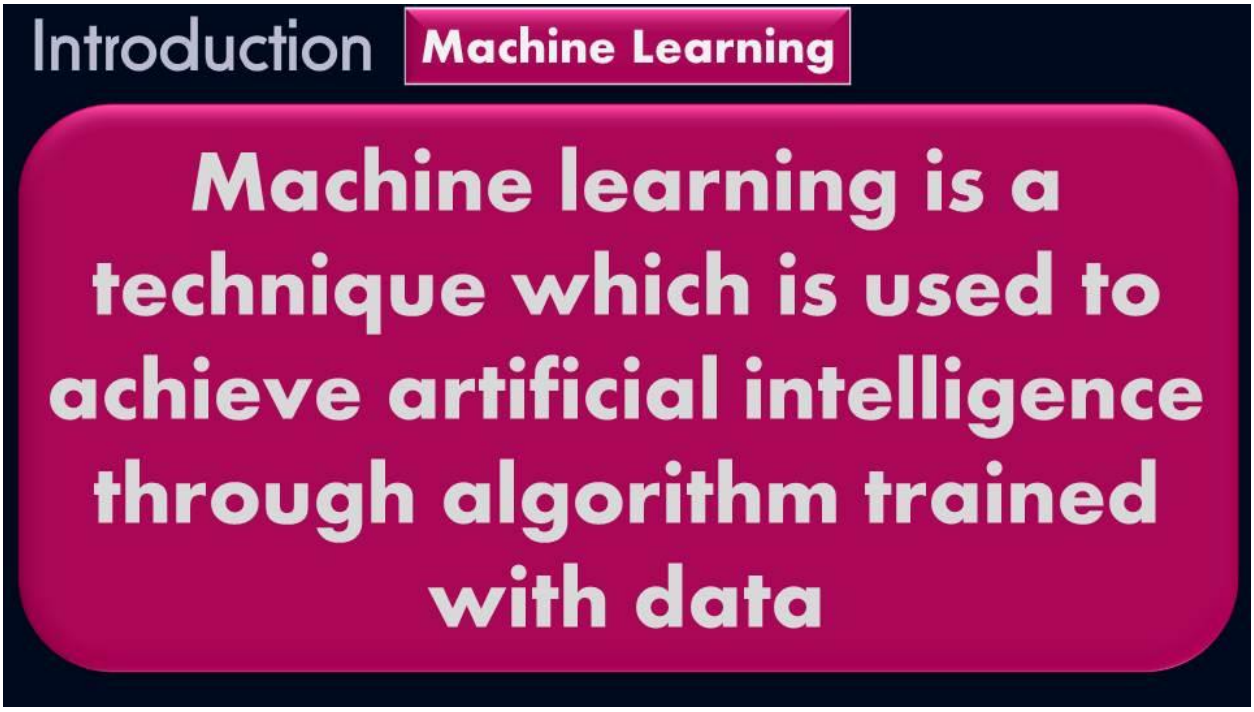
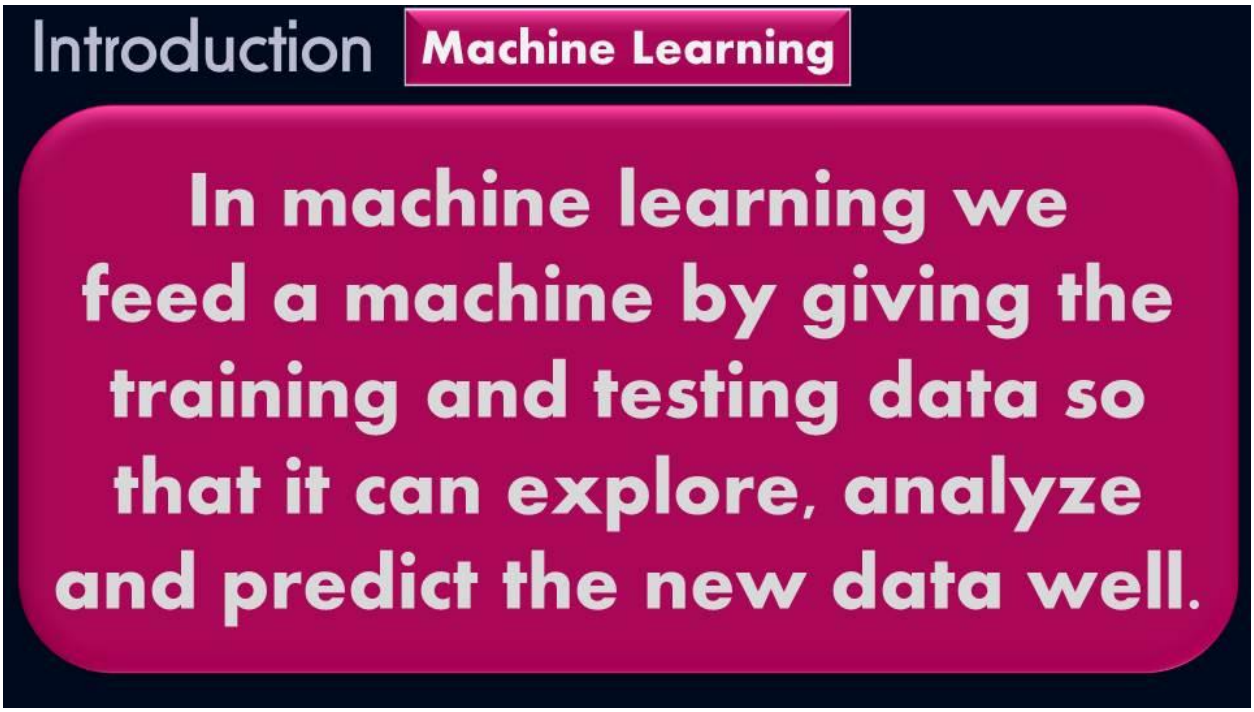
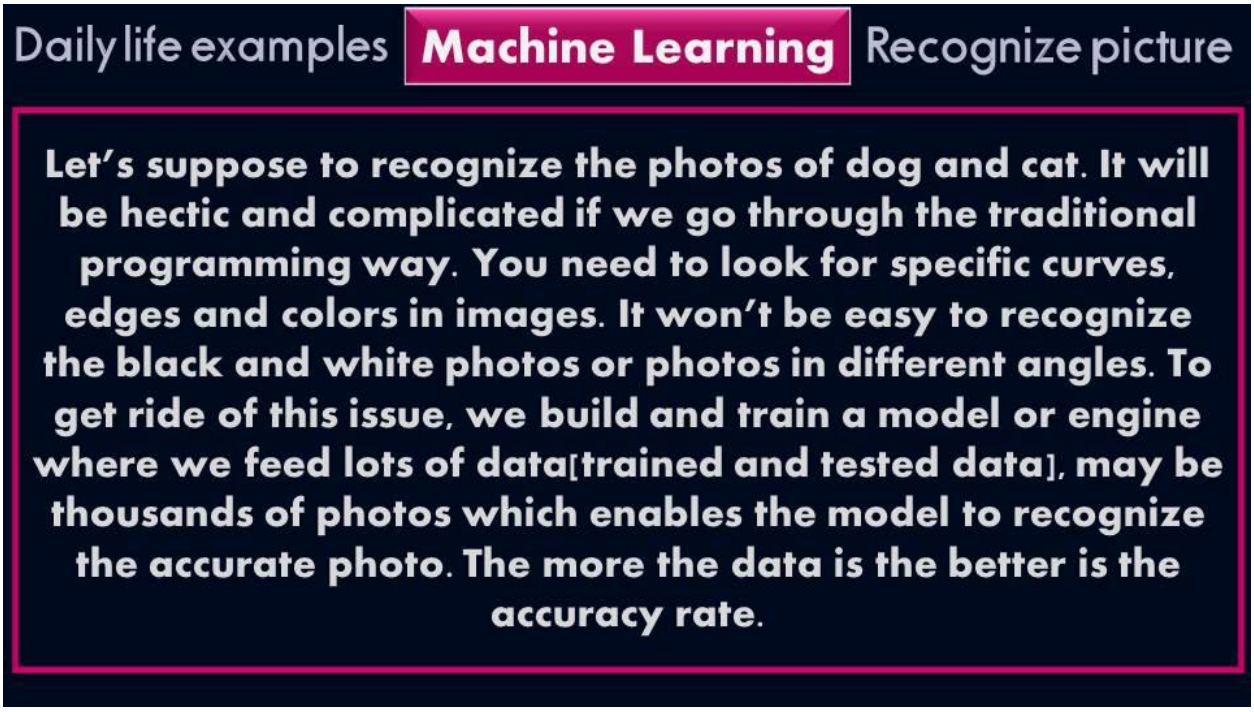
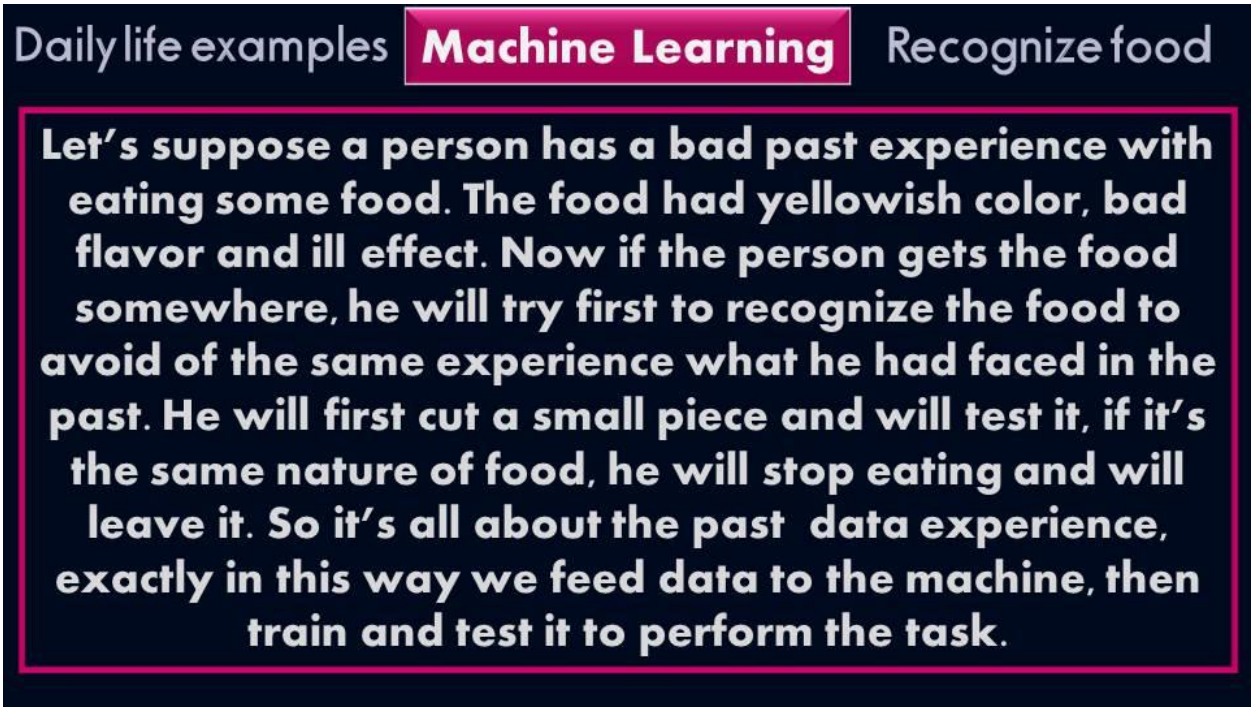

Introduction
Machine Learning
Machine learning is the subset of artificial intelligence which mimics the human behavior.

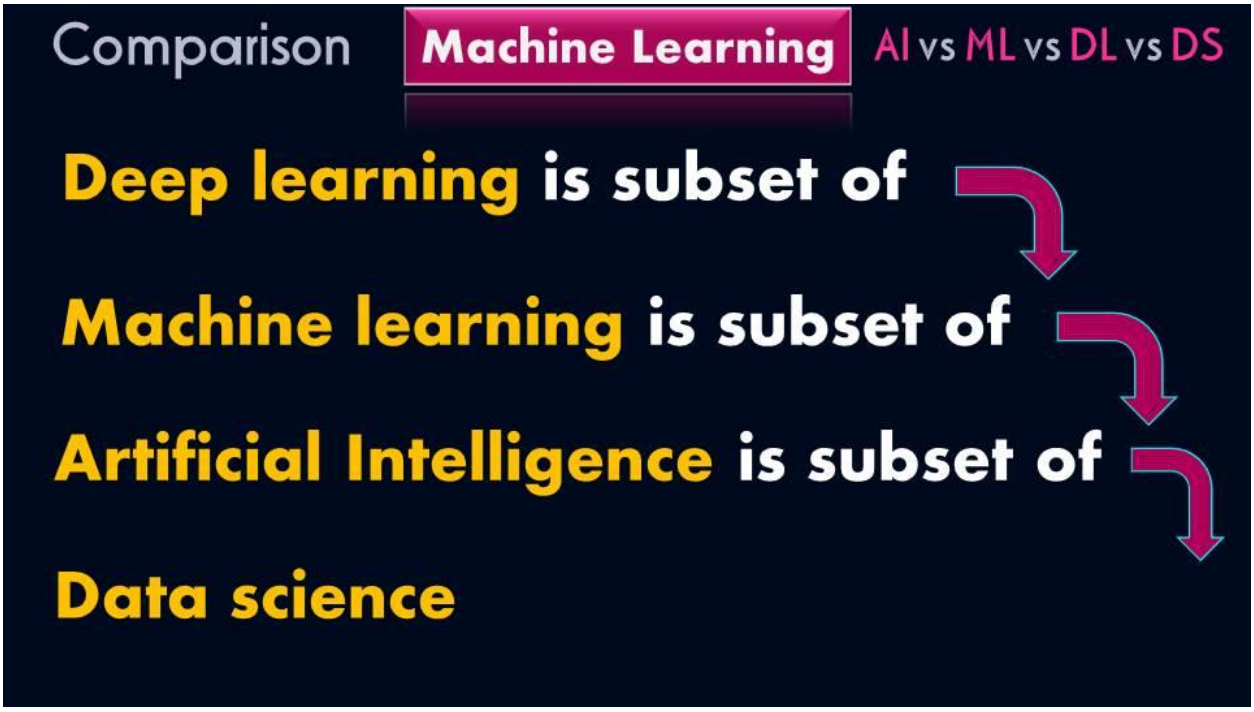

Introduction
Machine Learning
Machine learning is actually using statistical tools which understands common sense and performs the task

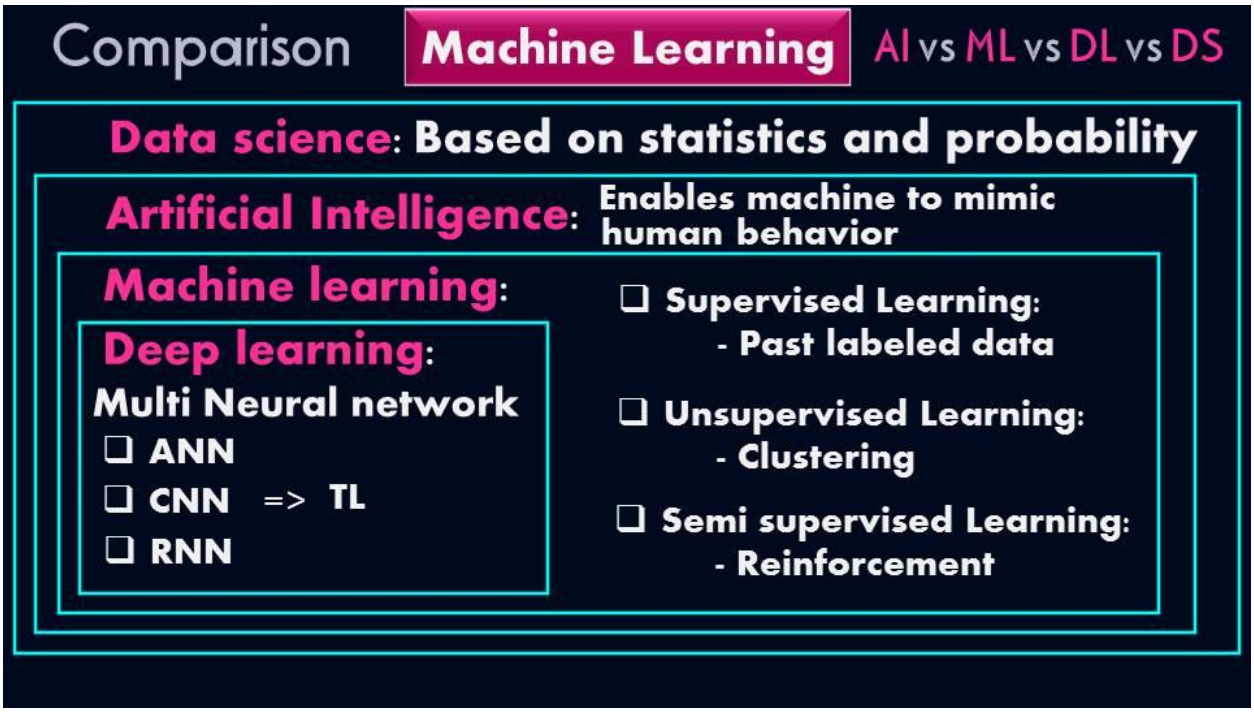

Introduction
Machine Learning
Machine learning is a technique which is used to achieve artificial intelligence through algorithm trained with data

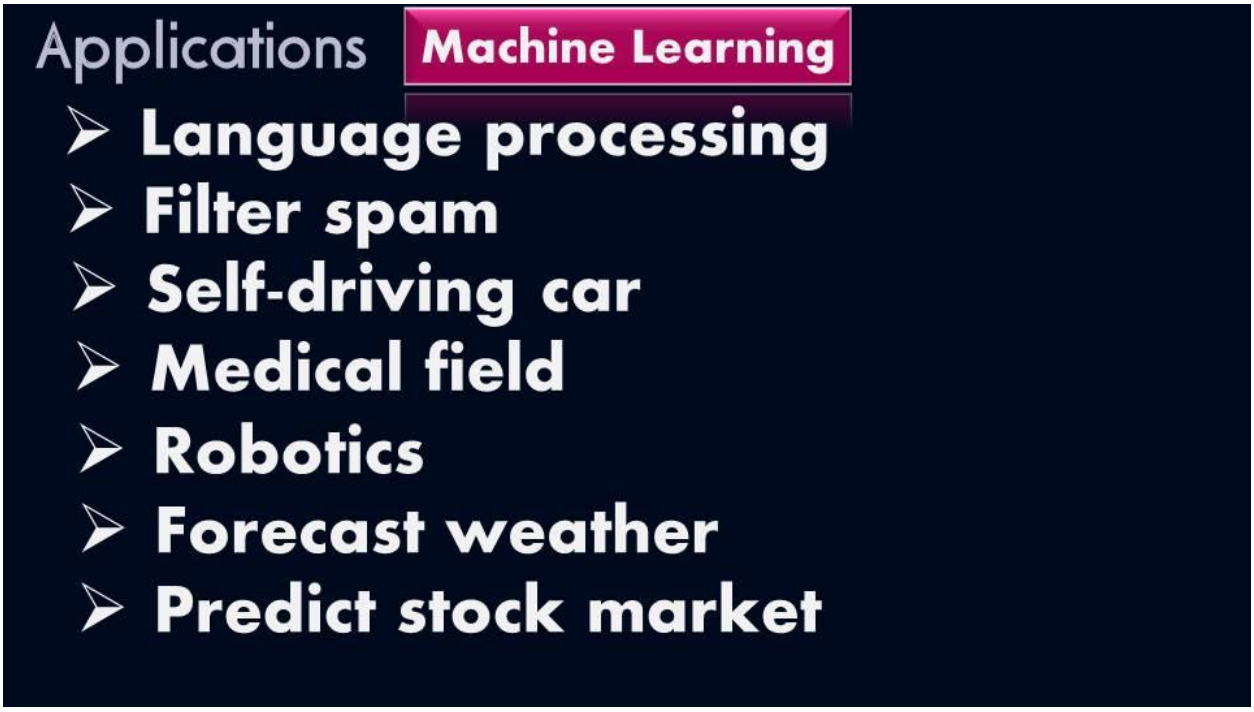

Introduction
Machine Learning
In machine learning we feed a machine by giving the training and testing data so that it can explore, analyze and predict the new data well.


Daily life examples
Machine Learning
Recognize picture
Let's suppose to recognize the photos of dog and cat. It will be hectic and complicated if we go through the traditional programming way. You need to look for specific curves, edges and colors in images. It won't be easy to recognize the black and white photos or photos in different angles. To get ride of this issue, we build and train a model or engine where we feed lots of data[trained and tested data], may be thousands of photos which enables the model to recognize the accurate photo. The more the data is the better is the accuracy rate.

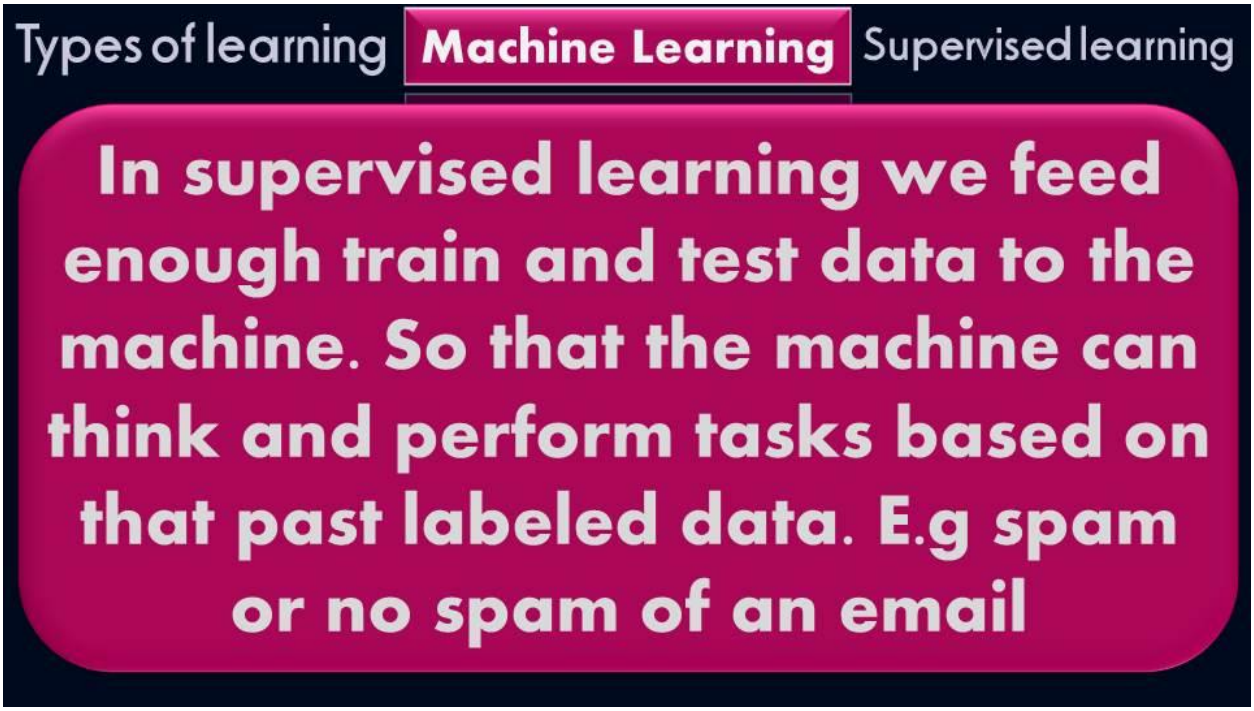

Daily life examples
Machine Learning
Recognize food
Let's suppose a person has a bad past experience with eating some food. The food had yellowish color, bad flavor and ill effect. Now if the person gets the food somewhere, he will try first to recognize the food to avoid of the same experience what he had faced in the past. He will first cut a small piece and will test it, if it's the same nature of food, he will stop eating and will leave it. So it's all about the past data experience, exactly in this way we feed data to the machine, then train and test it to perform the task.

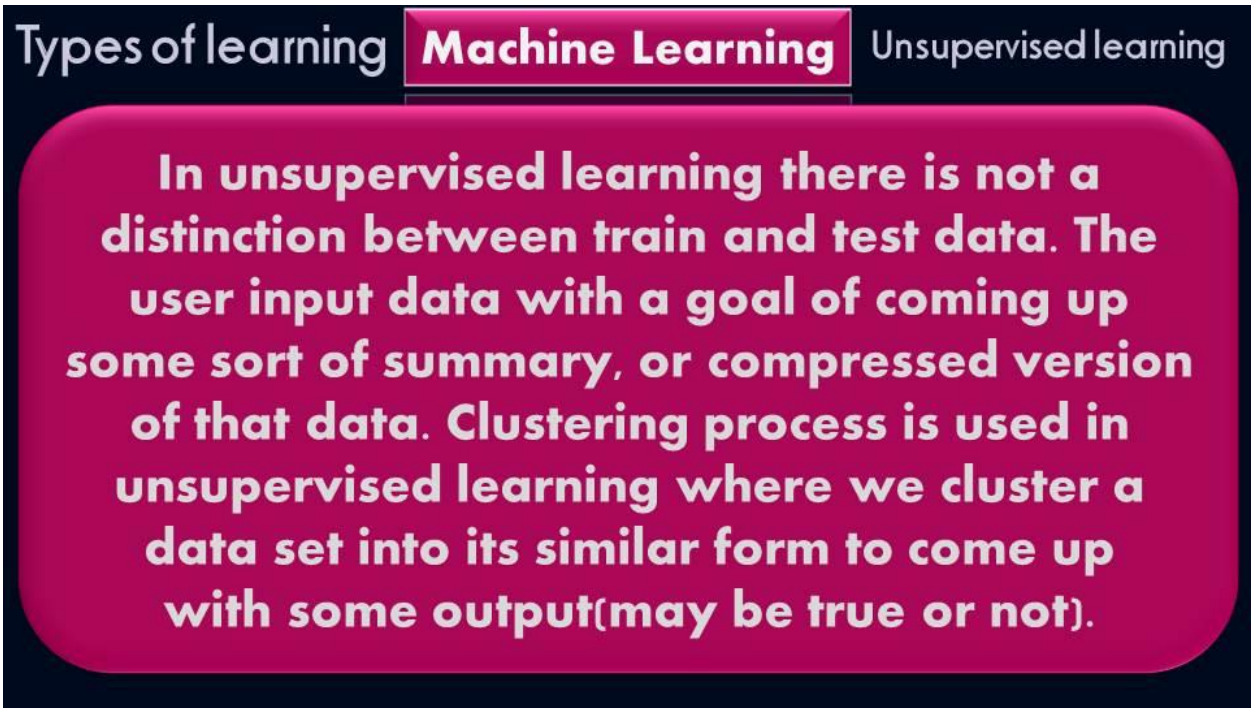

Comparison
Machine Learning
AI vs ML vs DL vs DS
Deep learning is subset of
Machine learning is subset of
Artificial Intelligence is subset of
Data science

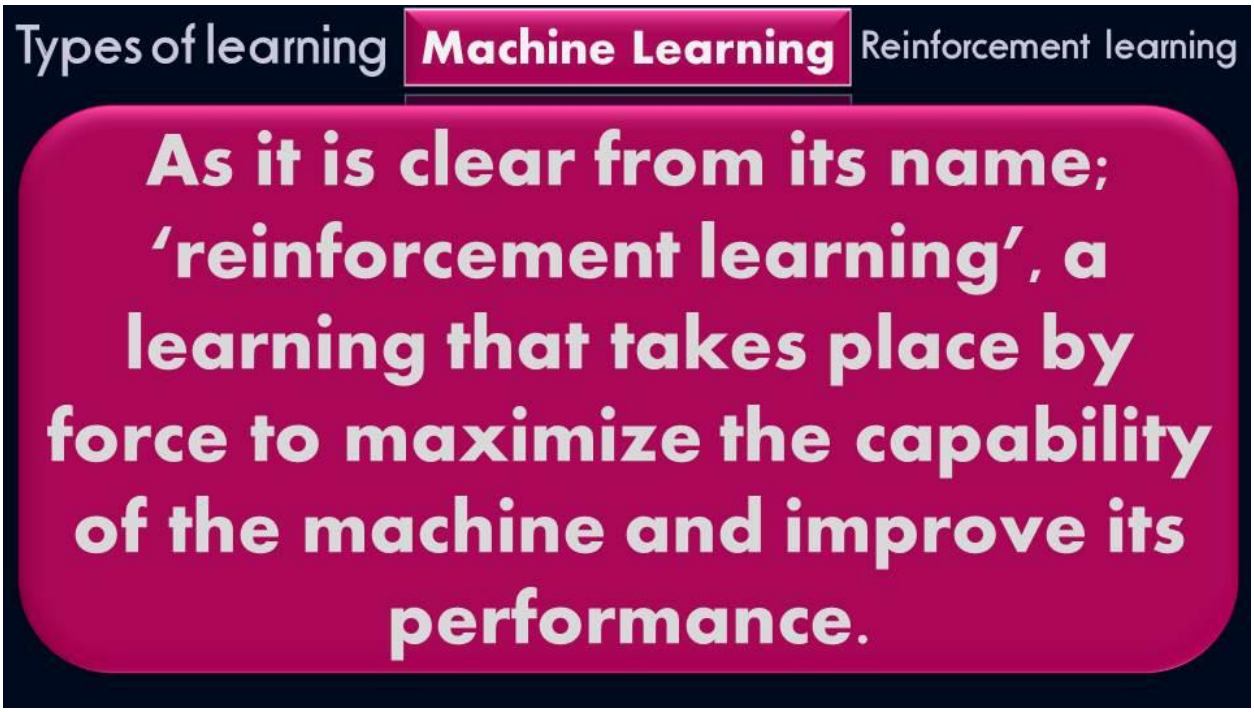

Comparison
Machine Learning
AI vs ML vs DL vs DS
Data science: Based on statistics and probability
Artificial Intelligence: Enables machine to mimic human behavior
Machine learning:
Deep learning:
Multi Neural network
ANN
CNN => TL
RNN
Supervised Learning:
- Past labeled data
Unsupervised Learning:
- Clustering
Semi supervised Learning:
- Reinforcement

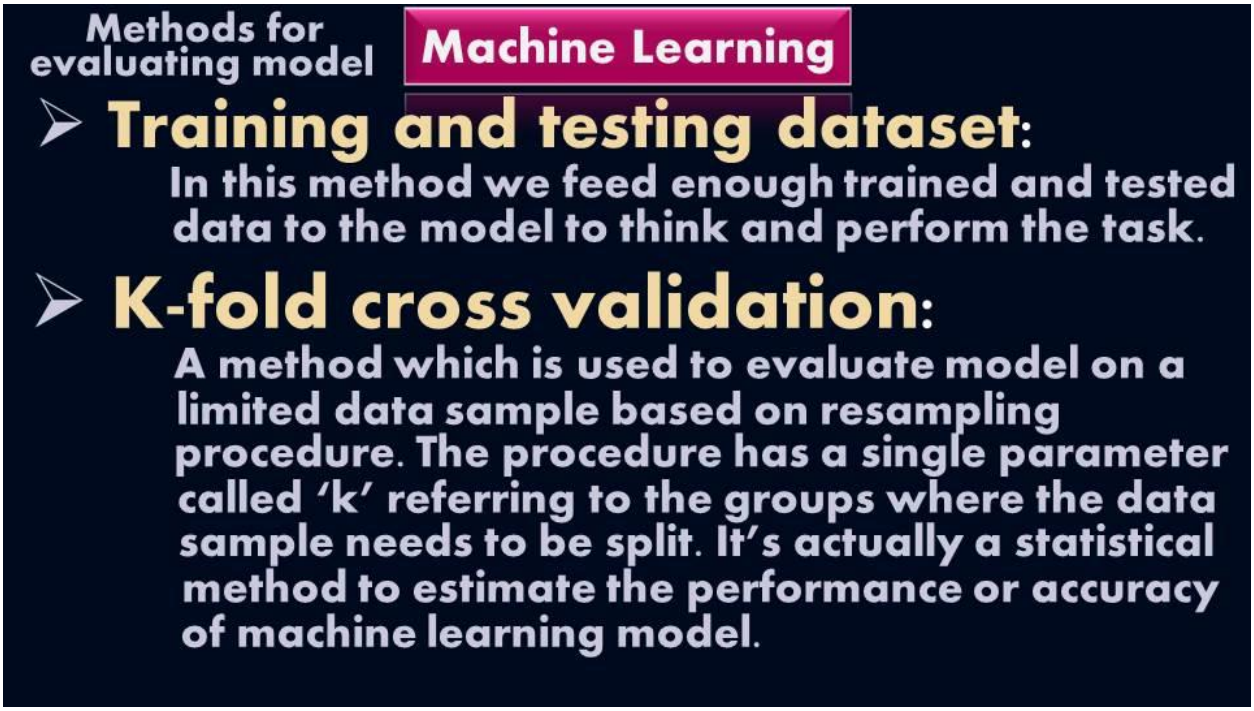

Applications
Machine Learning
Language processing
Filter spam
Self-driving car
Medical field
Robotics
Forecast weather
Predict stock market


Types of learning
Machine Learning
1): Supervised learning
2): Unsupervised learning
3): Reinforcement learning

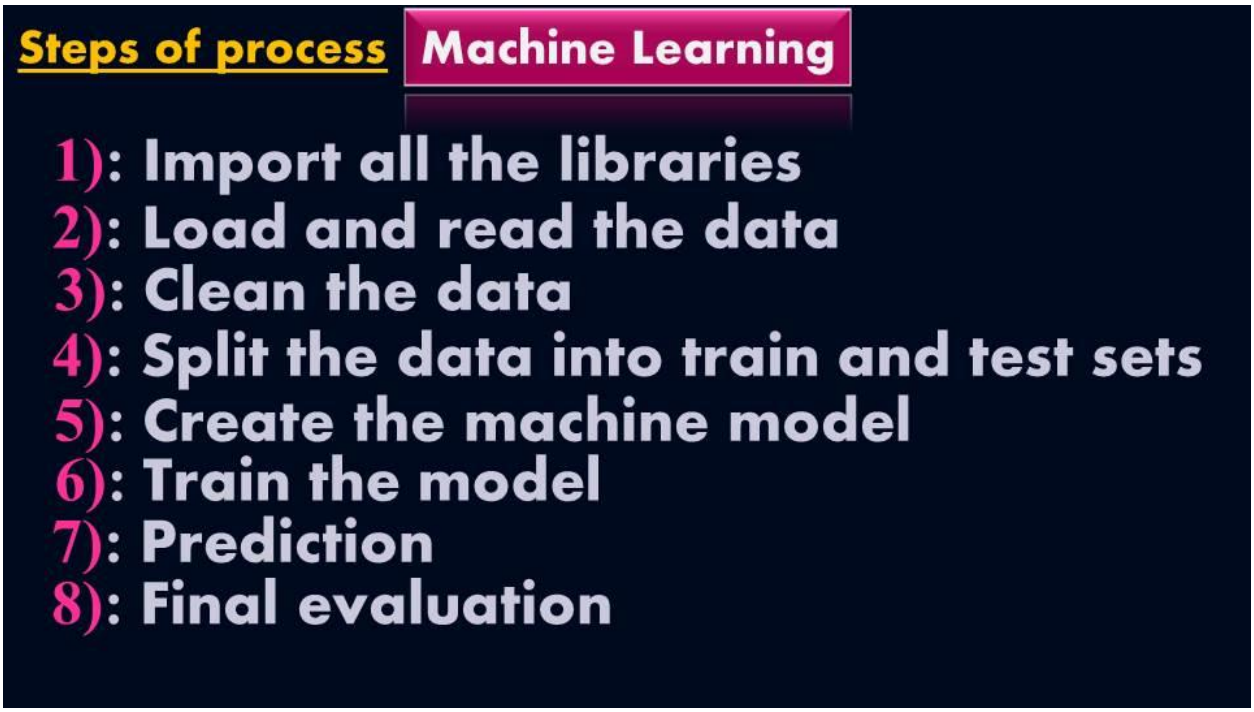

Types of learning
Machine Learning
Supervised learning
In supervised learning we feed enough train and test data to the machine. So that the machine can think and perform tasks based on that past labeled data. E.g spam or no spam of an email


Types of learning
Machine Learning
Unsupervised learning
In unsupervised learning there is not a distinction between train and test data. The user input data with a goal of coming up some sort of summary, or compressed version of that data. Clustering process is used in unsupervised learning where we cluster a data set into its similar form to come up with some output(may be true or not).


Types of learning
Machine Learning
Reinforcement learning
As it is clear from its name; 'reinforcement learning', a learning that takes place by force to maximize the capability of the machine and improve its performance.


Methods for evaluating model
Machine Learning
Training and testing dataset:
In this method we feed enough trained and tested data to the model to think and perform the task.
K-fold cross validation:
A method which is used to evaluate model on a limited data sample based on resampling procedure. The procedure has a single parameter called 'k' referring to the groups where the data sample needs to be split. It's actually a statistical method to estimate the performance or accuracy of machine learning model.


Classifiers
Machine Learning
These are the famous classifiers of machine learning:
❖ Support Vector Machine (SVM)
❖ Decision Tree
❖ Logistic Regression
❖ K-nearest neighbors (KNN)
❖ Naive Bayes
❖ Random forest


Steps of process
Machine Learning
1): Import all the libraries
2): Load and read the data
3): Clean the data
4): Split the data into train and test sets
5): Create the machine model
6): Train the model
7): Prediction
8): Final evaluation