Machine Learning with Python



Definition of ML

1. The machine learning is the field of study to give the ability to a Machine to learn without being explicitly programmed

2. The ability of a machine to improve its performance based on previous results.



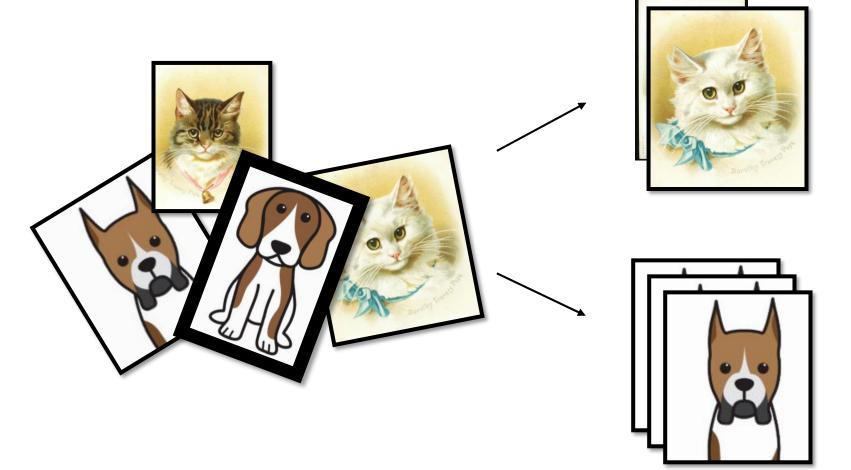
Formal Definition of ML

A program can be said to learn from experience **E** with respect to some class of tasks **T** and performance measure **P**, if its performance at tasks in **T**, as measured by **P**, improves with experience **E**

- Tom Mitchell



Simple ML Application





What is Machine Learning

- Getting better at certain task with time
- The act of remembering experience
- Exploiting generalization similarity
- Learning with adaptation

Spam Email detection using Machine learning



Spam email detection





Email has title and body

 Spam emails contains some specific keywords (like us, tweet, join today, offers, etc.)

 Emails without specific text, which has been marked as spam



Application

- Association Analysis
- Supervised Learning
 - Classification
 - Regression/Prediction
- Unsupervised Learning
- Reinforcement Learning (Semi supervised)



Machine Learning Vs Statistical Analysis

Machine learning is an algorithm that can learn from data without relying on rulesbased programming

Statistical modeling is the formalization of relationships between variables in the form of mathematical equ.

Subfield of computer science and artificial intelligence and explores the study and construction of algorithms Subfield of mathematics and deals with finding relationships between variables to predict.

Prediction

Estimation



How are AI and ML different?

Artificial Intelligence

Machine Learning

Deep Learning

The subset of machine learning composed of algorithms that permit software to train itself to perform tasks, like speech and image recognition, by exposing multilayered neural networks to vast amounts of data.

A subset of AI that includes abstruse statistical techniques that enable machines to improve at tasks with experience. The category includes deep learning

Any technique that enables computers to mimic human intelligence, using logic, if-then rules, decision trees, and machine learning (including deep learning)



Where else is it used

- Face recognition
- Speech recognition
- Handwriting recognition

Real Life Examples

- Facebook People You May Know
- Product Recommendation
- Virtual Assistants

