

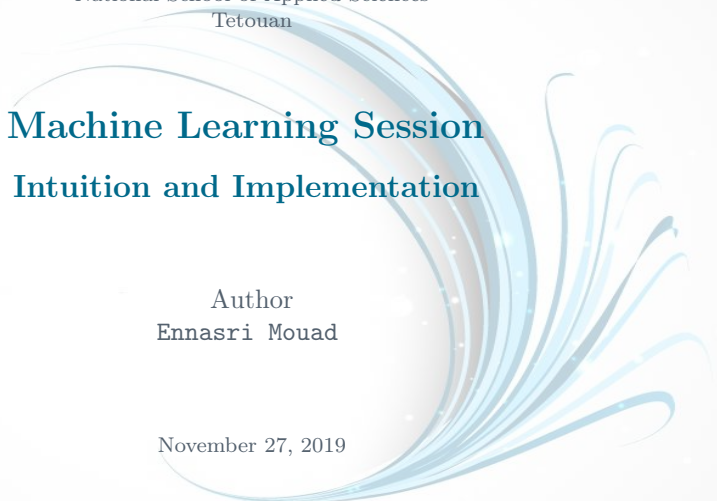
National School of Applied Sciences
Tetouan

Machine Learning Session

Intuition and Implementation

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What is Machine Learning

Learning types

Basic Terminology and Setup

Implementations

What is Machine Learning

Definition



Arthur Samuel (1959)

Machine Learning : Field of study gives computer the ability to **learn** without being explicitly programmed.

Tom Mitchell (1998)

Well-posed Learning Problem : A computer program is said to learn from experience **E** with respect to some task **T** and some performance measure **P** if its performance on **T** as measured by **P**, improves with experience **E**.



Supervised Learning

Right answers are given !

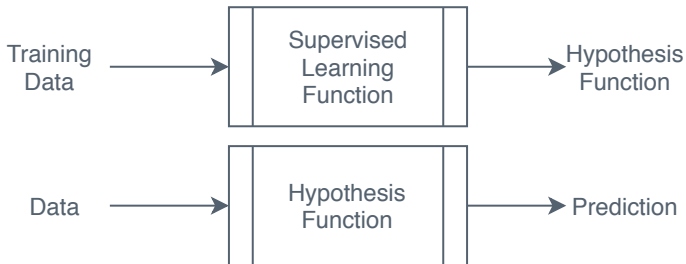


Figure: Prediction model construction



Regression

Predict continuous valued output.

What will be the price of Tesla Cybertruck in 5 years ?

Classification

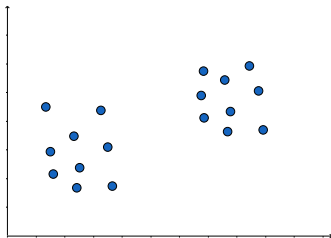
Predict discrete valued output.

Malicious or Safe ?, Apple or Banana ?

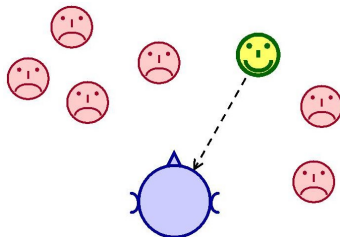


Unsupervised Learning

It is the machine job to find structure in data **By itself**, otherwise we talk about **data clustering**.



(a) Clustering problem



(b) cocktail party effect



Data Sample

	Features		Class
1	Weight (grams)	Texture	Label
2	155	Rough	Orange
3	180	Rough	Orange
4	135	Smooth	Apple
5	110	Smooth	Apple

A stylized graphic of a wave or a series of flowing lines in shades of blue and white, curving around the text. The lines are smooth and have a slight gradient, giving it a sense of motion and depth. The overall aesthetic is clean and modern.

Setup!



Requirements

- ▶ Install Python 3
- ▶ Install Pip if missing

sudo apt install python3-pip

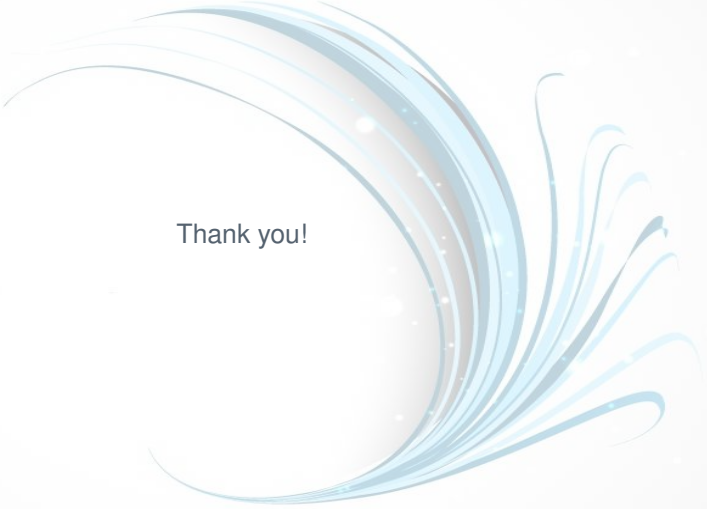
- ▶ Install packages (*scikit-learn scipy matplotlib*)

sudo pip install -U scikit-learn scipy matplotlib

An abstract graphic consisting of several flowing, curved lines in shades of light blue and white, creating a sense of motion and elegance. The lines are layered and have a soft, ethereal quality.

Implementation!

<https://github.com/DullBK201/introml/>



Thank you!