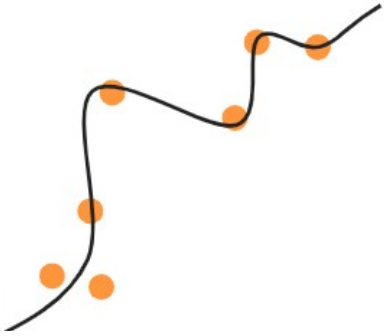
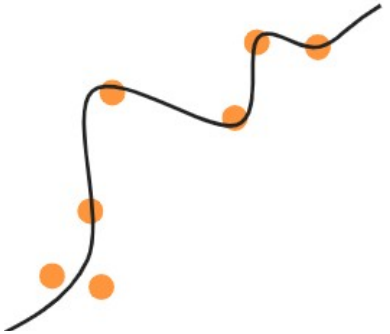


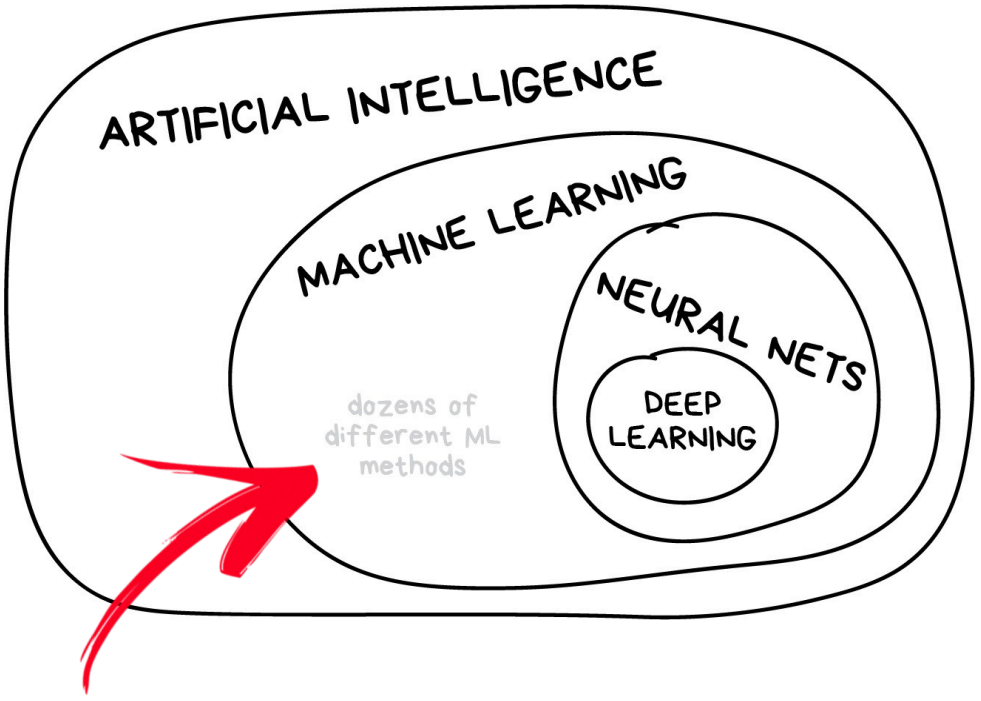
Machine Learning Intro



Today we will:

- get know what is classical ML
- understand basic concepts
- learn terminology
- get familiar with Scikit-learn

Classical Machine Learning



https://vas3k.com/blog/machine_learning/

Why “Learning”?

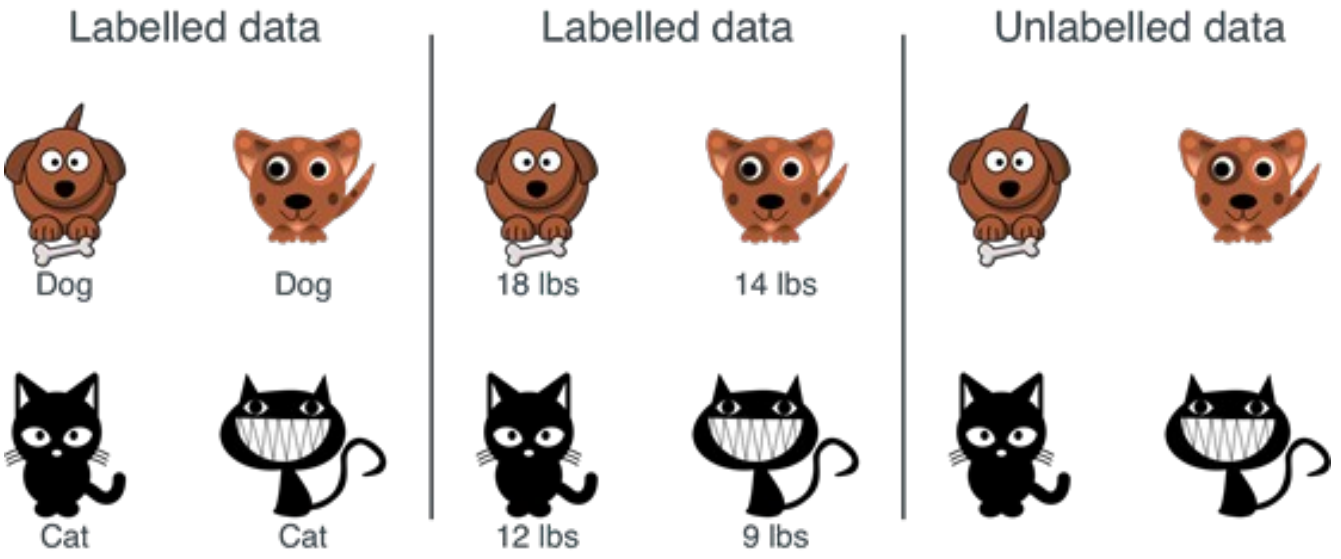
Algorithm:

data → model → result

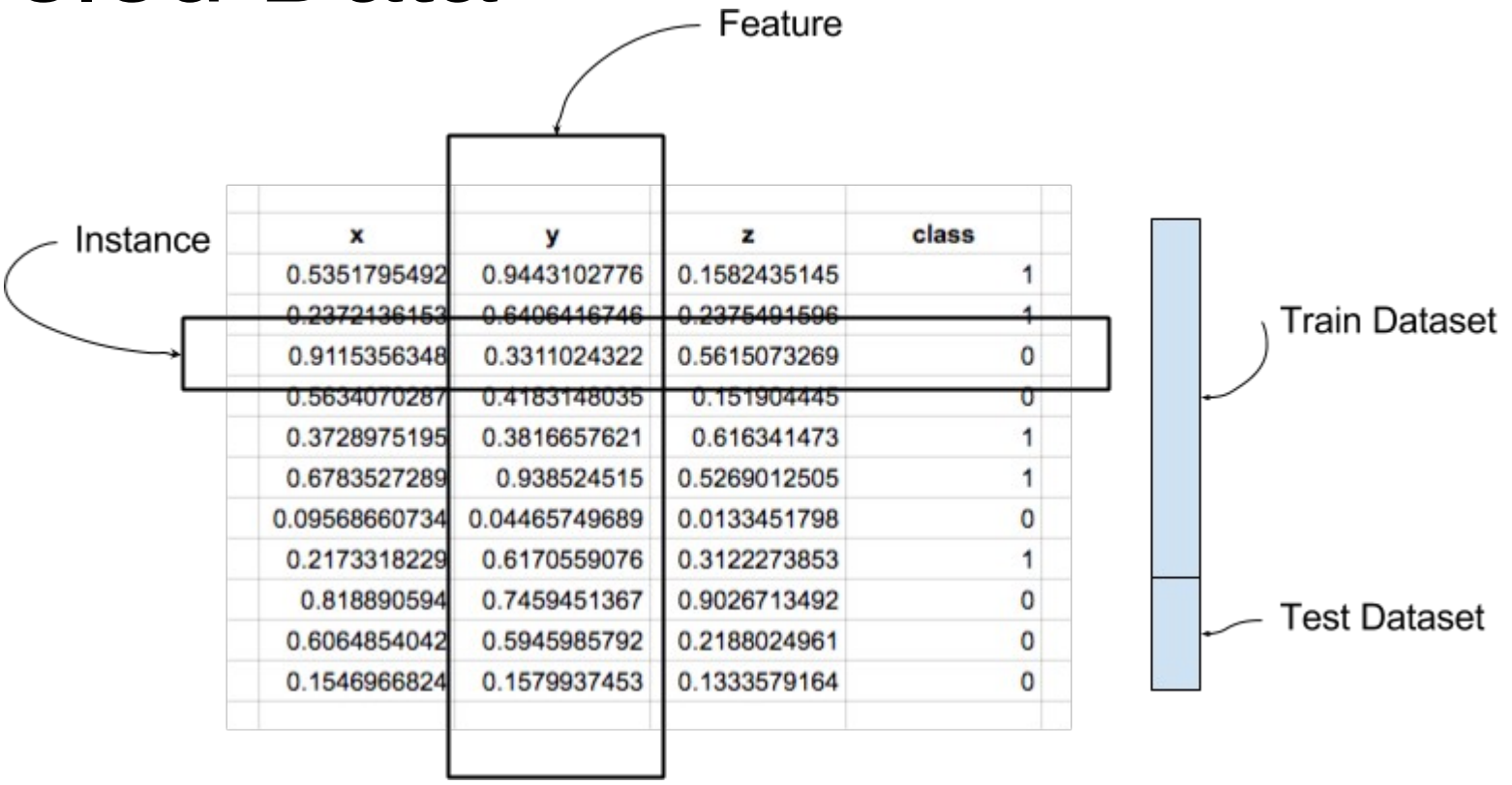
ML:

data → result → model

Data


Labelled data
Labelled data
Unlabelled data
Dog
Dog
18 lbs
14 lbs
Cat
Cat
12 lbs
9 lbs

Labeled Data



https://machinelearningmastery.com/data-learning-and-modeling/

Evaluation metrics

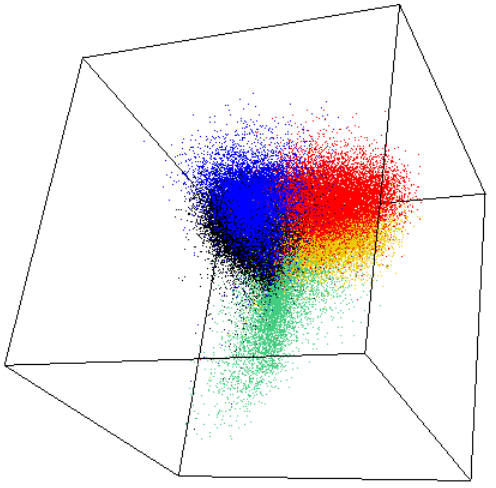
The metric explains the performance of a model:

- Classification Metrics (accuracy, precision, recall, F1-score, ROC, AUC, …)
- Regression Metrics (MSE, MAE)
- Ranking Metrics (MRR, DCG, NDCG)
- Statistical Metrics (Correlation)
- Computer Vision Metrics (PSNR, SSIM, IoU)
- NLP Metrics (Perplexity, BLEU score)
- Deep Learning Related Metrics (Inception score, Frechet Inception distance)

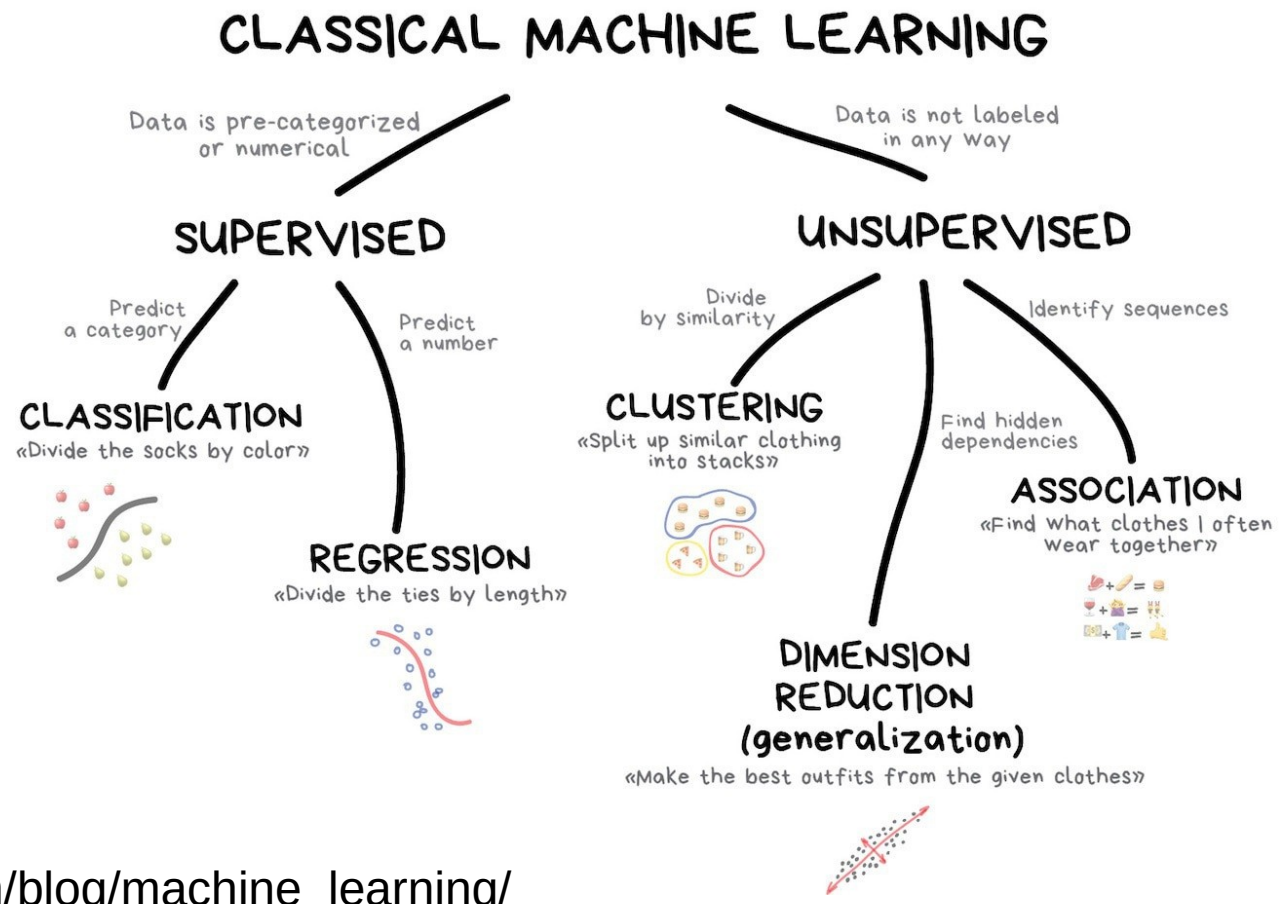
Feature space

Features (parameters or variables):

- tabular data
- pixels
- intensity on frequencies
- visual descriptors
- words of word collocations
- sounds on frequencies
- … and many more



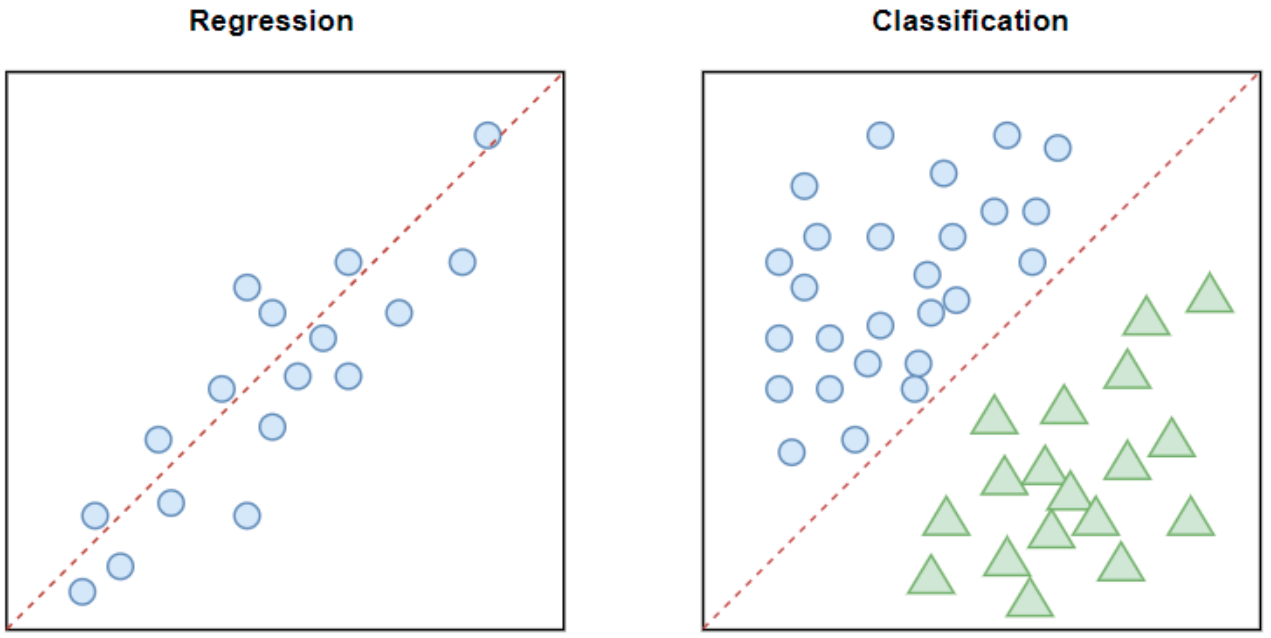
Algorithm



https://vas3k.com/blog/machine_learning/

Supervised learning

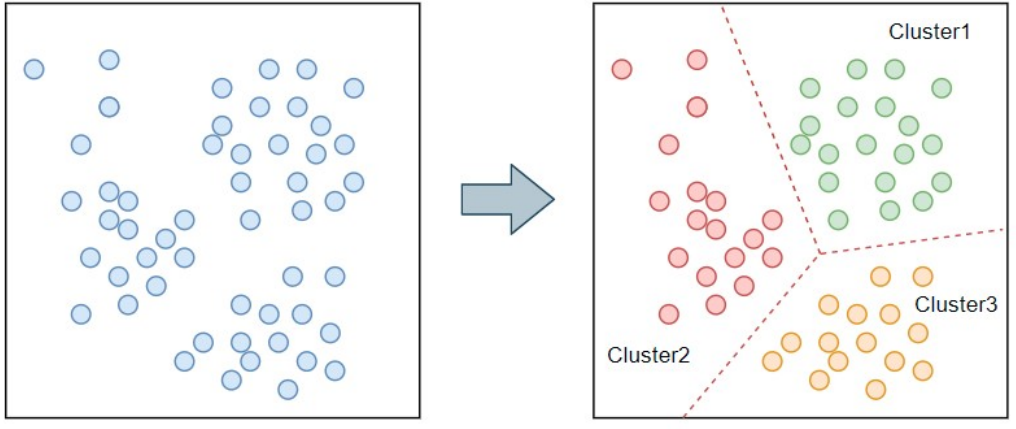
We teach or train the machine using labeled data



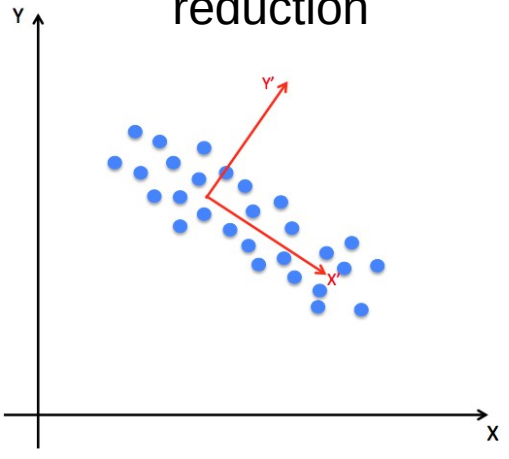
Unsupervised learning

Machine groups unsorted information according to similarities without any prior training of data.

Clustering



Dimension reduction



Scikit-learn