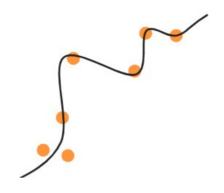


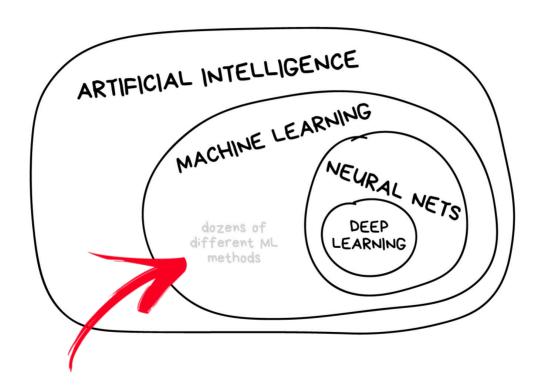
# Machine Learning Intro



#### Today we will:

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

## Classical Machine Learning

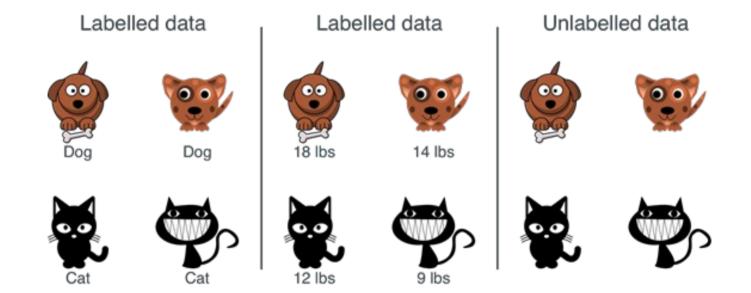


# Why "Learning"?

```
Algorithm:
   data → model → result

ML:
   data → result → model
```

#### Data



Labeled Data Feature class z Instance 0.5351795492 0.9443102776 0.1582435145 0.2272126152 0.6406416746 0.2275401506 Train Dataset 0.9115356348 0.3311024322 0.5615073269 0.5634070287 0.4183148035 0.151904445 0.3728975195 0.3816657621 0.616341473 0.6783527289 0.938524515 0.5269012505 0.04465749689 0.0133451798 0.09568660734 0.2173318229 0.6170559076 0.3122273853 0.818890594 0.7459451367 0.9026713492 **Test Dataset** 0.6064854042 0.5945985792 0.2188024961 0 0.1546966824 0.1579937453 0.1333579164

#### **Evaluation metrics**

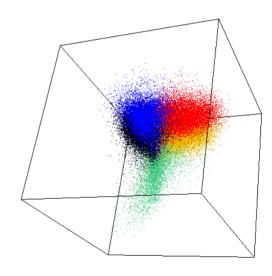
#### The metric explains the performance of a model:

- 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

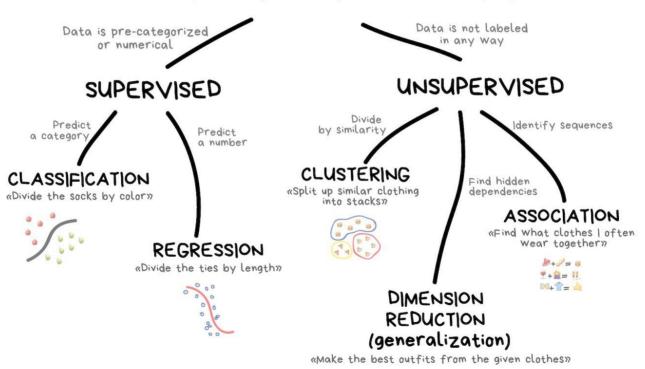
#### Features (parameters or variables):

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



# Algorithm

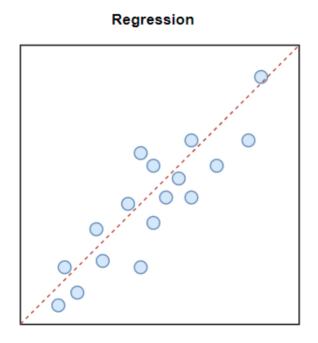
#### CLASSICAL MACHINE LEARNING

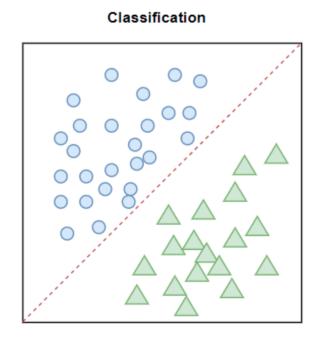


https://vas3k.com/blog/machine\_learning/

# Supervised learning

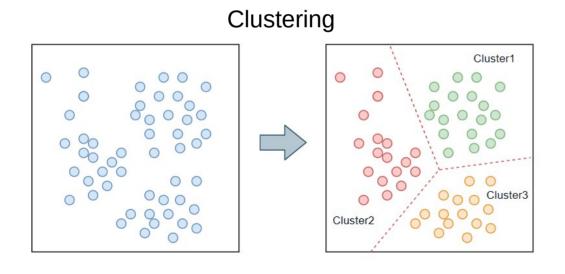
We teach or train the machine using labeled data

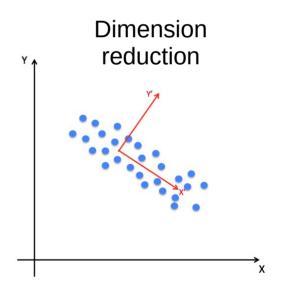




## Unsupervised learning

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







### Scikit-learn