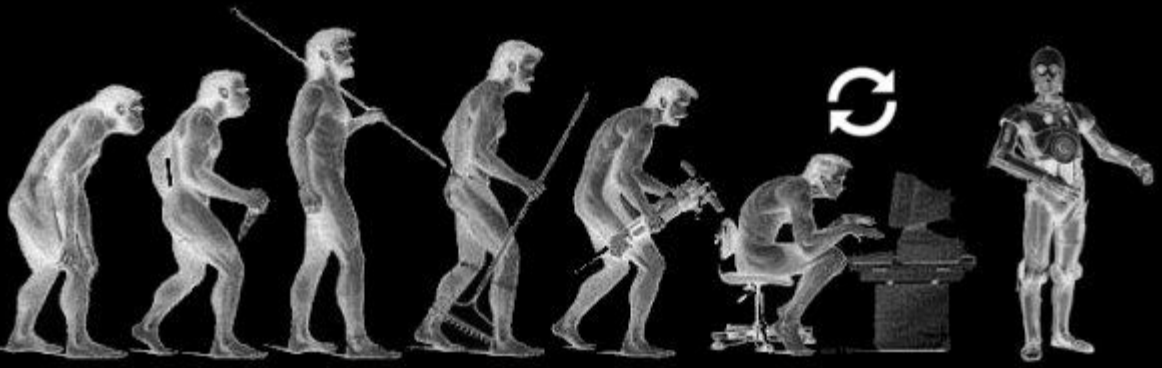
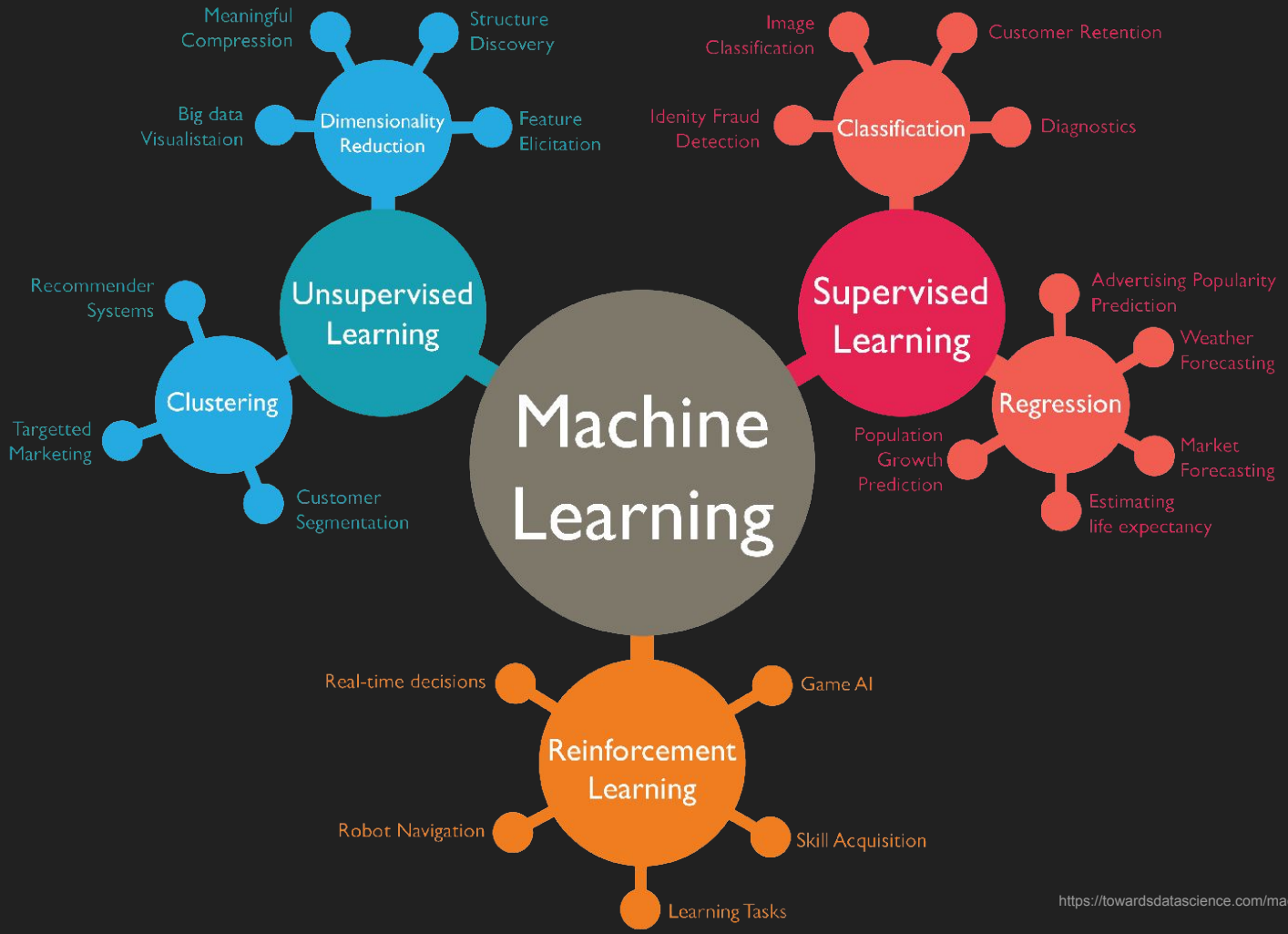
AI4ALL

Giri Iyengar, Davood Shamsi

Feb 3, 2018





https://towardsdatascience.com/machine-learning-types-2-c1291d4f04b1

How does Machine Learning work?

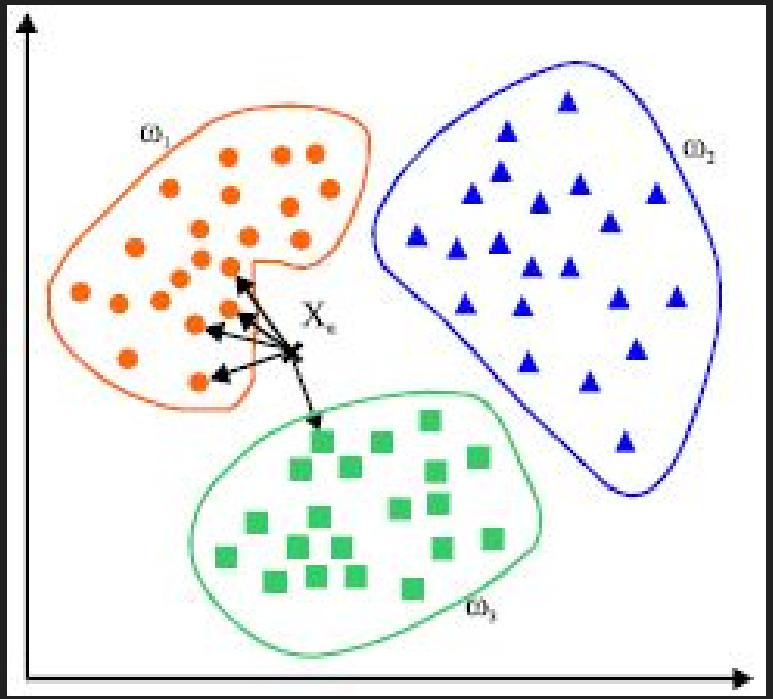
1. Collect some data
2. Split it into TRAINING, VALIDATION, TEST subsets
3. Extract features
    a. If you are doing any transformation of the features, do it only using the TRAINING data
4. Choose a Model
    a. intuition, subject matter expertise, experience help here
5. Feed TRAINING data to your model
6. Evaluate model on VALIDATION data
7. Repeat as required, tuning the model
8. Finally test on TEST data to get realistic performance numbers
9. Release model and profit from it :)

How does Machine Learning work?

Data, Data, and lots of Data

A Simple ML Algorithm - kNN Algorithm

kNN stands for k-Nearest Neighbors

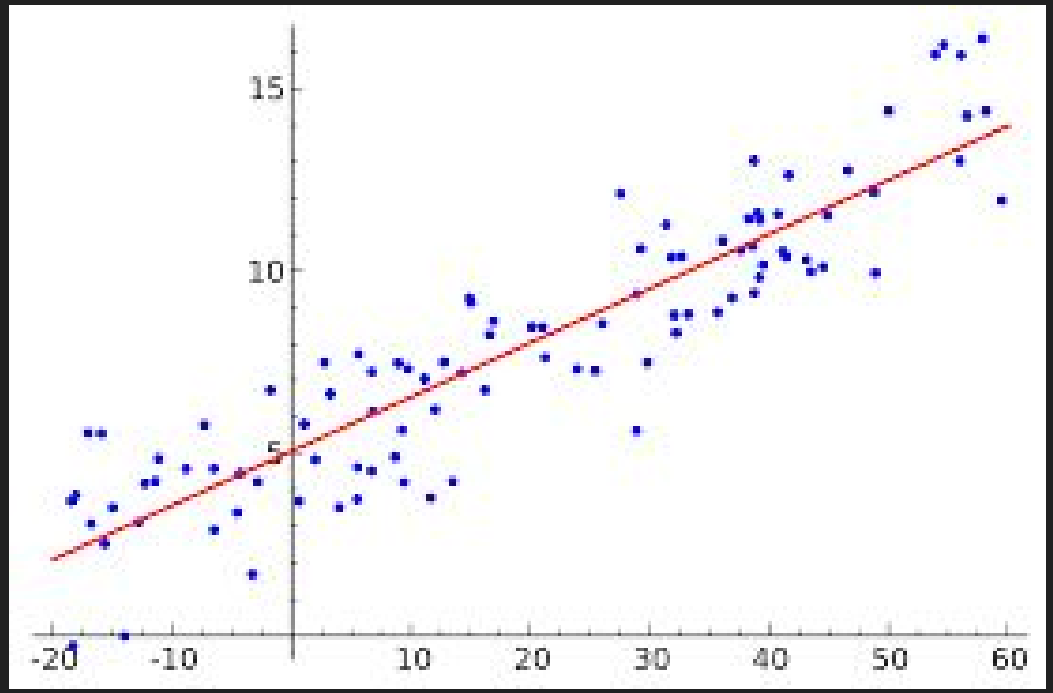


k-Nearest Neighbors - What are some issues with it?

- What happens when you change k?
- Is it really learning?
- What happens when a new TEST data sample comes in?
- What happens when you have lots of training data?

Another Simple Algorithm - Linear Regression

Linear Regression - Given some data points, fit a trend line



Linear Regression

- Given some data
  - Split into TRAIN, VALIDATE, TEST
- Plot the data to visualize
  - Get an idea of the type of model you want to build
- Fit the Linear model and evaluate
  - Model of the form: $Y = a_0 + a_1 x_1 + a_2 x_2 \ldots$
  - Parameters: a_0, a_1, … etc
- Tune as needed
- Predict and Profit from it!