



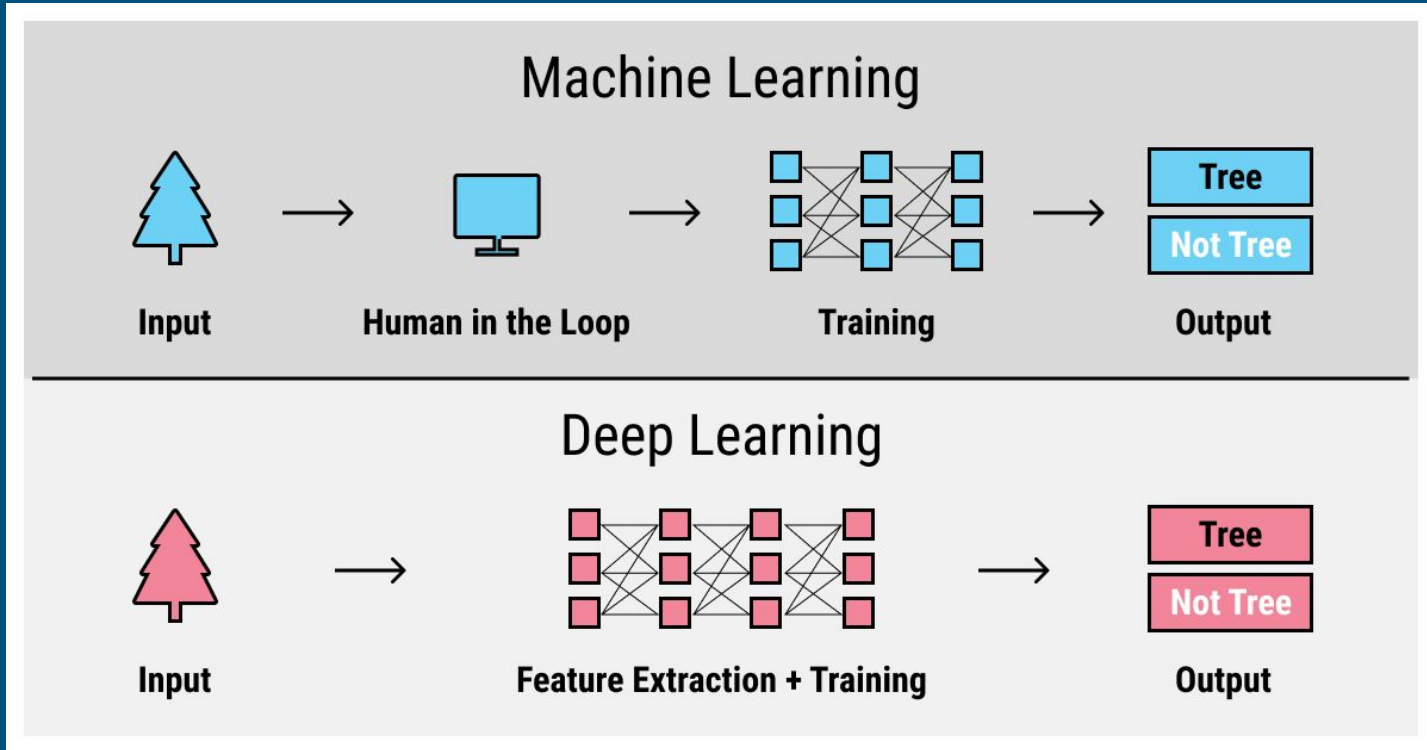
# Machine Learning

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Dr. Dongchul Kim

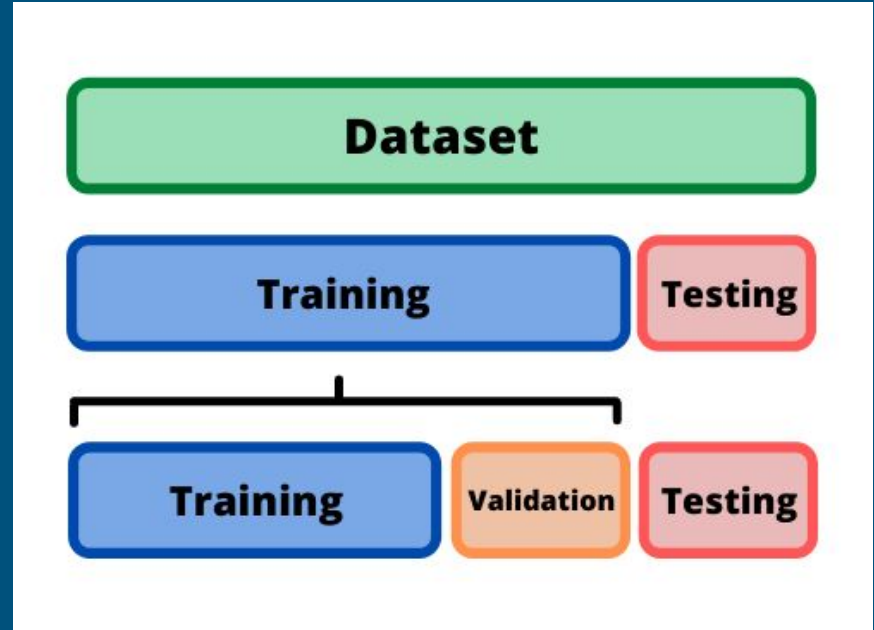


# Machine Learning



# Data

- Example
  - <https://archive.ics.uci.edu/>
- Train and Test
- Feature and Sample



# Types of Learnings

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01

## Supervised learning

- you are given examples with correct labels and are asked to label new examples

02

## Unsupervised learning

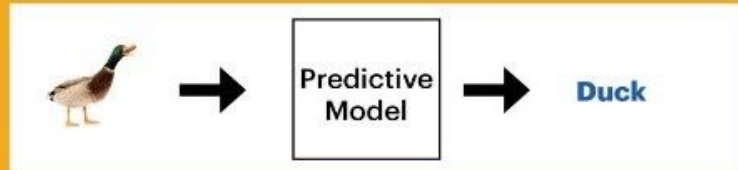
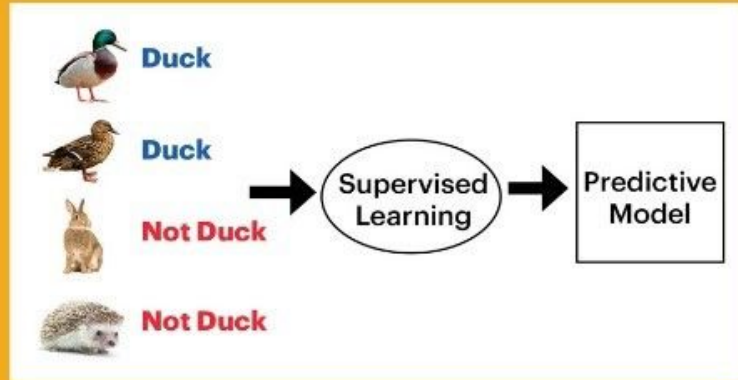
- you are given only unlabeled examples

03

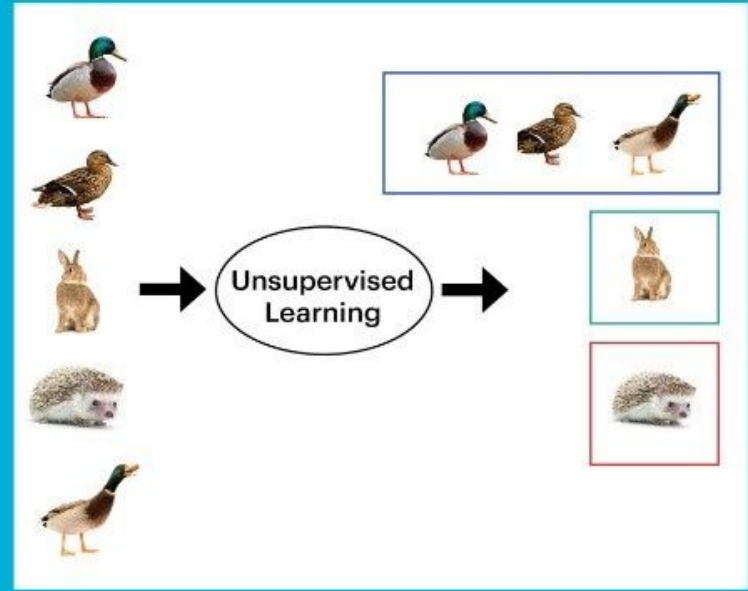
## Reinforcement learning

- you are given the overall performance (as opposed to labels to particular examples)

## Supervised Learning (Classification Algorithm)



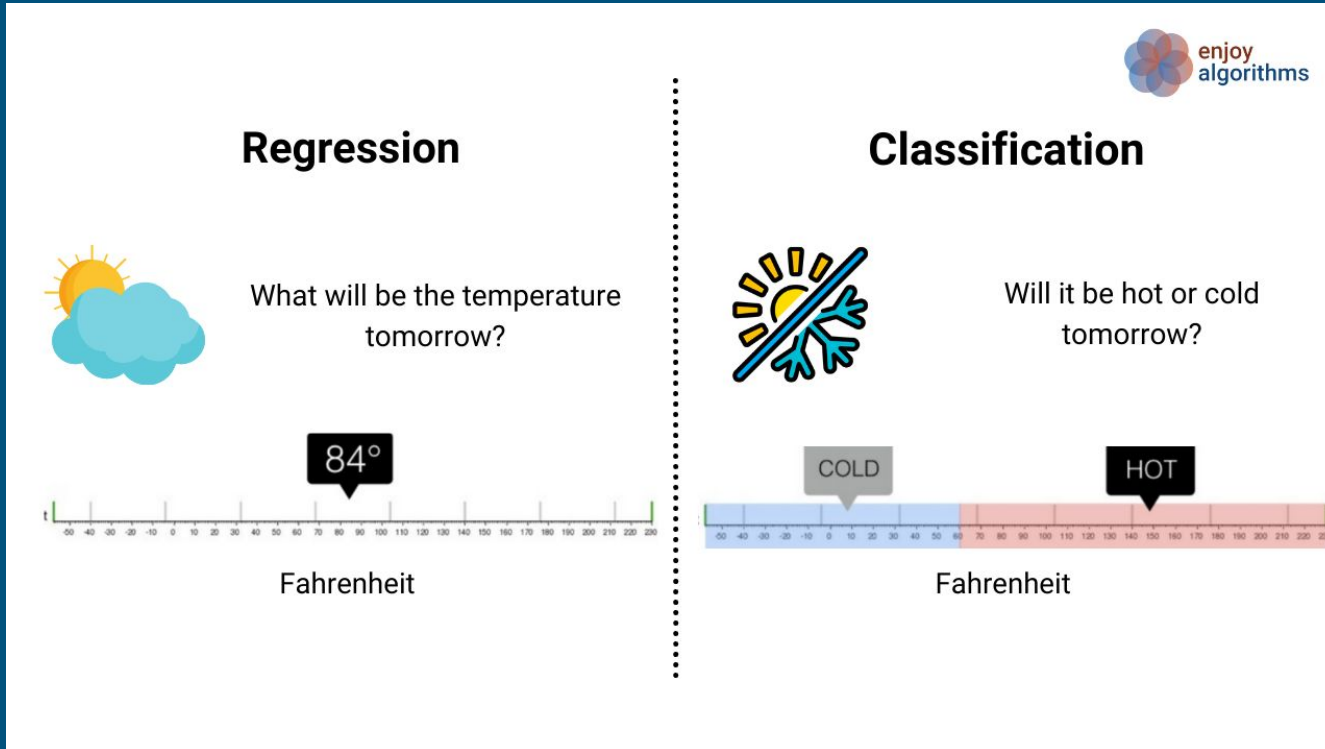
## Unsupervised Learning (Clustering Algorithm)



# Examples

- Example of Supervised and Unsupervised learning data sets
  - <https://archive.ics.uci.edu/>
- Example of Reinforcement learning
  - <https://www.youtube.com/watch?v=V1eYniJ0Rnk>

# Supervised Learning



# Supervised Learning

**Classification**



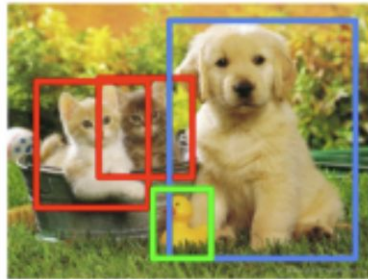
CAT

**Classification  
+ Localization**



CAT

**Object Detection**



CAT, DOG, DUCK

**Instance  
Segmentation**

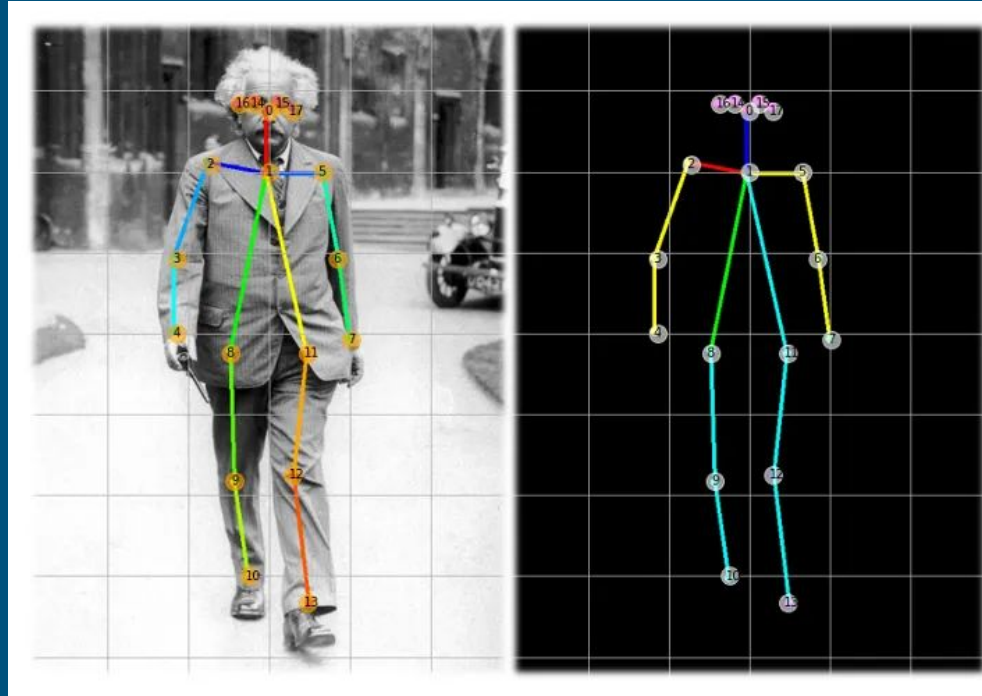


CAT, DOG, DUCK

Source: Michal Maj. Object detection and image classification with yolo, 2018.



# Supervised Learning



Source: <https://towardsdatascience.com/realtime-multiple-person-2d-pose-estimation-using-tensorflow2-x-93e4c156d45f>