Introduction to ML

CSC 380 - Principles of Data Science

Lecture 6.1

How can get things done by a computer?

Write rules aka Algorithm

Give step by step to reach y (output) from x (input)

Ex : Checking if a number is even or odd

What if we don't know the steps?

- Given a collection of x ,and their mapped y (output) , figure out how to

  reach from x to y.

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- **I have some x that is labeled, and some x that aren't, figure out how to reach y.**

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- I have some x that is labeled, and some x that aren't, figure out how to reach y.

- I have x and y , and <u>when you are learning</u> whenever you get y correct, I 'll give you positive reinforcement, and when you get it wrong, I will penalize you. Maximise reward is the goal.

Supervised Learning (I'll teach you using examples)

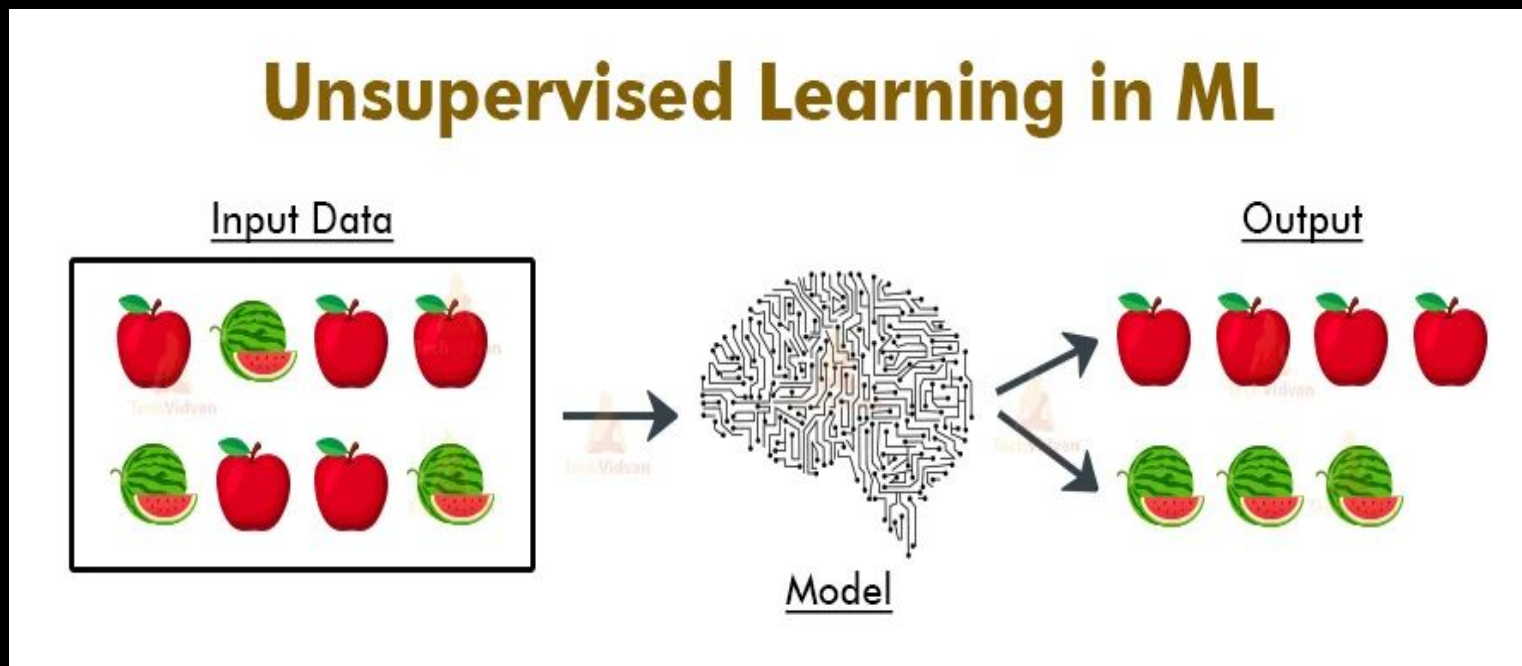Given a collection of x ,and their mapped y (output) , figure out how to reach from x to y.
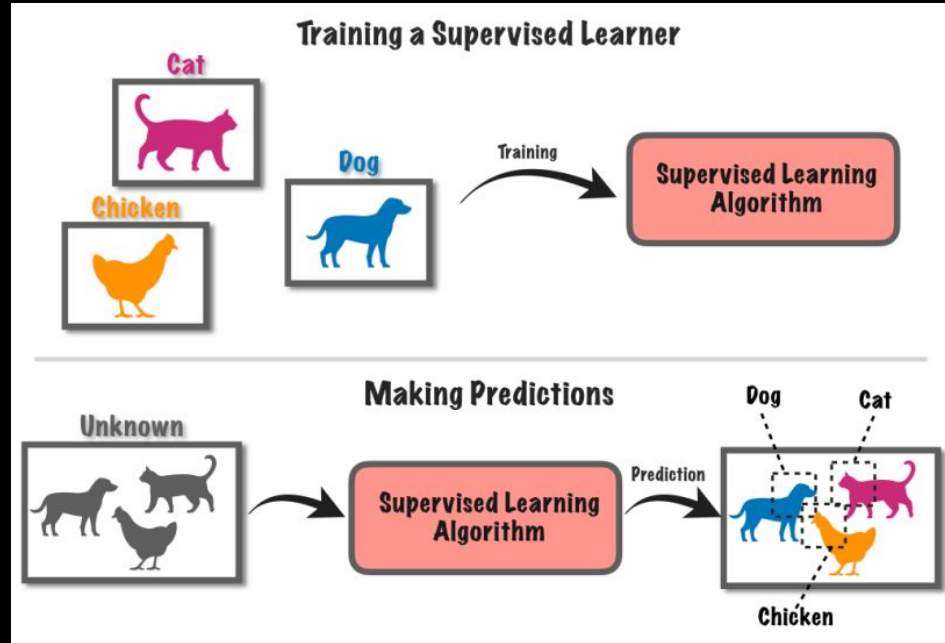
Unsupervised Learning (you go figure it out)

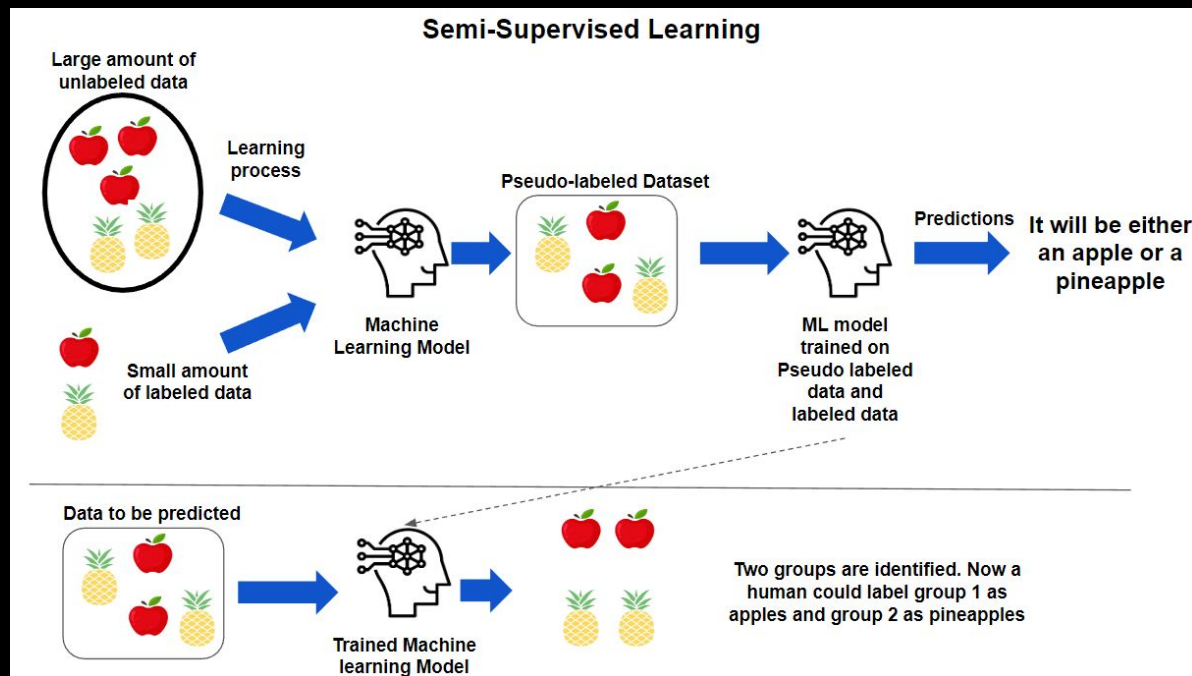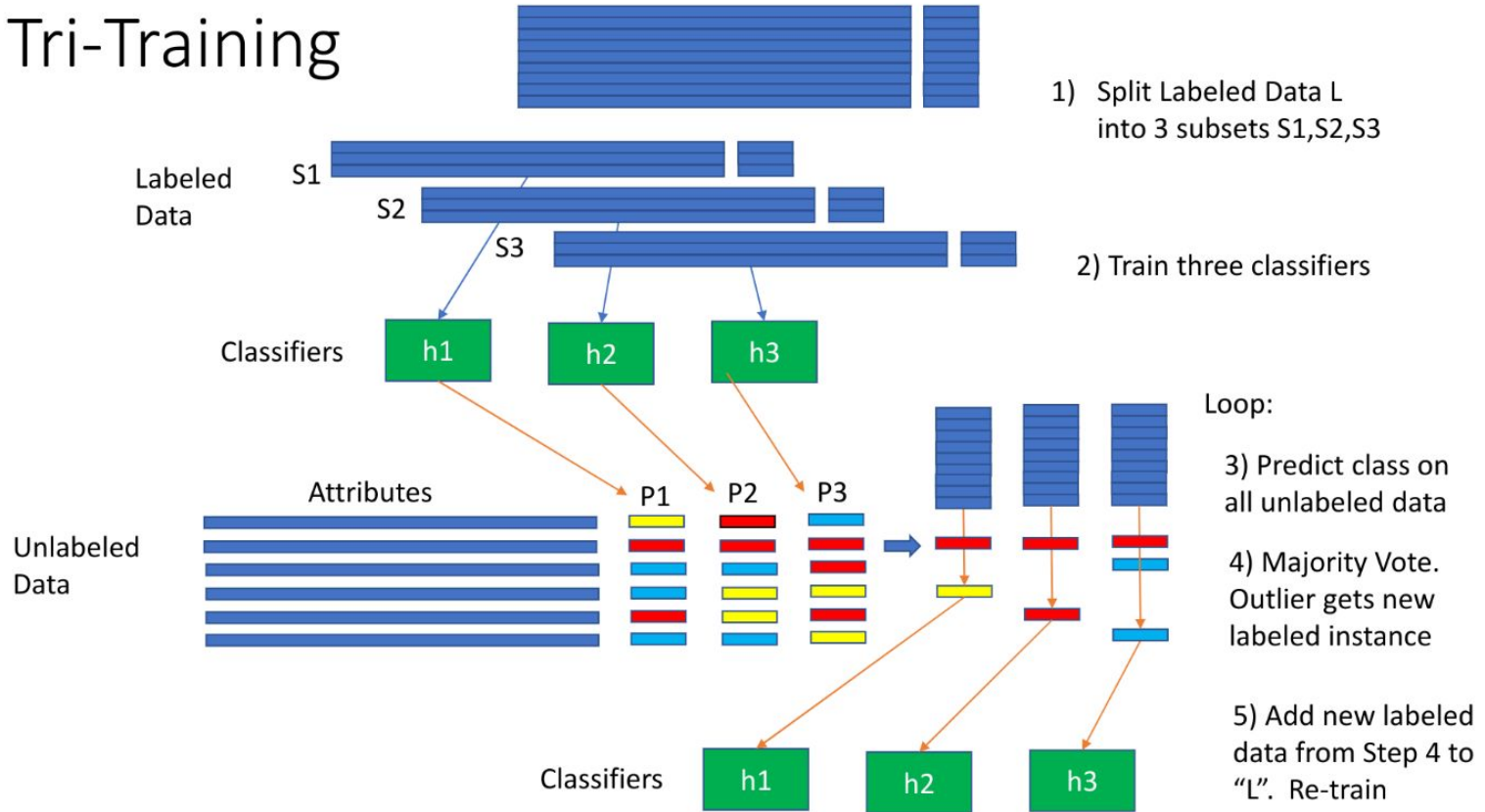I have a collection of x, I know y could be in there, find out y, and how to reach to y on new x

Semi -supervised Learning

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Source - Data Driven Investor

Tri-Training

Labeled Data

S1
S2
S3

Classifiers
h1   h2   h3

1) Split Labeled Data L into 3 subsets S1,S2,S3

2) Train three classifiers

Unlabeled Data

Attributes

P1   P2   P3

Loop:

3) Predict class on all unlabeled data

4) Majority Vote. Outlier gets new labeled instance

5) Add new labeled data from Step 4 to "L". Re-train

Classifiers
h1   h2   h3

Reinforcement Learning

I have x and y , and when you are learning whenever you get y correct, I 'll give you positive reinforcement, and when you get it wrong, I will penalize you. Maximise reward is the goal.