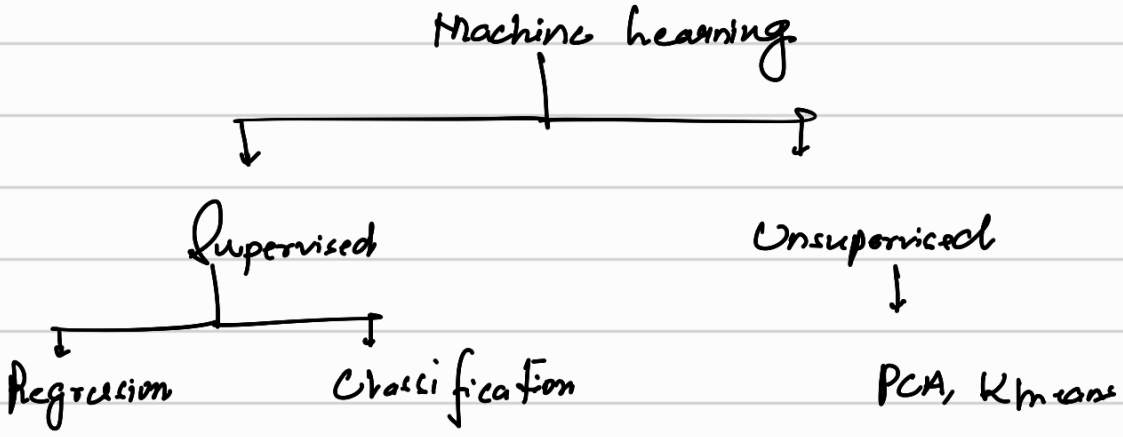
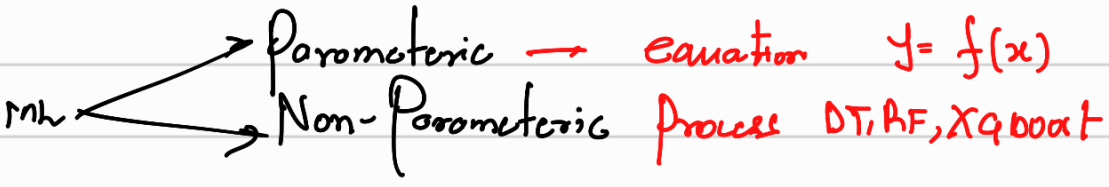
Introduction to Deep learning:



Linear Reg
Log Reg
DT, RF, Boosting

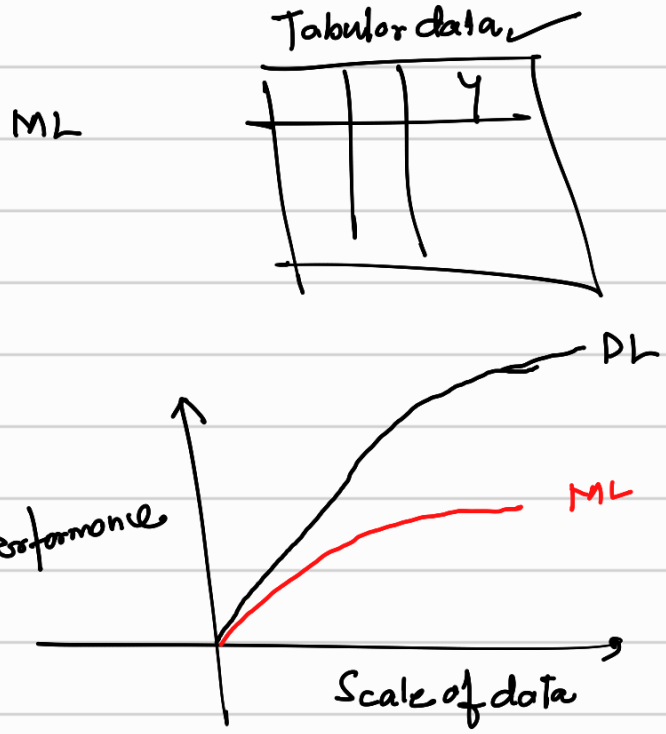


Deep learning → Parametric form.

$y \sim f(x)$

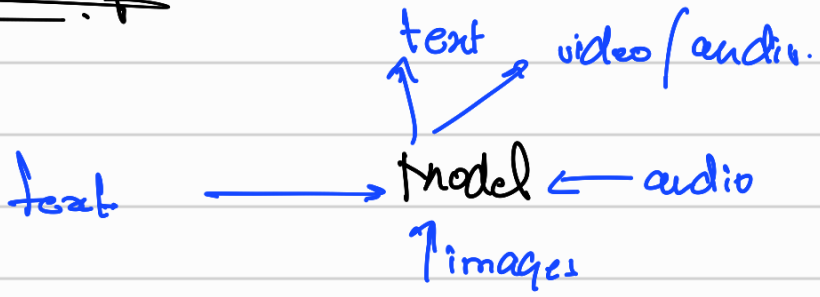
↓

equation



automated feature engineering → Images, videos, text, Audio. graph. etc.

Multimodality



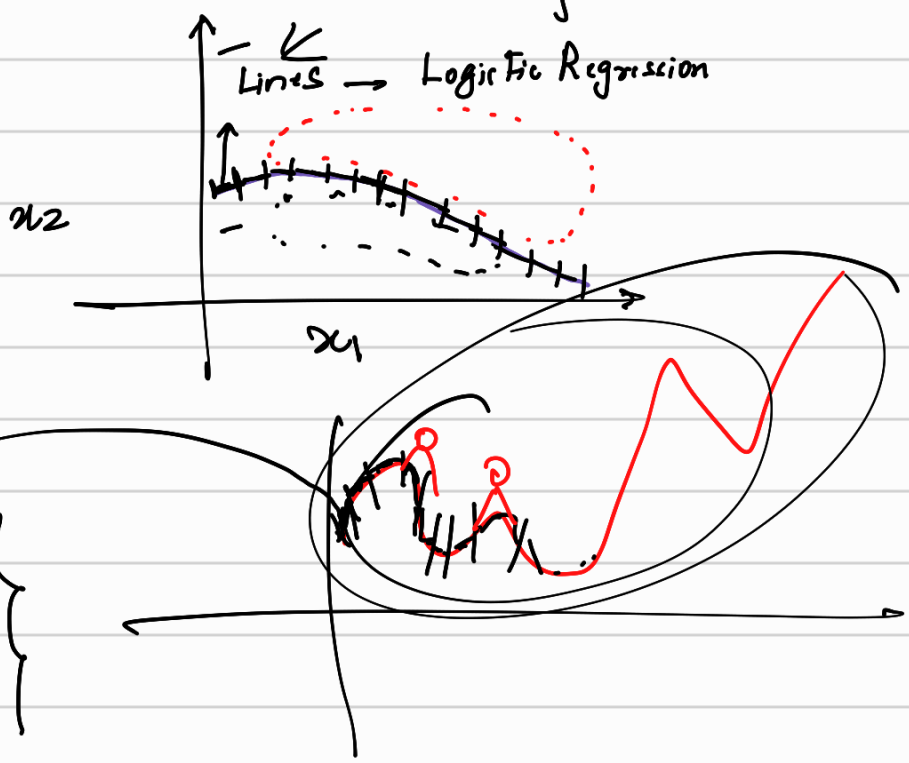
Deep learning a framework wherein we create a parametric model to predict y as a function of x.

$y \leftarrow (f)(x)$

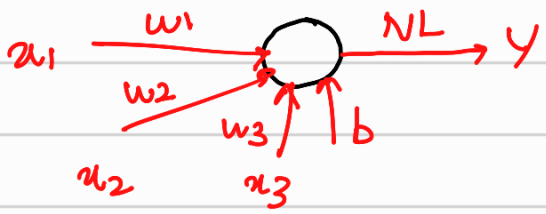
- Tabular data → Artificial Neural network
- Image → Convolution neural network
- Audio → Sequence (RNN, LSTM)
- Text
- Graph → Graph neural network

Lecture-2 What is a Neuron?

$y \approx f(x_1, x_2)$



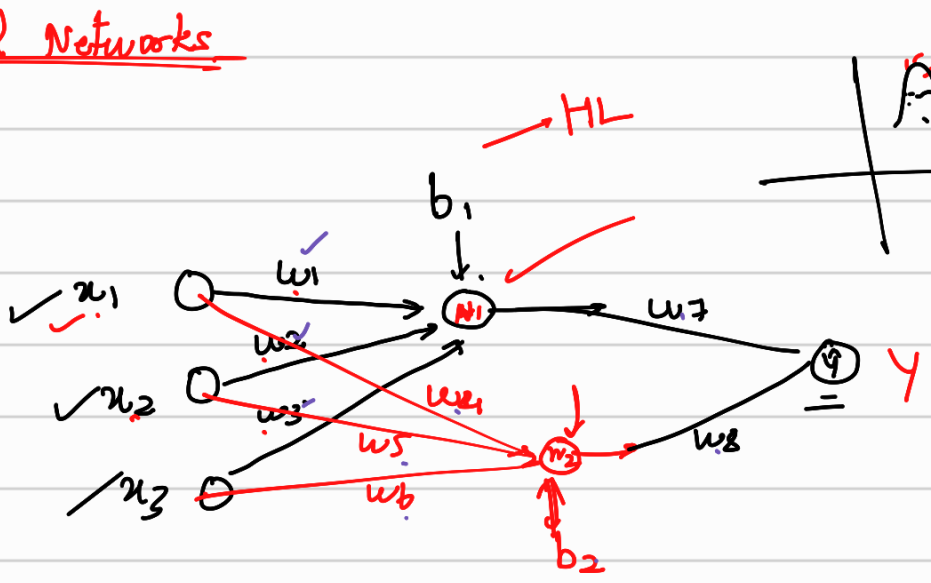
- → intercept
- → Slope
- → Curvature



$$y = NL(w_1x_1 + w_2x_2 + w_3x_3 + b)$$

activation functions

Neural Networks



$$\hat{y} = \text{sigmoid}(w_7N_1 + w_8N_2 + b_3)$$

x_1	x_2	x_3	y
~	~	~	~
~	~	~	~
~	~	~	~

I want my $\hat{y}$ to go as close as possible by modifying the weights and biases.

- Define the architecture.
- weights and biases → random, initialize.
-  → loss

- Reduce the loss by modifying the weights and biases.

↓

Gradient Descent