Day 1 : Deep Learning

7pm - 9pm IST

Motive : { Clear their Basics, Maths, Interview preparation }

Agenda

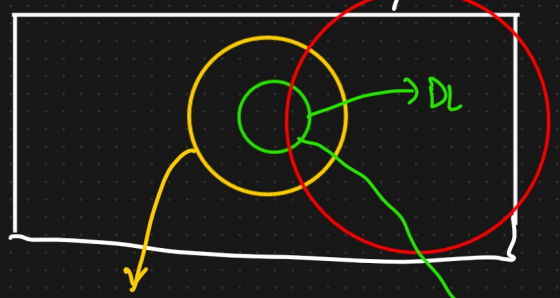
1. Deep Learning → Perceptron { AI Vs ML vs DL vs DS }
2. Forward Propogation
3. Backward Propogation
4. Loss function
5. Activation functions
6. Optimizers.

Prerequisite

1. Python
2. ML
3. Stats

AI VS ML VS DL VS DS

Deep Learning → DL



{ ML is a subset of AI }

Goal { application which can do its own task without any human Intervention }

1. Netflix App
2. Self Driving Cars
3. Amazon Application
4. Sofia

RTX 3090

ML → Statstool to analyze the data, visualize the data, predictions, forecasting, clustering

Researchers (1958)

Multi Layered Neural N/w { Mimic the human brain }

{ Perceptron }

(*) Why Deep Learning Is Becoming Popular?

① 2005 → ORKUT, FACEBOOK, Instagram, WhatsApp, LinkedIn Twitter

DATA → Exponentially ↑↑↑

2008 → {BIG DATA} → Efficiently

Year {2013-2014}

Netflix

2013 → Company had huge amount of Data

⇓ {AI → popular}

Scanlon Products

Panasonic : AC's, TV's, Refrigerator {Data}

↓ ⇓

Model → Reduce the Electricity Bills ⇓

⇓

Subscription Basis

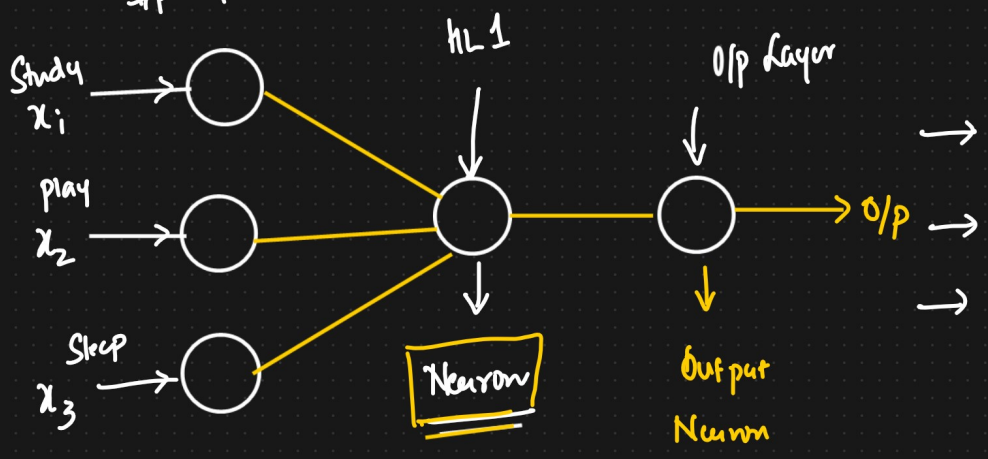
⇓

{Cumulate Revenues, Better Decisions} {RTX Titan} {RTX 3090}↑

② Hardware Advancement (NVidia) → GPU's → TRAINING THE MODEL

GPU's → COST ↓↓↓

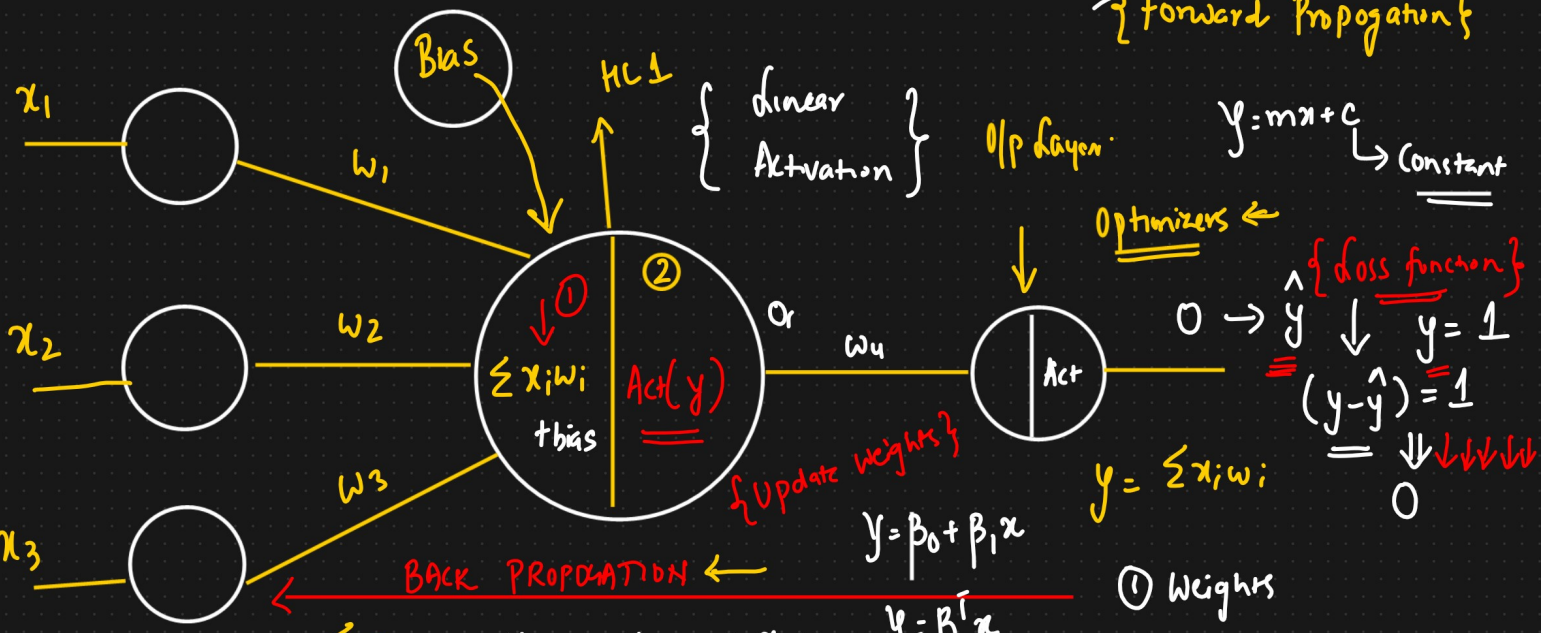
④ Perceptron {Single Layered Neural N/W}.



Binary classification

Dataset

Study	Play	Sleep	Pass/Fail
7	3	7	1
2	5	8	0
4	3	7	1



① Weights
② Neurons
③ Activations

Binary classification

↳ Sigmoid $= \frac{1}{1 + e^{-y}} = \frac{1}{1 + e^{-(\sum x_i w_i + b)}}$

0 to 1

$\geq 0.5 \rightarrow 1$

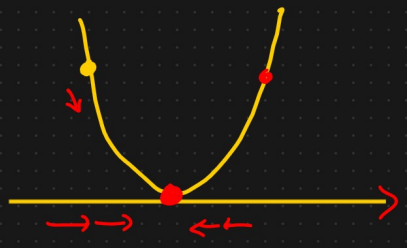
$< 0.5 \rightarrow 0$

0 or 1

① ANN
② CNN
③ RNN
④ Object Detection

GRADIENT DESCENT ⇒ kind of optimizers

$y - \hat{y}$ ⇒ minimal



Conclusion

(300 lbs)

Scribble Ink

1. I/P layers
2. Weights
3. Bias — Day 2
4. Activation function X

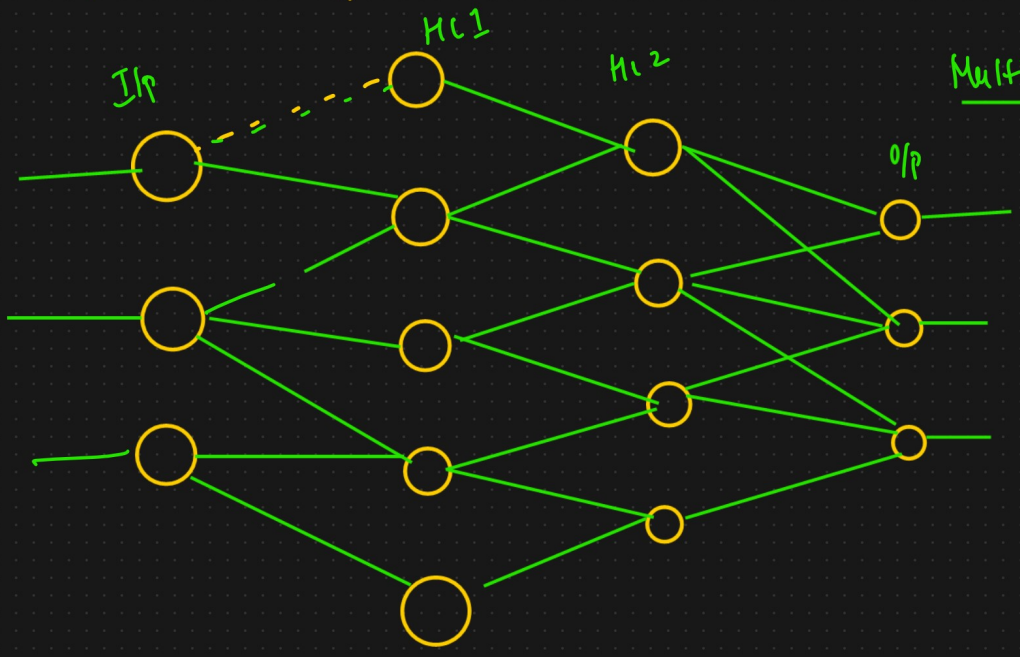
→ Forward Propogation

ANN

Chain Rule of Differentiation

5. Loss function X $\{\hat{y} - y\}$ ↓W
6. Optimizers
7. Update the weight — Day 3

→ Backward Propogation



Multi Layered N/W

1. ANN
2. CNN
3. RNN

→ NLP ~ 7 days