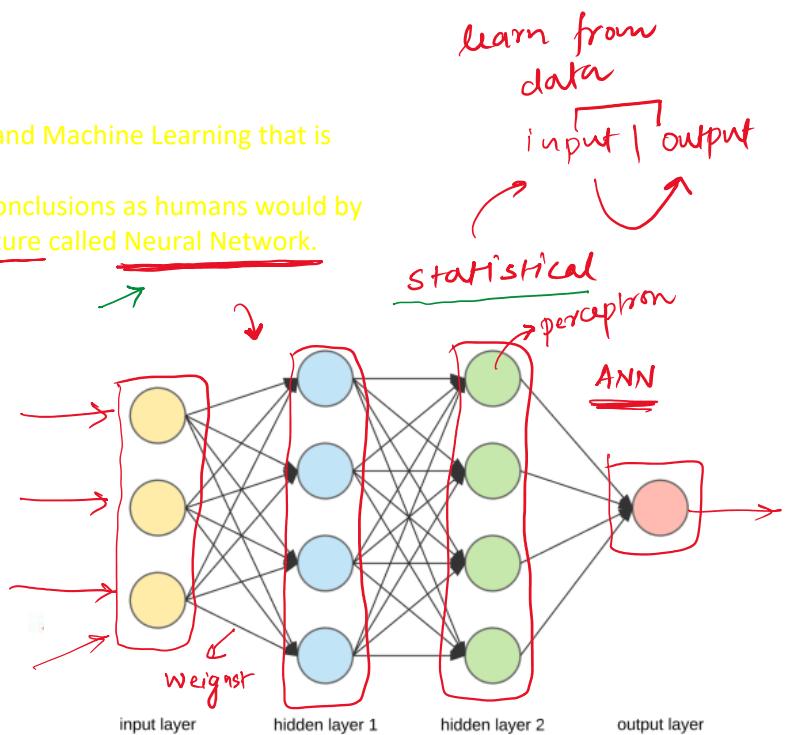
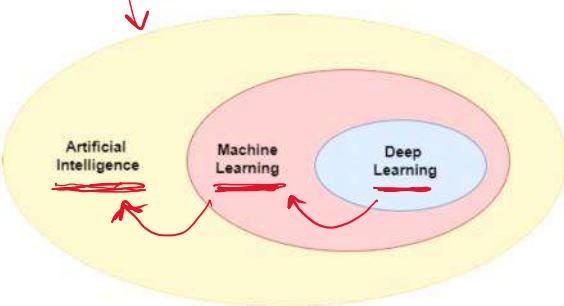


What is Deep Learning?

16 February 2022 06:32

Deep Learning is a subfield of Artificial Intelligence and Machine Learning that is inspired by the structure of a human brain. Deep learning algorithms attempt to draw similar conclusions as humans would by continually analyzing data with a given logical structure called Neural Network.



ANN →

CNN → convolutional
NN ✓ image

RNN → Recurrent NN → speech / text

GAN → generate (text) images

why dl getting so famous?

→ 1) Applicability →

2) Performance →

state-of-the-art

human experts

Applications

Go → AlphaGo → AI
5 → 0

selfdriving
drugs
→ chemistry

Deep learning is part of a broader family of machine learning methods based on artificial neural networks with representation learning.

Deep Learning Algorithms uses multiple layers to progressively extract higher-level features from the raw input. For example, in image processing, lower layers may identify edges, while higher layers may identify the concepts relevant to a human such as digits or letters or faces.

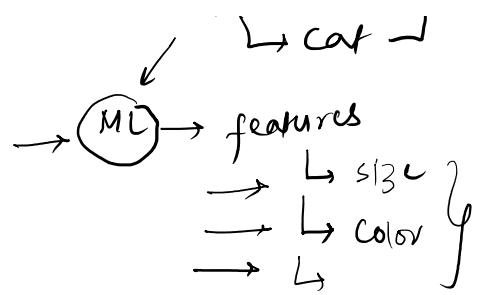
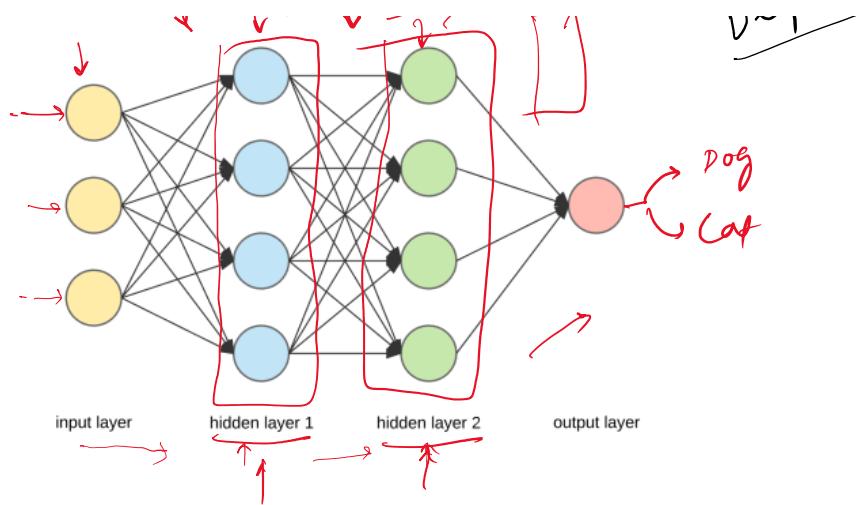


→ Representation

feature extraction
engineering

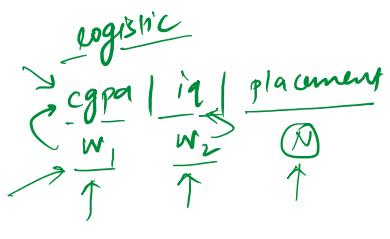
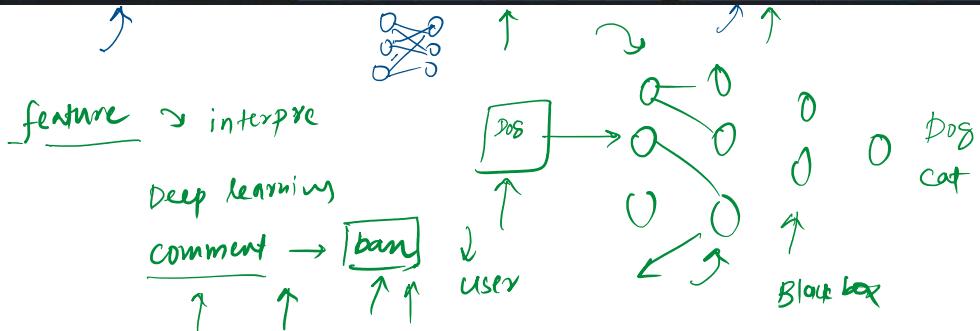
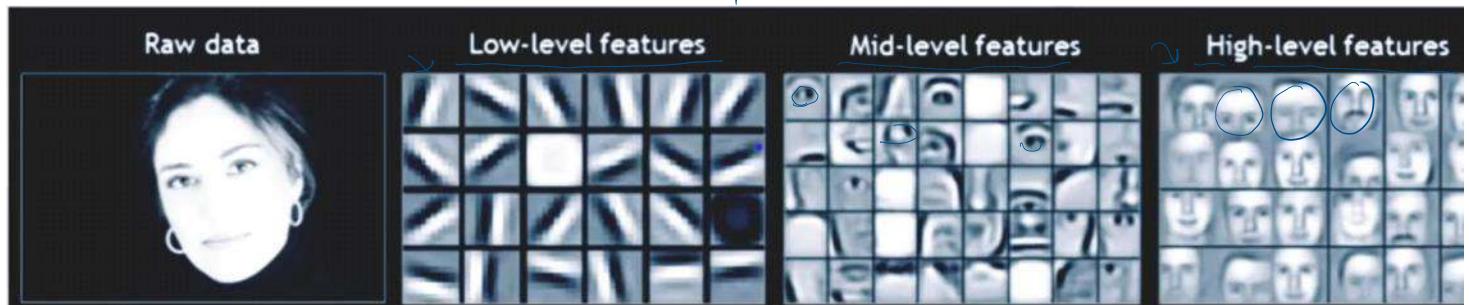
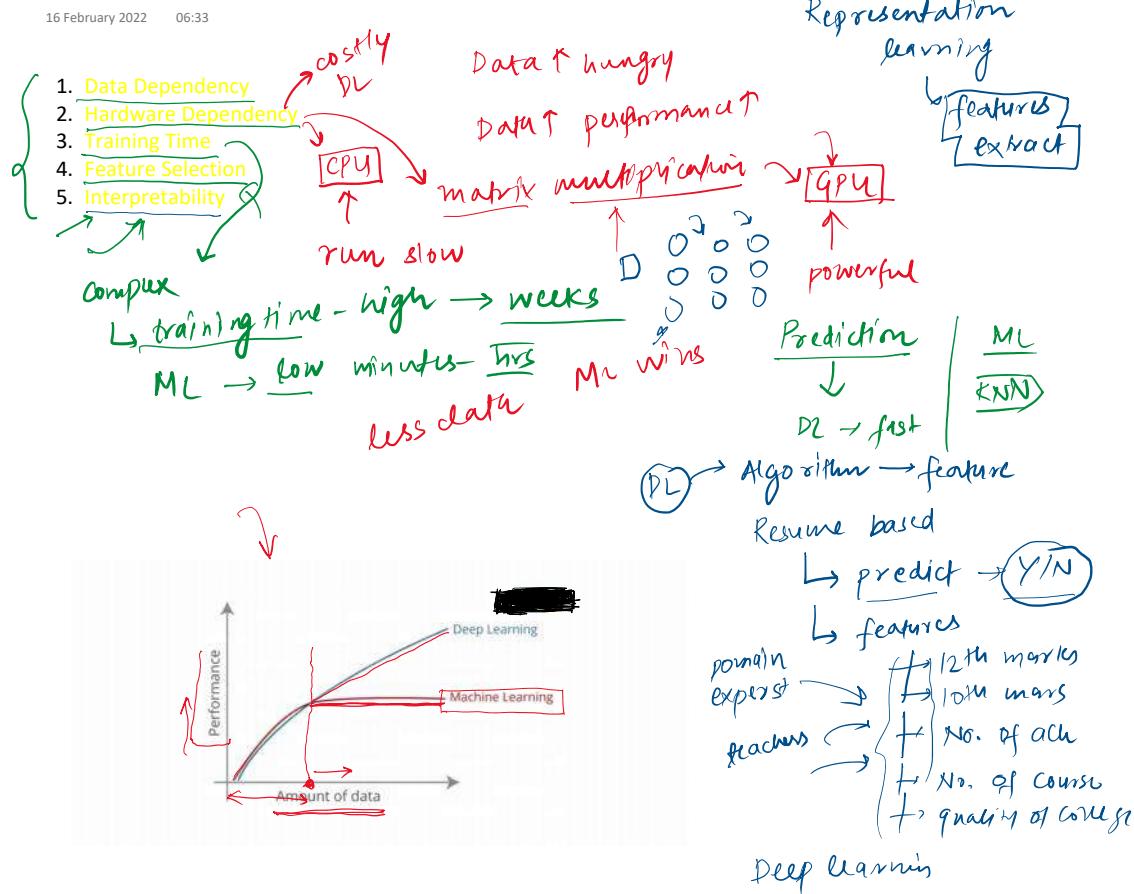
features



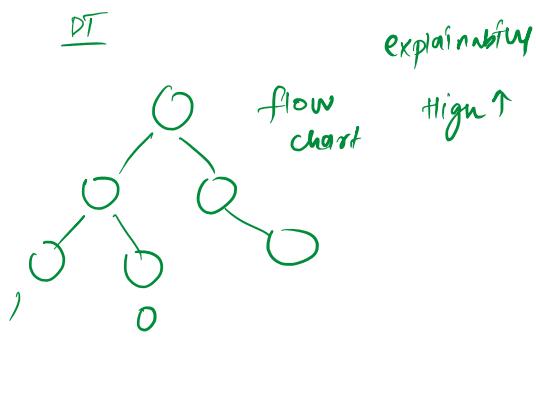


Deep Learning VS Machine Learning

16 February 2022 06:33

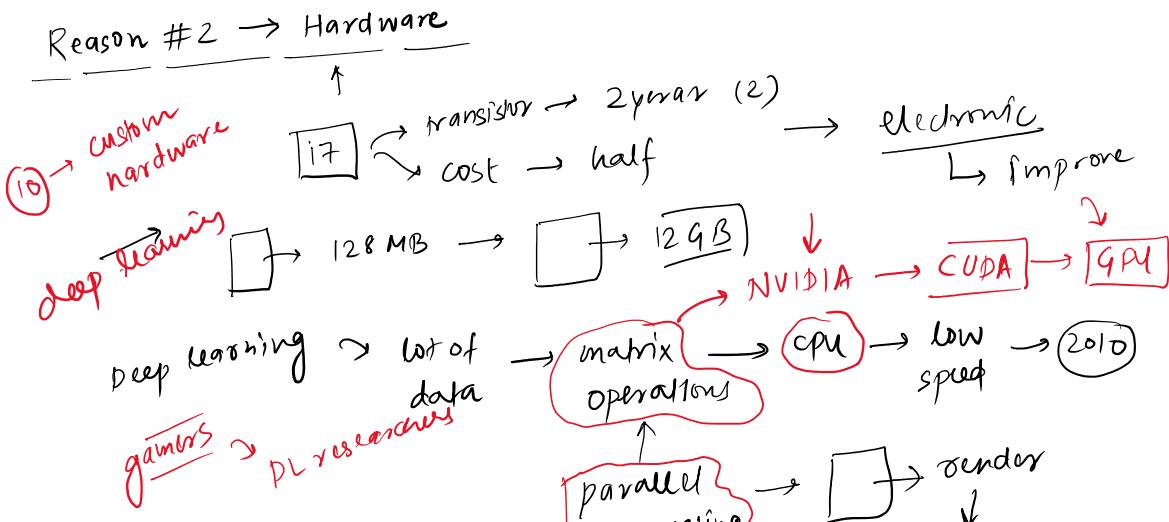
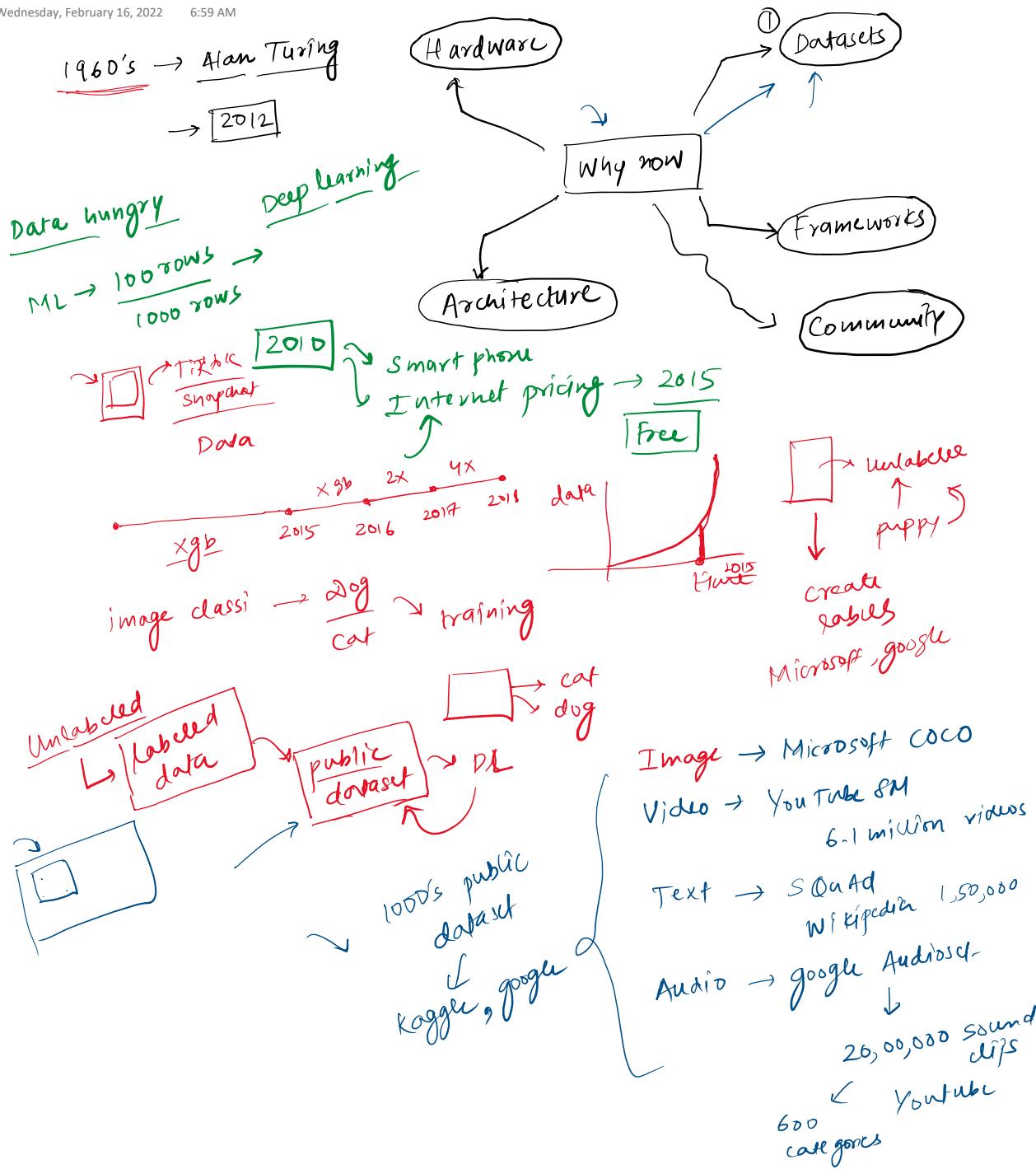


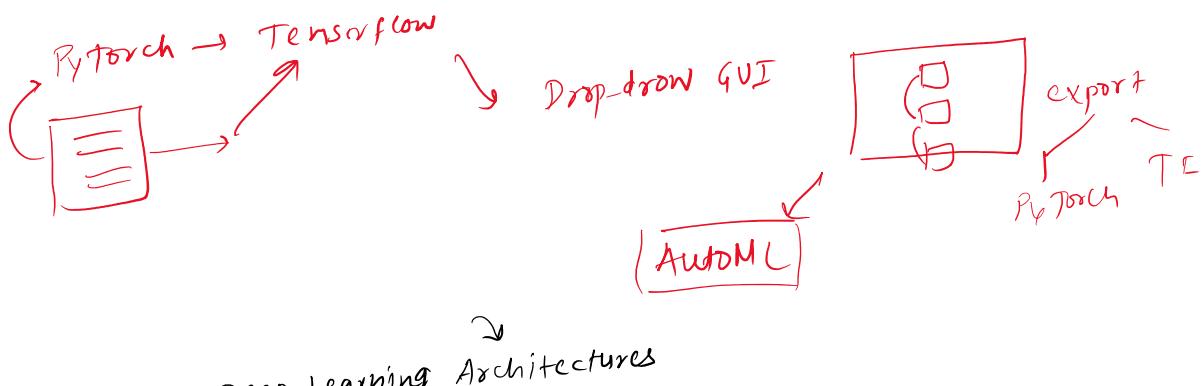
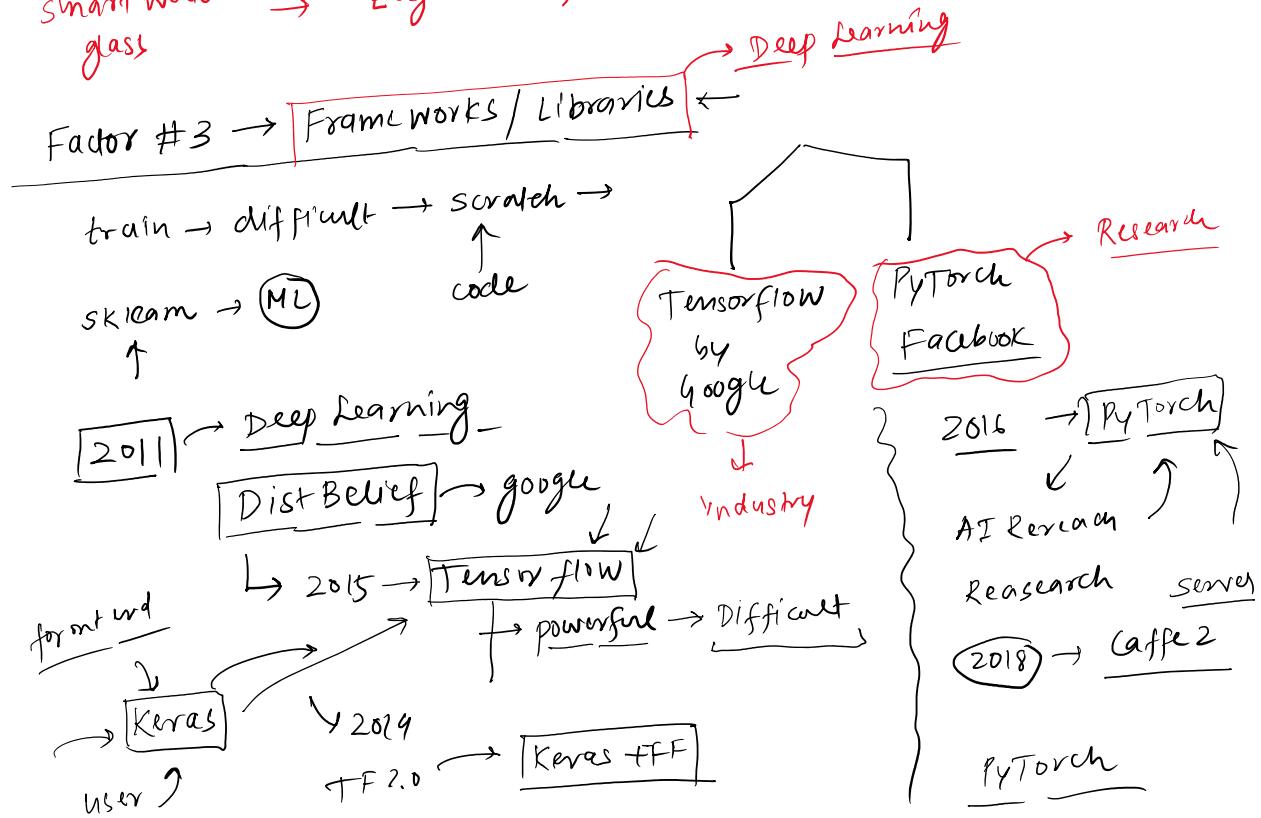
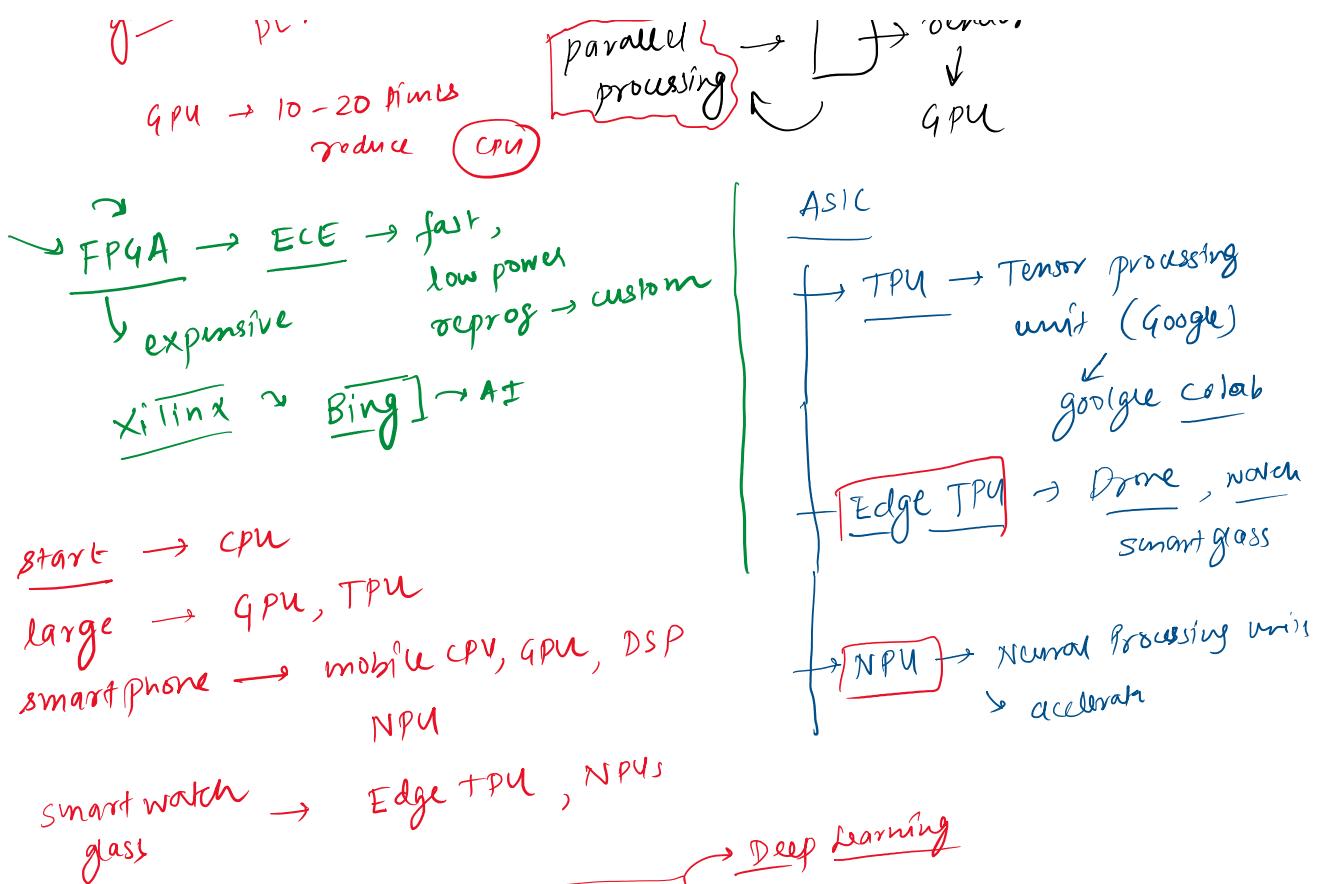
Machine learning →



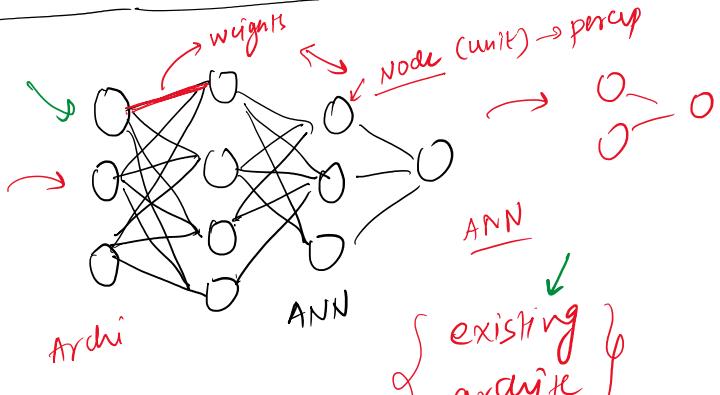
Why now?

Wednesday, February 16, 2022 6:59 AM





Factor #4 → Deep Learning Architectures



CNN RNN

D NN archi

experiment

{ + time
+ effort
+ money}

state-of-the-art
best accuracy

Transfer learning

NN → Archi
Dataset → train → ready to use
fires down

image classification → ResNET		Object det → YOLO
Text classifi → BERT		Speech gen → WaveNET
Image segment → UNet		
image trans → Pix2Pix		

#5 → People / community

Deep learning → 1960 → 2011

(DL)

Research

↳ DL engin

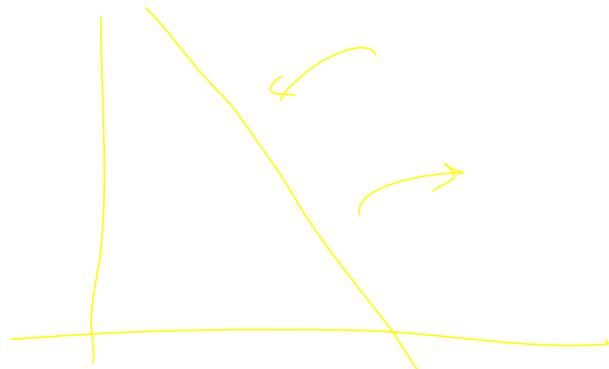
↳ Teacher

→ student → Tagger

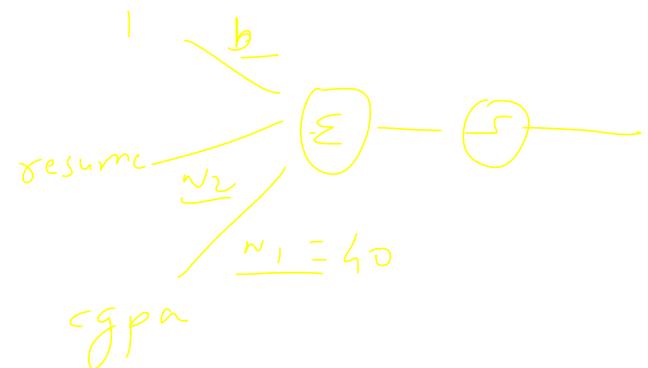
Code Example

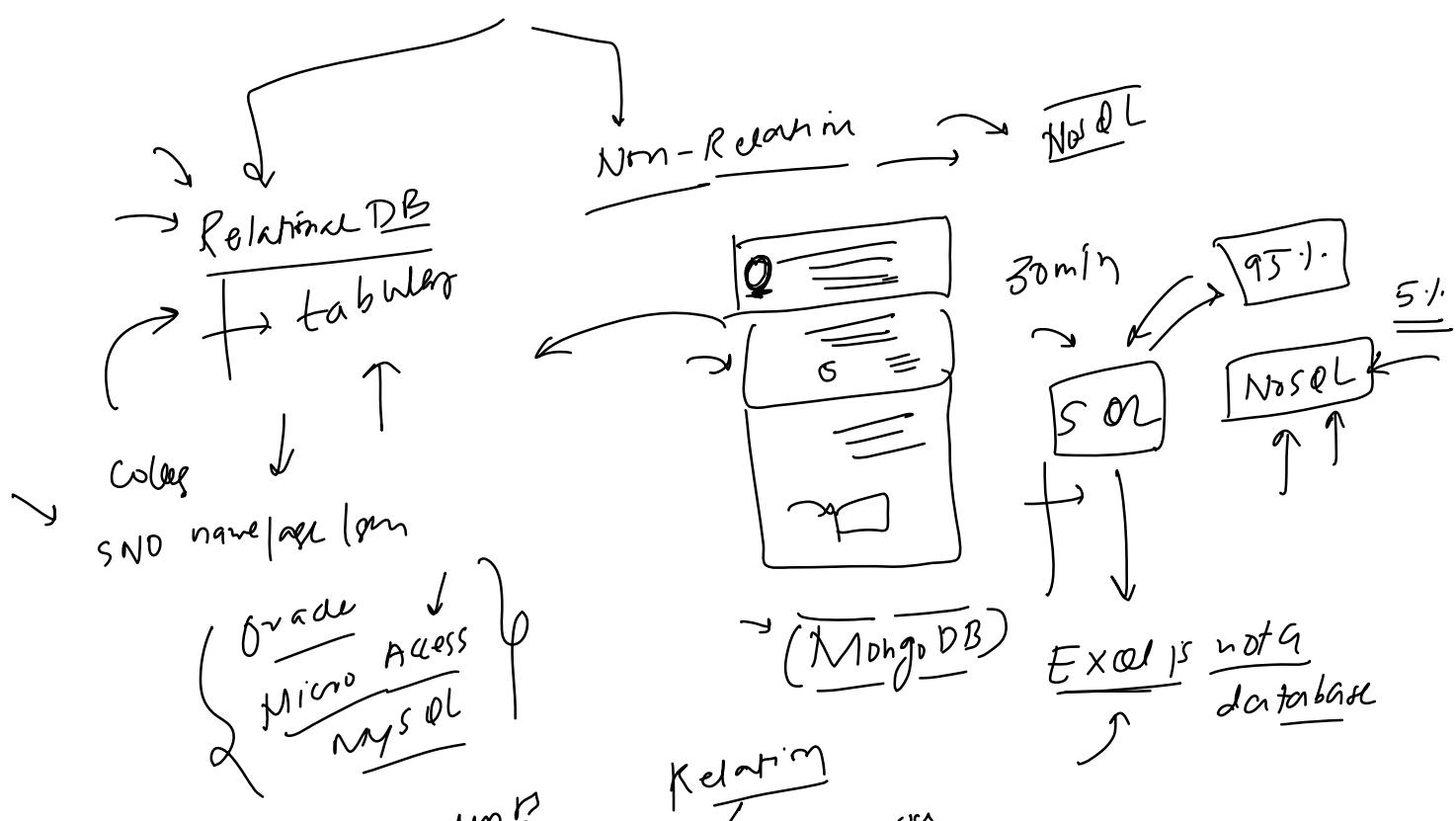
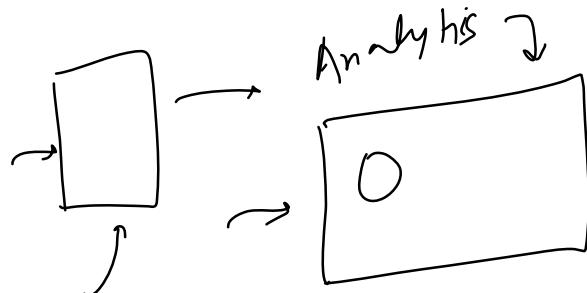
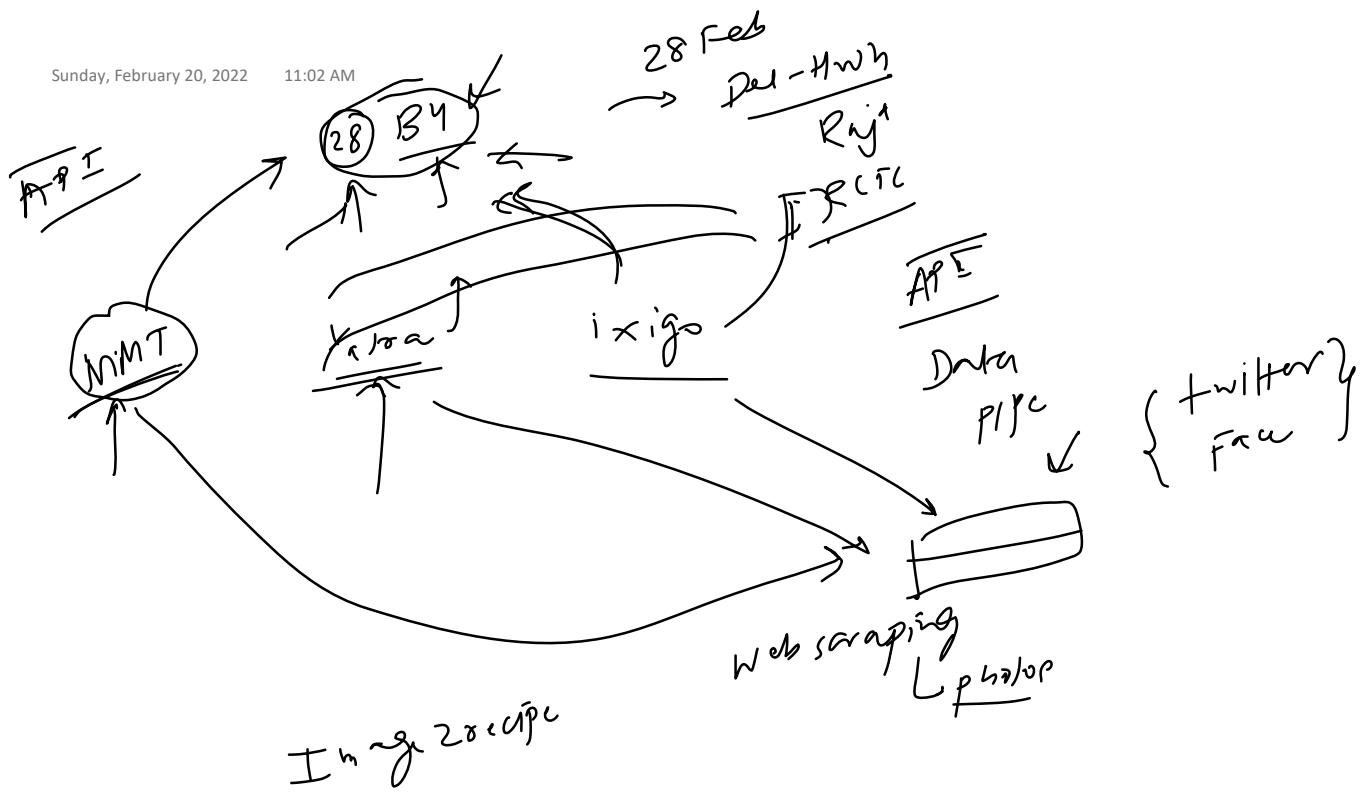
Saturday, February 19, 2022 7:10 AM

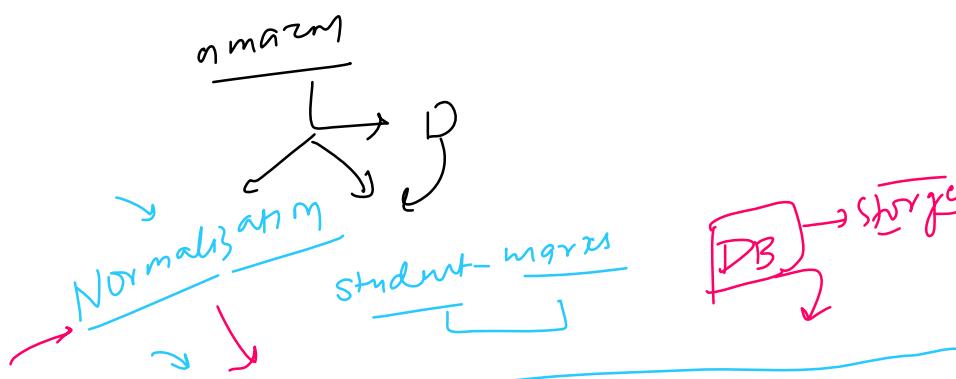
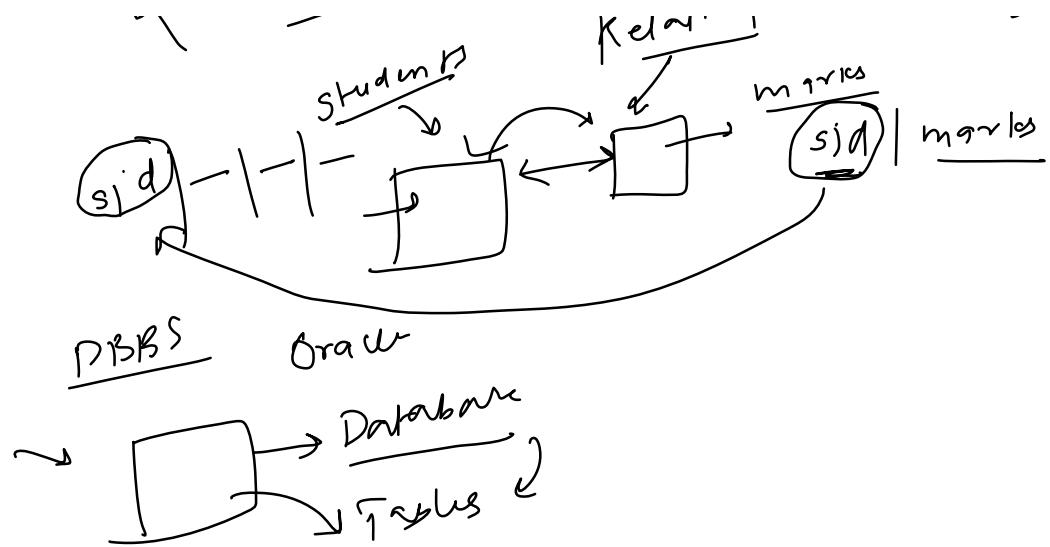
cgpa | resume / placed



$$w_1 \cdot 31 + w_2 \cdot 1 = b = 25$$

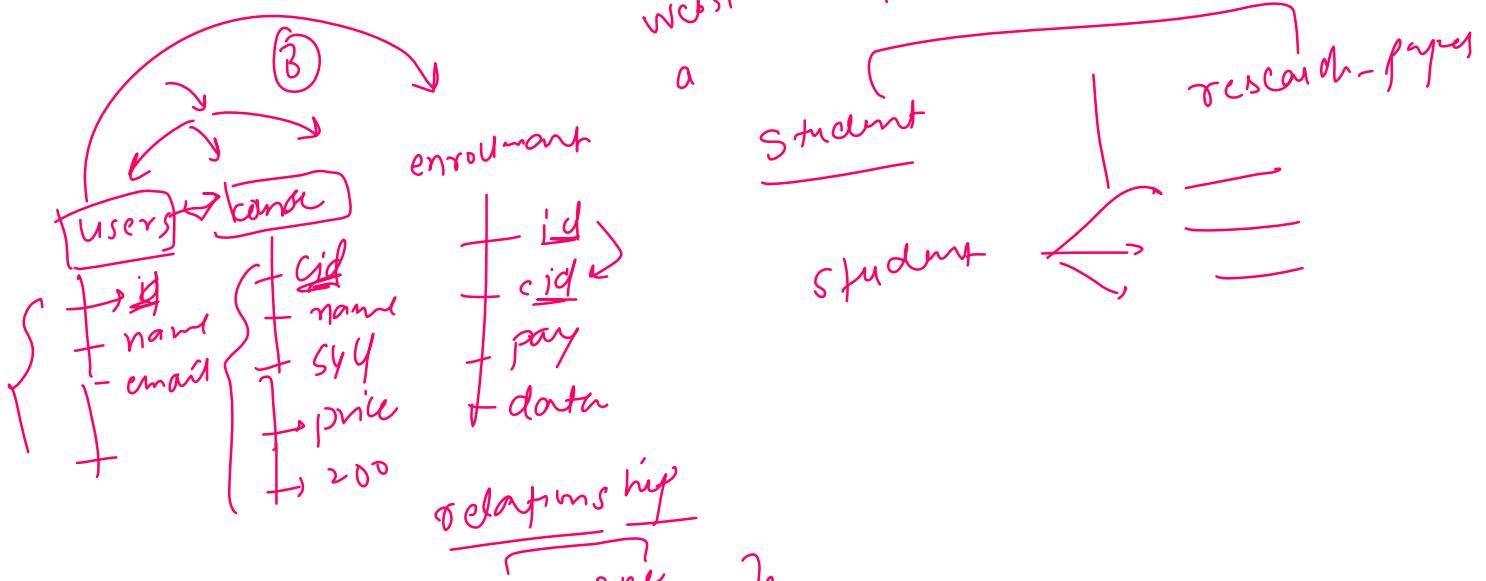
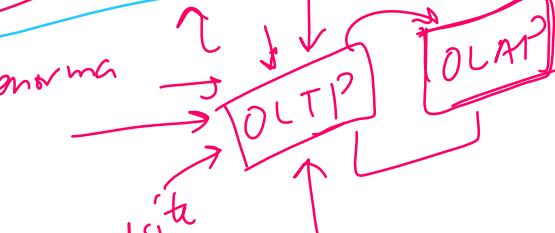






student-marks

sid	name	gender	age	course	marks
1	Satyam	M	21	Eng	24
1	Satyam	M	21	Math	32



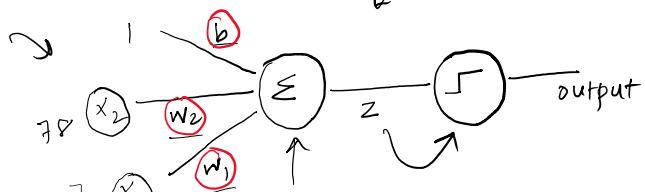
$\rightarrow \{$ one-one
one-many }
many - |

Recap

22 February 2022

14:12

$$z = w_1x_1 + w_2x_2 + b$$



cgpa	iq	placed
x1	x2	
7	78	1
6	61	0
9	92	1

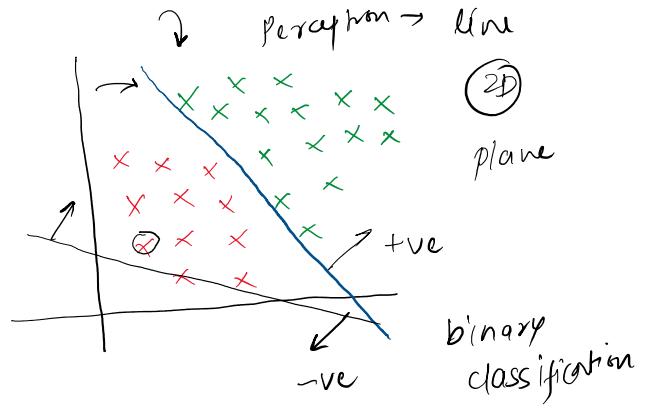
↳ mathematical model \rightarrow neuron

$$\begin{aligned} z \geq 0 &\rightarrow 1 \\ z < 0 &\rightarrow 0 \end{aligned}$$

↳ random

$$\begin{aligned} A &\rightarrow w_1 \\ B &\rightarrow w_2 \\ C &\rightarrow b \end{aligned}$$

$$Ax + By + C = 0$$



Prediction
→ Training

↳ **Perceptron Rule**