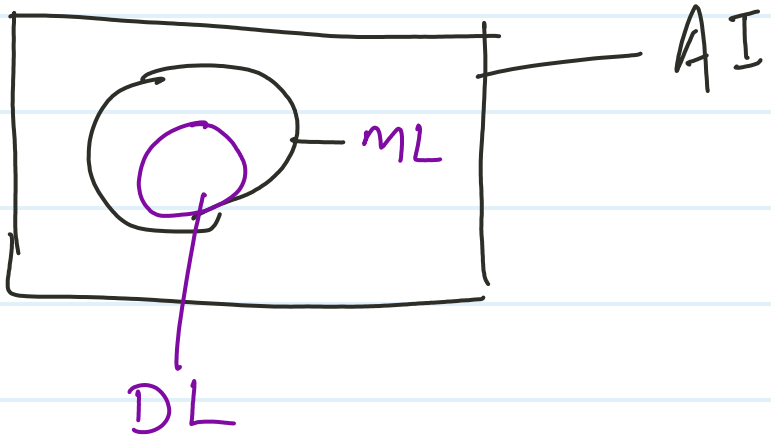
Deep learning



why deep learning?

Human brain mimic

2005 - social media

FB / orkut - beijing

2011 - exponential growth data

1 TB/y / 100 TB / daily

Big Data

Huge data store

Data Engg –

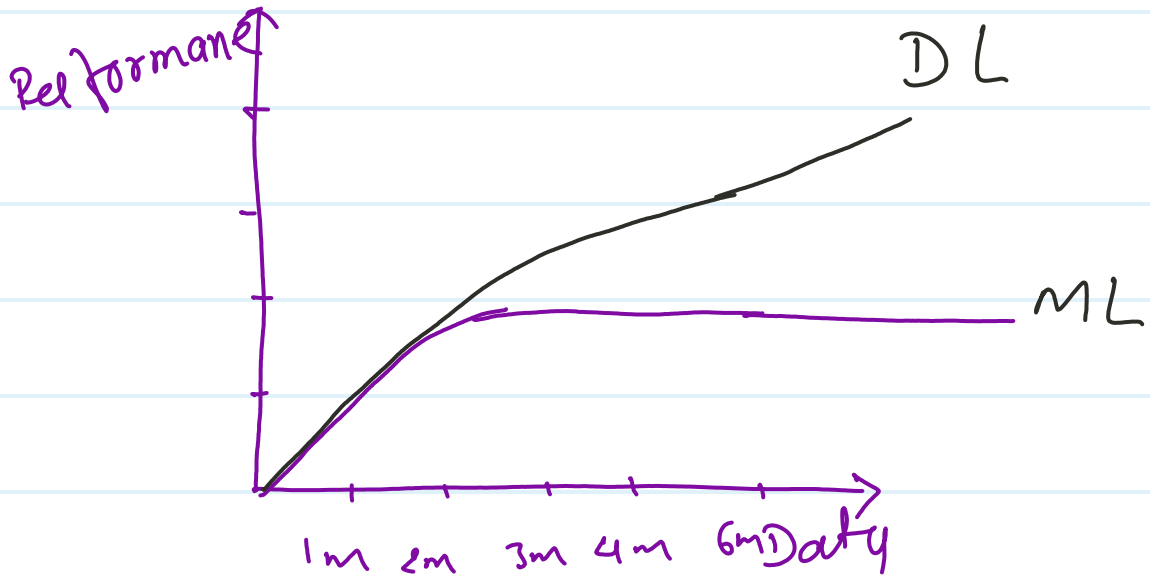
cloudera – structure data
unstructure data

2015 – Data science ✓

Research – DL / Fast

ML – CPU

DL – GPU Nvidia ↓ Price
AMD



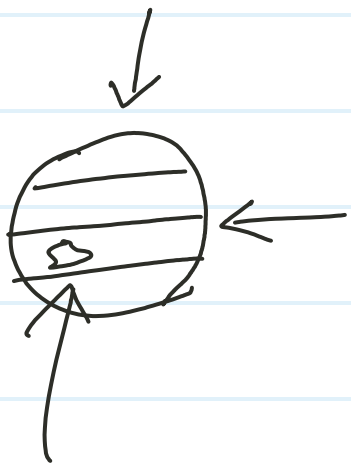
① Hardware (GPU)

② On huge amount of data we can make better model

③ Deep learning is been used in many domains

X-Ray - 2D - ML

MRI Scan - 3D - DL



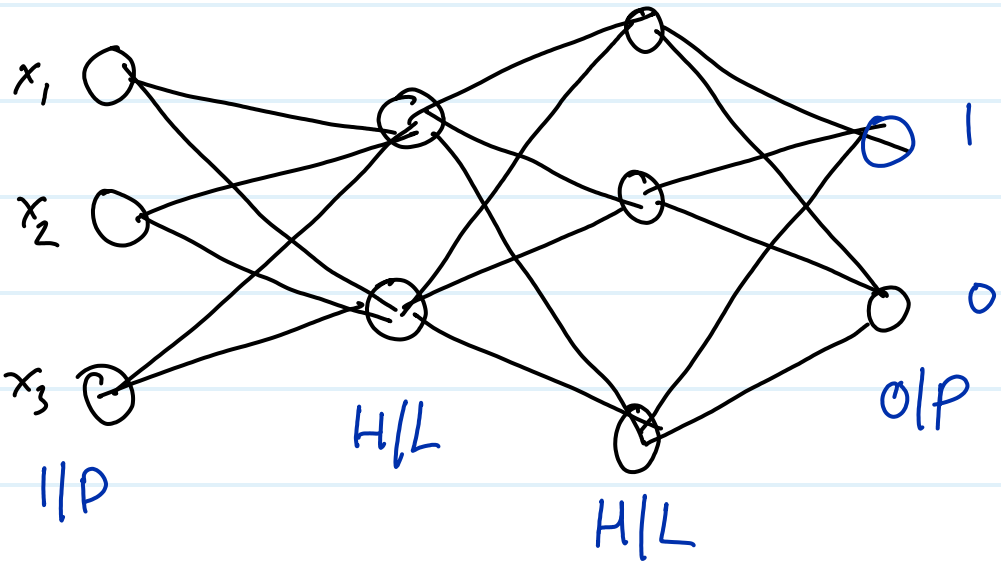
ML	vs	DL
① Subset of AI		subset of ML
② work-well on small to medium size data		work well large amount of dataset
③ manually select and extract feature		Learn feature automaticall during training
④ model - LR/DT SVM/ RF		CNN / ANN / RNN transformation
⑤ CPU		GPU
⑥ Fast training		Slower training
⑦ Good Accuracy on tabular data		Higher accuracy on unstructer data image / Text / voice etc.

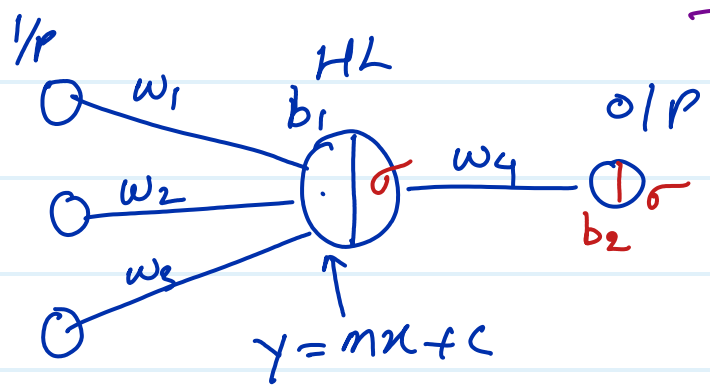
⑧ Recommendation system / fraud detection personlee system

Image detection
Text translator
voice command

Deep learning

Neural Network





single unit neuron

Perceptron

① ANN – Artificial Neural N/w

It works on tabular data like ML

Regression / classification / clustering
LR / SVM LR / DT K-means

② CNN – Convolutional Neural N/w
CV – Computer vision

It works on data like image / video frame
VGG, Masked, yolo, Detectron

③ RNN – Recurrent Neural N/w
NLP or Time series
voice

It works of Time series data and text data

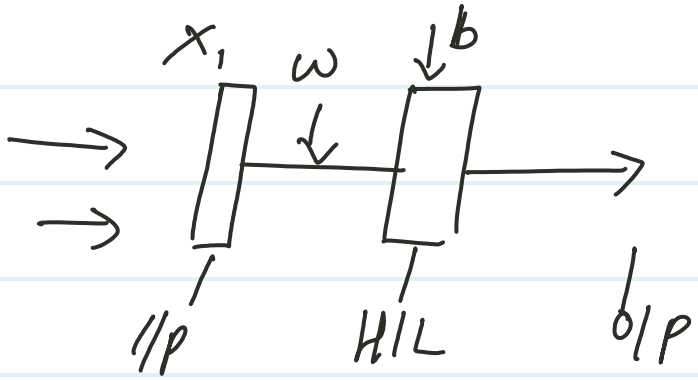
[LSTM RNN, Encoder decoder, RNN GRU, BERT]

Important key elements in the DL

1. Neural N/w
2. Perceptron
3. Layes [I/P | O/P]
4. weight
5. bias
6. Activation function
7. Loss function
8. Forward propogation
9. Backward propogation
10. Optimizes
11. Epoch & Batchs
12. Learning Rate
13. Regularization
14. Dropout
15. weight initiliser
16. iteration

Neural N/W

1. I/p layer
2. Hidden
3. output



Single Neural N/W