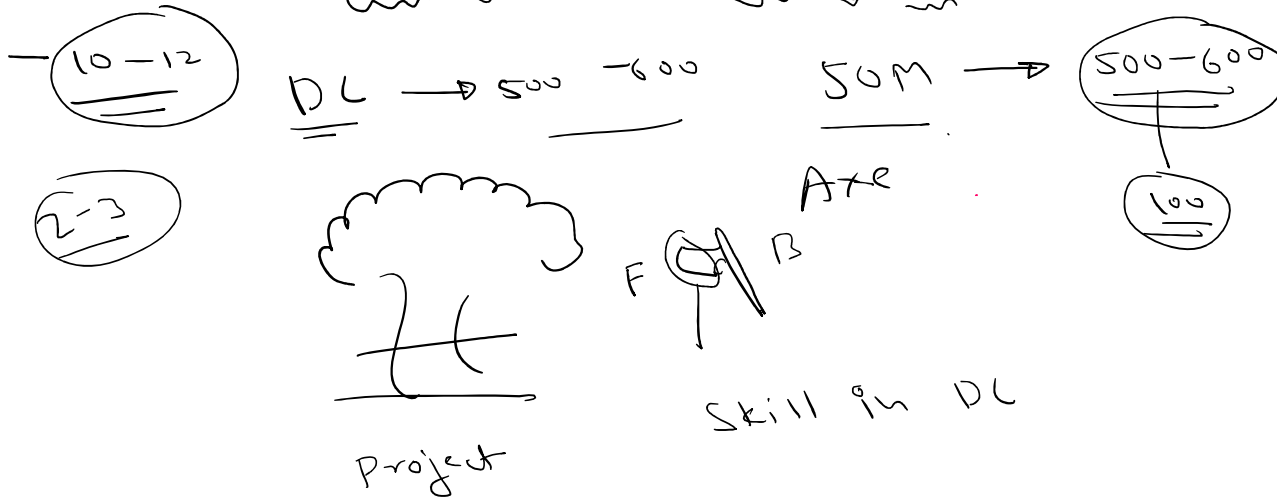


Deep learning Day-1



* By the end of this session you know

- (1) What is neuron? ✓
- (2) What is Neural Networks (Artificial Neural Network) (ANN)
- (3) How to work with Neural Networks?
- (4) How to generate Neural Networks?
- (5) Hyper parameter tuning of NN.
- (6) How to use keras and tensorflow to generate NN.
- (7) What are the different applications of NN. ✓

* Main objective of Deep learning

To build an AI system capable enough to predict and to take decision on the behalf of human being.

— Calculator

$$\boxed{} \begin{array}{c} + \\ - \\ \times \\ \div \end{array} \boxed{} = \underline{}$$

→ Machine learning ✓

Independent variable

Dependent variable

	x_1	x_2	x_3	x_4	y
(1)	100	-1	300	500	Cat
(2)	300	-0	100	150	Dog
(3)	101	-1	320	520	Cat

1 Lakh

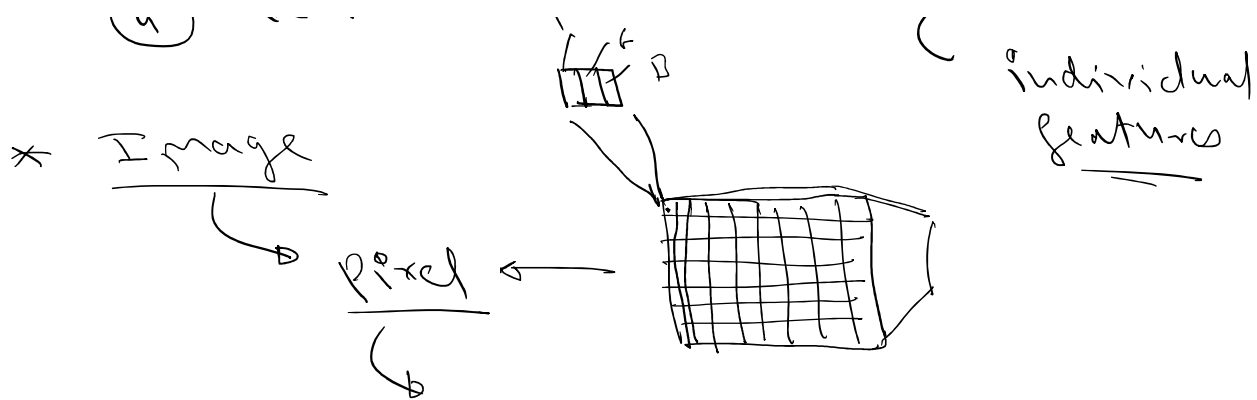
* Draw back of machine learning

— it is only applicable on structure data

→ Deep learning is applicable on unstructure data.

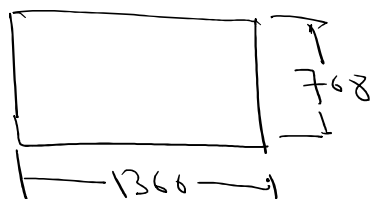
* Types of unstructure data

- (1) Text → 200 to 300 sentences
 - (2) Images
 - (3) Audio
 - (4) video
- 10,000 word
individual



SD, HD, Ultra HD Resolution \rightarrow Count of pixel

15 inches \rightarrow Resolution \rightarrow 1366×768

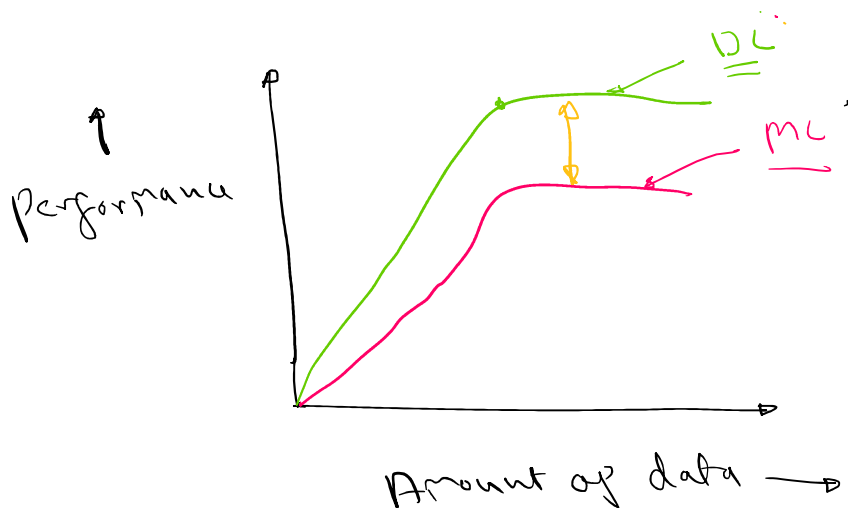


1366×768
10 Lakh

10 Lakh feature.

\rightarrow in Image data each pixel act as a individual feature.

* Performance graph between ML and DL

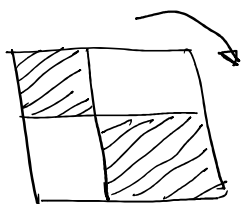


* ML is suitable for Simple data.

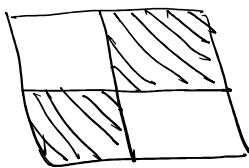
* DL is more suitable for complex data.

* ... is suitable for ...

* DL is more suitable for complex data.



(a)



(b)

Cardinality

* Use of unstructured data

- (1) Text data (NLP) → RNN, LSTM, (3.5)
- (2) Image data (CNN) → ANSV, CNN
- (3) Audio data (Audio Analytics) X

Frequency



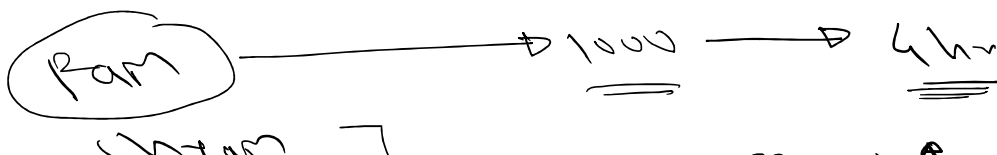
(4) Video analytics. X

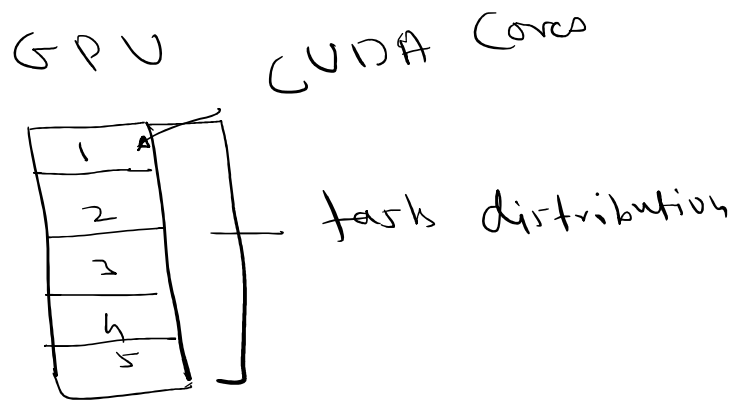
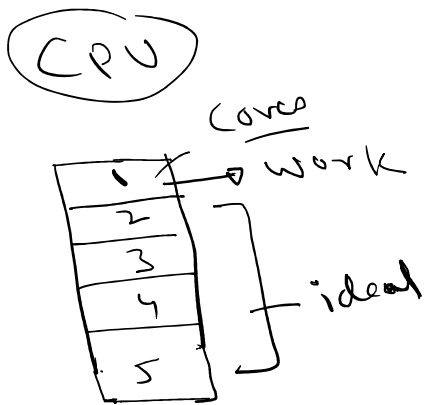
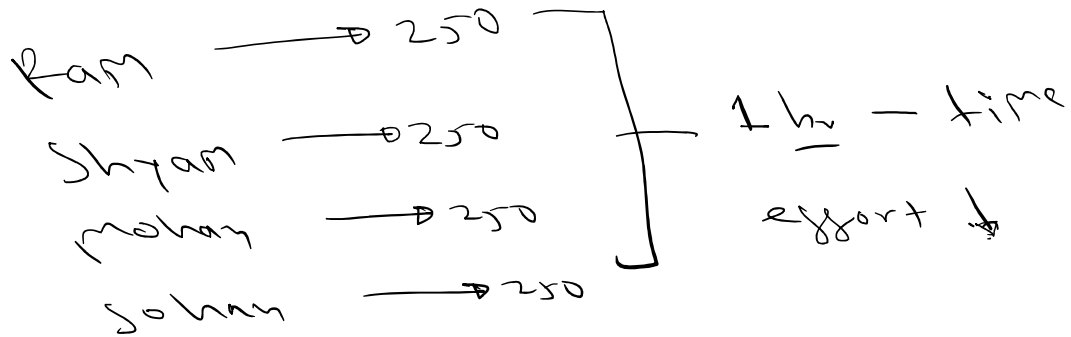
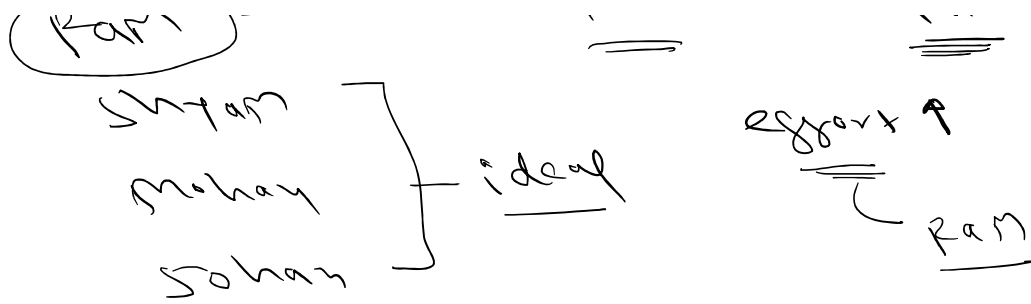
* CPU vs GPU

Central processing unit

Graphical processing unit

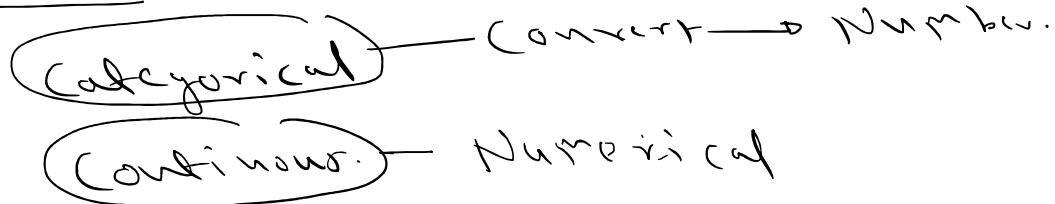
→ TASK → 1000 cloth wash





parallel and distribution processing

* Cardinality



→ One hot encoding -

→ label encoding

good . better best -

→ label encoding (order)

→ good . better best
0 1 2 3

	x_1	$x_2 - A$	$x_3 - B$
Category	A	1	0
B		0	1
D		0	0
C		0	0
E		0	0
		1111	1000

Category - 500
 A — other Cont% (Err% 0, 1)
 B
 C
 D

* Curse of dimensionality

Column → Curse of dimensionality

Cardinality
row