January - 03 - 2024

(Python) ✗

stats:

→ desc, infer

* central, chi-square

* z, t, ANOVA

* hypo, correlation

→ sampling.

SQL:

→ Joins - left, right, inner, self

→ Subquery

→ procedures, views

→ trigger, trans

→ window function ✗

Power BI:

→ data onboarding.

→ Data preprocessing (powerQuery)

→ charts, buttons,

→ data modeling. DAX ✗

ML:

Regression - linear regression, Randomforest regressor

classification - tree Based, Distance Based, Boosting, Probabilistic

clustering - hire, k-means / PCA

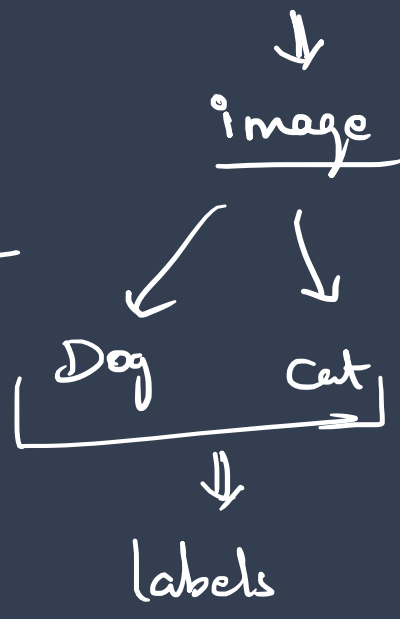
⇒ AI, ML, DL, DS

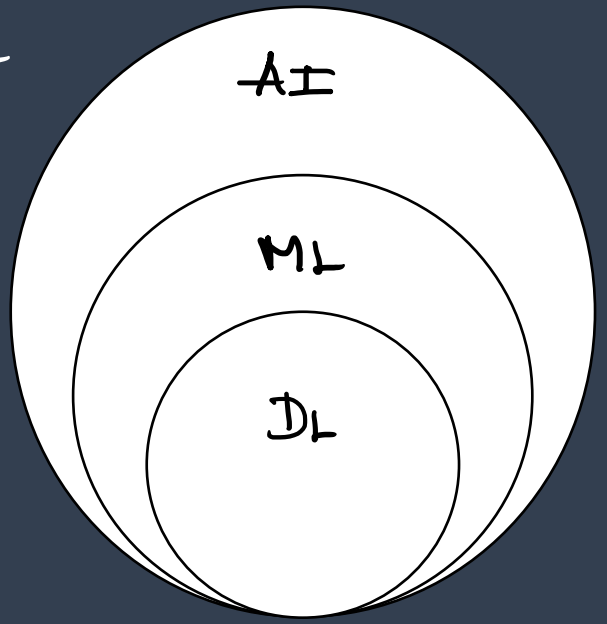
AI - Science that enables machine to mimic human.

ML - Art to acheive AI by algo that are trained with data.

DL - Type of ML that is inspired by human brain.

tail length	eye color	weight	height	Nose length	eyebrow length	Dog / Cat





Machine learning:

Architecture of Algo

selecting relevent columns

Data → feature extraction ⇄ train the model ⇄ performance metrics → Accuracy, Auc, Roc, Recall, ...

(tabular)

Deep learning:

{feature extraction & model training}

Data →  → Performance metric

{tabular, image, video, audio, pdf, text, doc....}

(Black box)

Road Map — Deep learning.

{ Neural Network , loss function , Gradient Descent , SGD , Adagrad , Adam }

- { Artificial Neural Network } (ANN)
- { convolutional Neural Network } (CNN)
- { Recurrent Neural Network } (RNN)

ANN → Tabular data (Regression, classification, clustering)

CNN → image, (video → frames of images.)

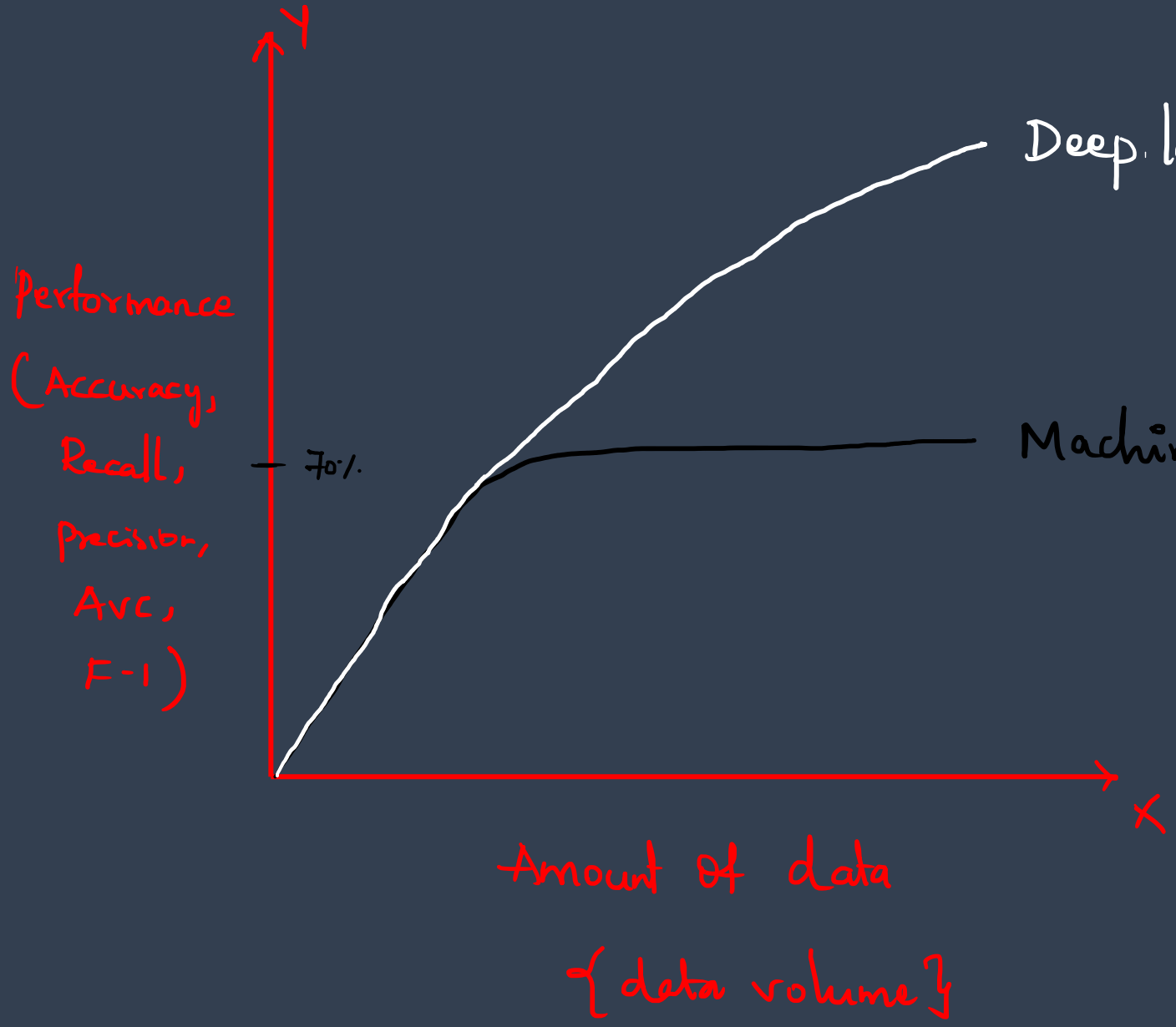
* Image classification. (male / female, cat / Dog)
* object detection. (people, animal)
* facial Recognition. (Suresh, Santosh, Arya)
* segmentation, object tracking.

image ⇒ pixels
⇓
(vectors)
⇓
number

RNN: → text (doc, pdf, txt, csv, xlsx), time-series

* NLP (natural language processing)
  - → sentiment Analysis.
  - → saracsm detection.

→ text summary
→ GPT-1, GPT-2, GPT-3, BARD



Reason for DL:

→ Exponential growth in Data

→ technology upgrade

GPU → Tesla T4

↑

Collab

40 - hours : (20 - classes)

⇒ 20 - hours (10 - classes) → ANN, CNN (upto 24 hours)

⇒ 20 - hours (10 - classes) → NLP (min 16 hours)

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homework :

Who is Geoffey Hinton ? What is his contribution to Artificial Intelligence ?