

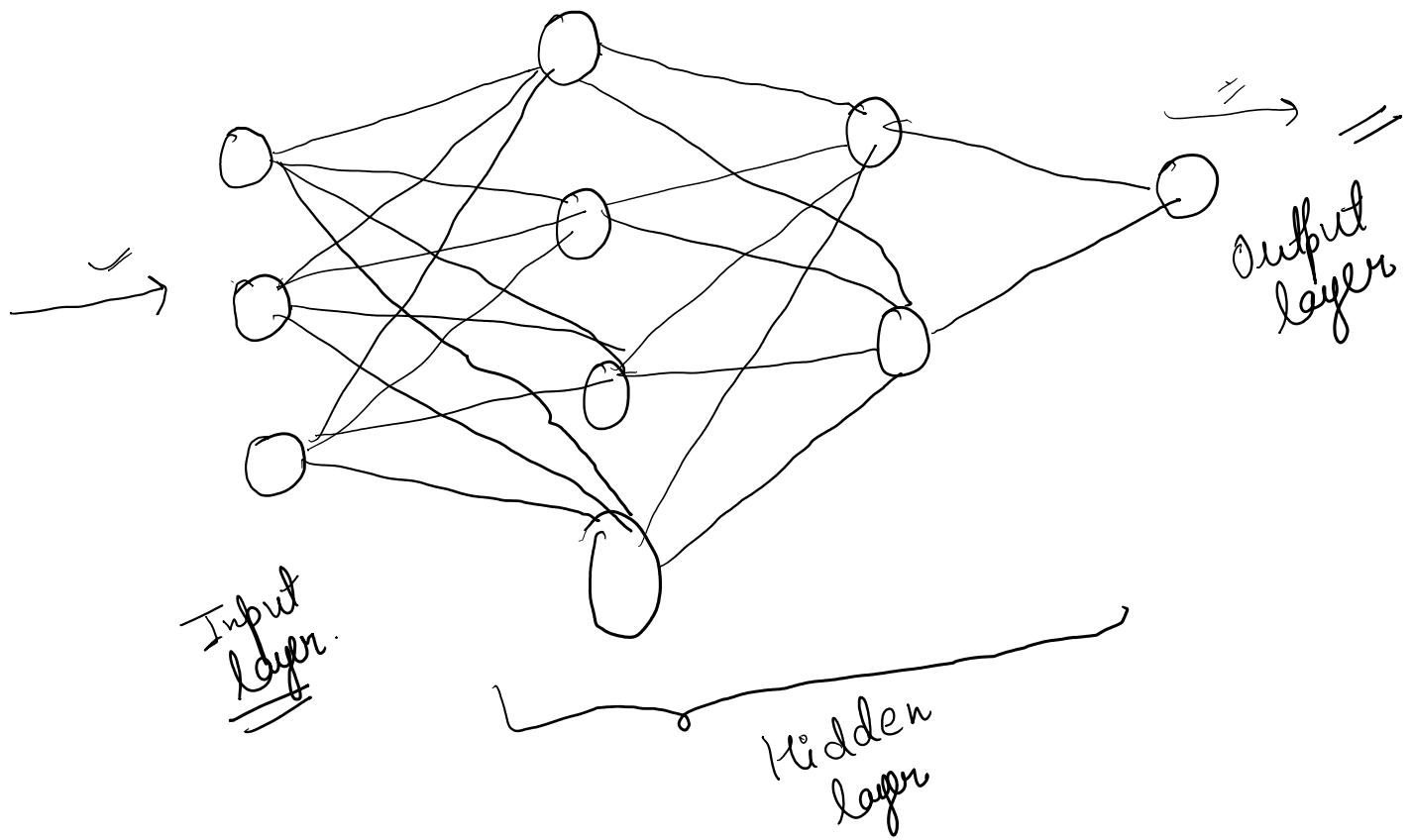
WHAT YOU WILL STUDY IN TODAY VIDEO ?

Done
/ /

- ▶ What is Deep Learning ? ✓ *Complete*
- ▶ Deep Learning VS Machine Learning ✓
- ▶ Throughout History of Deep Learning

① Advanced form
of ML

② Subset of ML
Copy of human brain



Aspect

feature engineering

Data types | Data complexity

Computational Power

Interpretability

Training data

Accuracy wise
(complex problems)

✓ ✓ ML

Manually

Tabular data

how resources
(Normal PC)

Easy to understand

low data size

low accuracy

✓ ✓ DL

Automatic

Tabular data

Images

Textual data

High CPU
High GPU

Black box

large data reqd.

high accuracy

Conclusion

For data once

→ ML

① less data
less resource
tabular data

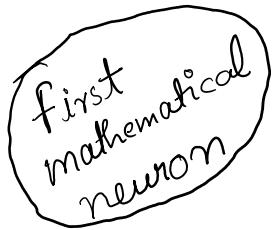
→ (ML) //

② large data
high resources
images, textual
real-world problem

→ (DL) //

Stage 1 :- Early Days (1940 - 1980)

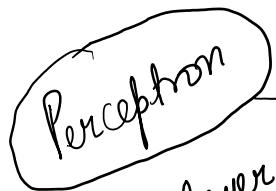
1943 :- first concept of DL



Warren McCulloch

Walter Pitts

1958 :- first AI model



frank Rosenblatt

ANN
(tabular data)

single layer neural network

Basic classification
tasks

1970 :- Dark Period for DL
(Downfall)



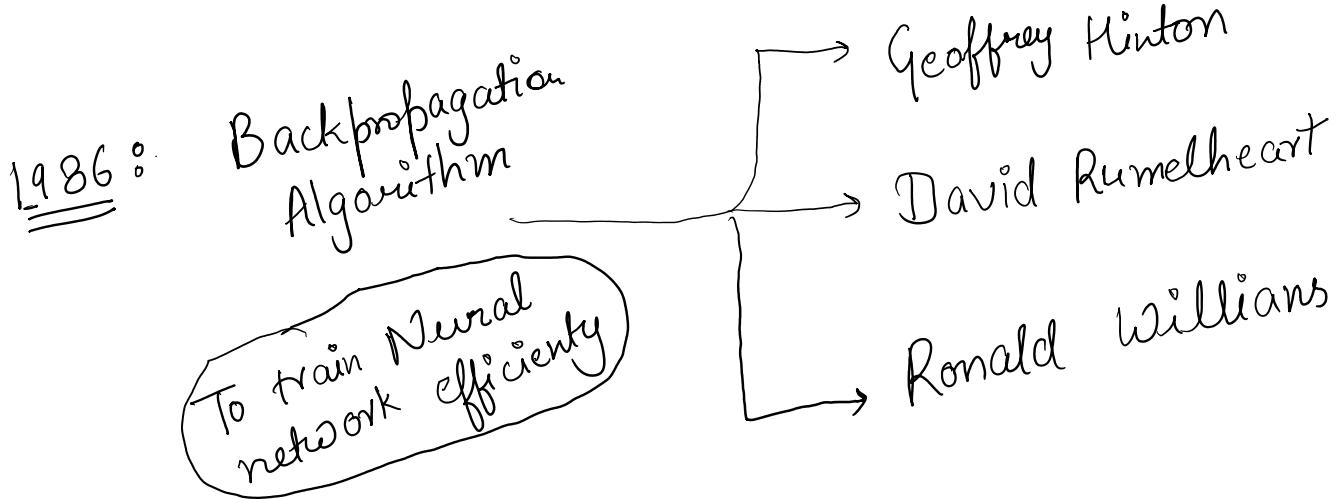
Interest ↓
funding ↓

Stage 2 :- Comeback Era (1980 - 1990)

1982 :- RNN were introduced

(Recurrent Neural Networks)

→ textual data



1989 :- CNN (Convolutional neural network) → images

first CNN → Yann LeCun
recognize handwritten digits (0-9) =

1997 :- LSTM were introduced → long short term memory

Special type of RNN

{ Vanishing Gradient Problem }
fix:

Stage 3 : DL Boom (2000 - 2020)

2006 :- Geoffrey Hinton coined term "Deep learning"
↑↑ //

=

coined

Interest ↑↑
fundings ↑↑

=

2012:

famous

AlexNet

CNN model

win:

ImageNet

Alex
Krizhevsky

Geoffrey Hinton

Ilya
Sutskever

//
Google
Facebook
Microsoft

2014:

① GRU (Gated Recurrent Unit)

Simple
faster

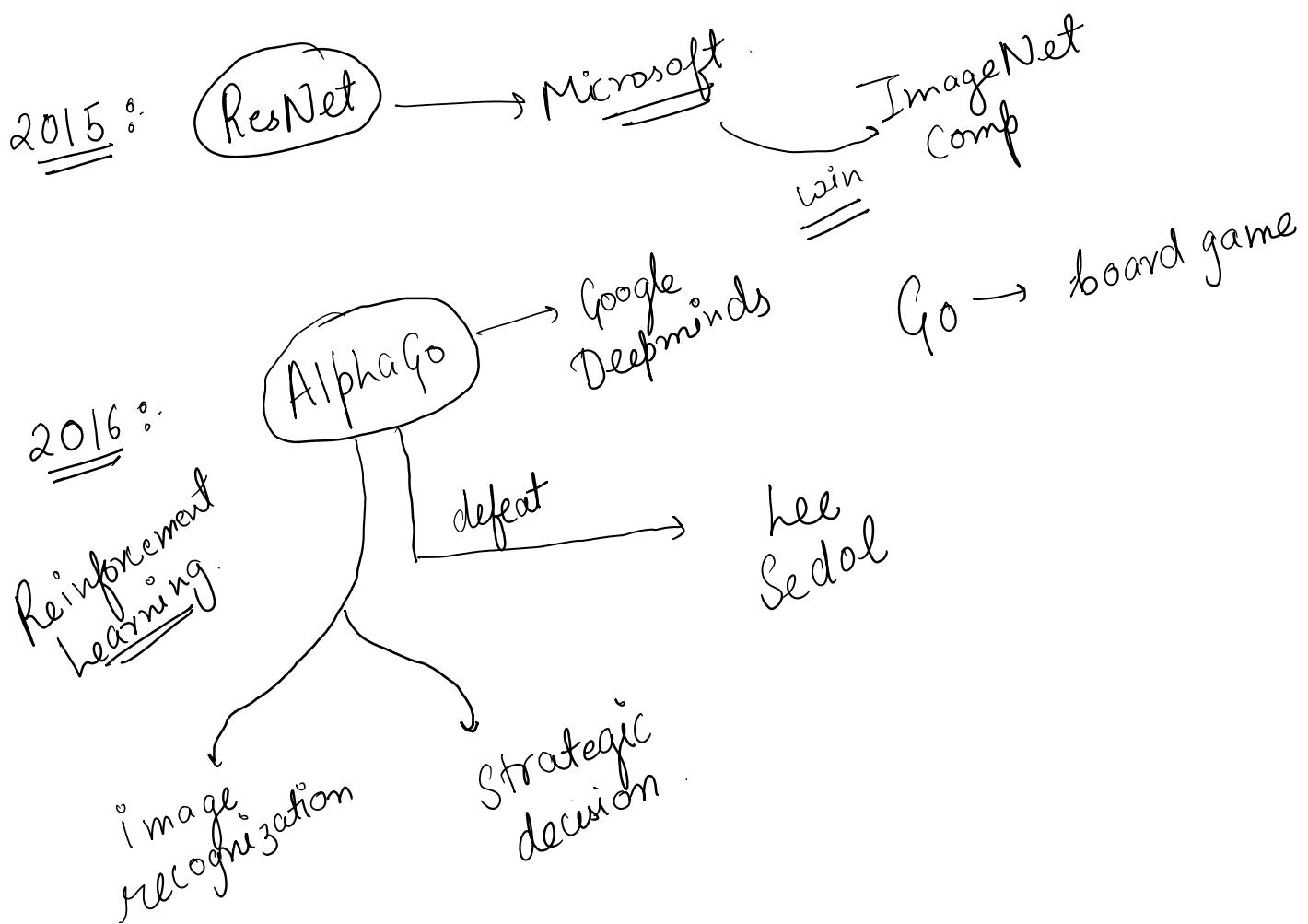
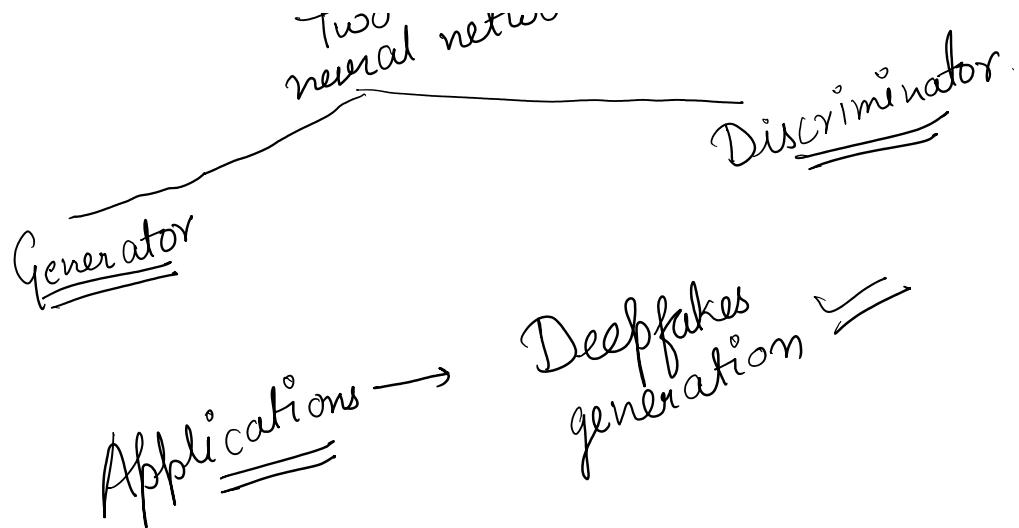
translation

Machine
Chatbots

② GAN (Generative Adversarial Network)

Two
neural networks

generator.



- 2017: Transformers
- ① All words at once (faster)
 - ② Better memory
- ... fa ✓

② Better memory
③ Large data \equiv

2017 \rightarrow Google
Self Attention
Mechanism
Model

2018 \rightarrow Google
(BERT) \equiv

Open AI
(GPT-1) \equiv

2019 \rightarrow Open AI
(GPT-2) \equiv

Stage 4: DL Revolution (2020 - Current)

2020 \rightarrow Open AI (GPT-3)
 \downarrow
Code generation \equiv

2021: DALL-E
& other models (Images from text)

2022: Open AI launch ChatGPT
(GPT-3.5) \equiv

Llama
(Meta)

Gemini
(Google)

Gwen
(Aibcbs)

~ made ~)

2024: Reasoning Models = O1 vs GPT-4.

2025: DeepSeek → OpenSource model
Reasoning Model