Lecture 24 : Deep Learning

— review of previous lectures

— Discriminative AI (Supervised & on Supervised)

(input → discriminate ⇒ output)

— for unstructured data — certain problems

conventioal ML fail ↵

⇓

solve ⇒ [Deep learning] → sub field
of ML

(روشن، کہ 3 ہیں. میں رنگ میں مشین رنگ نئی وغیرہ - اُسے)

(Neural Network) ہے آ ٹی ہے - تو اُس کر

- ہے تک نری اسلام

ReLu (famous neuron ⇒ gives max no. b/w 2 number)

• Neuron (math function)

• Neural Network (collecto of neuron -- arranged
hierarchly)

input → hidden → output)

Deep Learning
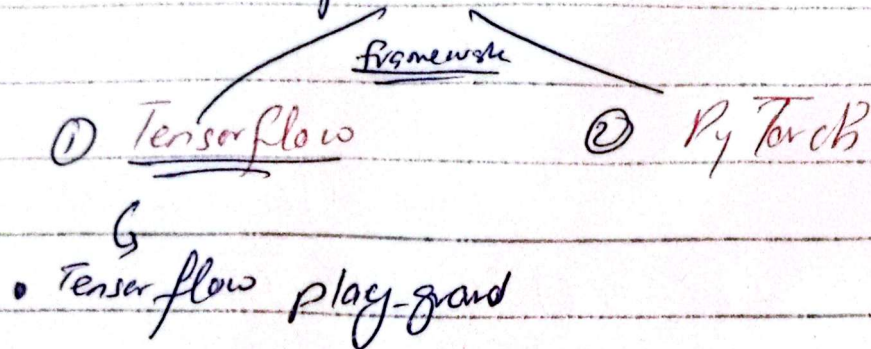
↳ sub-field of ML where we study about
Neural Networks

↳ helps us in NLP, Computer Vision,
image processing & speech
and all other application.

• Different type of algorithm available for neural
Network

⇒ Deep Learning in very vibrant field.

⇒ All recent advancement in AI due to neural networks.

✓ How deep neural network works

✓ How to implement

framework

① Tensorflow   ② PyTorch

• Tensor flow play-ground

Machine learning ⇒ programming where data is more important than logic.

Data can in be form of features
Traing on data

• Thousands of machine learning models avail 65?

ML = {
→ needs features
→ need structured data
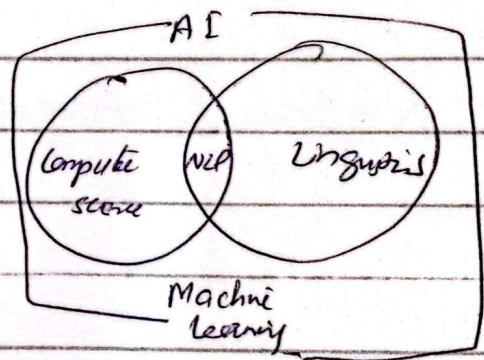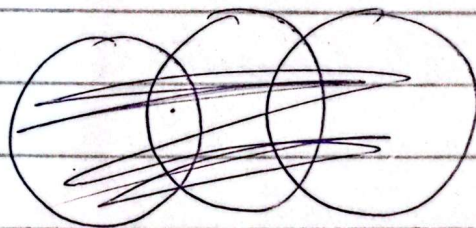→ better feature better model
}

Deep learning

↳ input → output

no needs of human intervents for extracting features

enstructed data $\xrightarrow[\text{(math fnts)}]{\text{neuron}}$ output (numbers) → Then that will be used as input for other neuron

So actually successive layer of neurons is exactly features

NLP (Natural Language Processing)
discipline of building machines that can manipulate human language.

AI

Computer scene | NLP | Linguistics

Machine learning

we case (examples)
(i) sentiment analysis
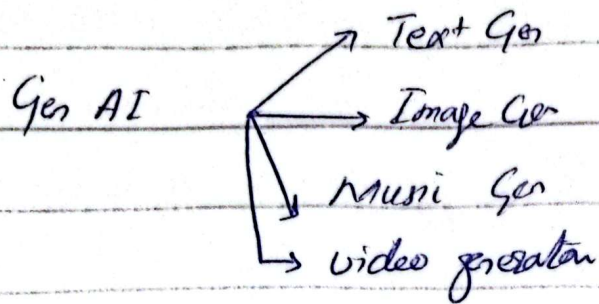(ii) summarization
(iii) Question Answer
(iv) chat Bot
(v) information Retrieval

Generative AI

Earlier: discriminative AI
Now: Generative AI

Type of AI that creates new content.

☆ Smart Use of Time

Gen AI → Text Gen
→ Image Gen
→ Music Gen
→ Video generation

Large Language Model (LLM)

- type of AI that can recognize & generate Text.
- Trained on huge data.
- are build on ML ⇒ neural network called Transformer

Retrieval Augmented Generator (RAG)

Technique for enchancing the accuracy & reliability of gen AI models with facts fetched from external source.

⇒ story concept of RAG.

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