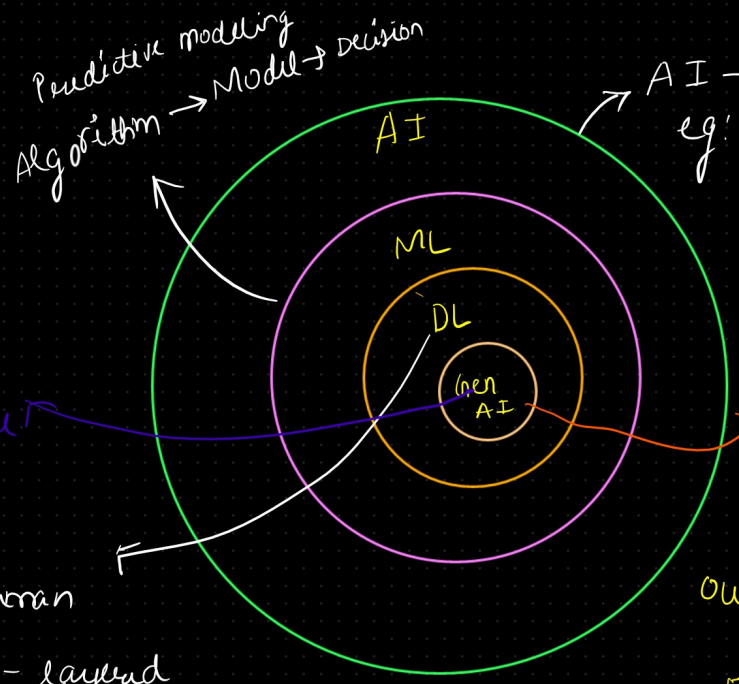
Deep Learning

Introduction to Deep Learning

→ Deep learning is a subset of machine learning that utilizes artificial neural networks with multiple layers to learn intricate patterns and representations from data.

→ For instance, in image recognition, a deep learning model can be trained to identify objects like cats or dogs by analyzing numerous images and learning the distinguishing features of each.

AI Vs ML Vs DL Vs GenAI Vs DS



Predictive modelling
Algorithm → Model → Decision

AI → Smart application
eg: Self-driving
(Tesla)
Robots

Data Science

New data generate based on sample data
Output → Images, Videos
Text etc
Eg → Chat gpt
Google Bard

Mimic the human Brain (Multi-layered Neural Network)

Eg → ChatGpt
Facial Recognition
Recommendation

Main Aim: To develop a AI Application

ML is a subset of AI
DL is a subset of ML
GenAI is a subset of DL

Deep learning → Mimic the human Brain
↳ neuron → Artificial

use case: → Facial Recognition

Virat Kholi
↓
Face
↓
Recognition
↓
Mind
↓
Brain
↓
Neurons

I phone
↓
Phone Lock
↓
Face Lock (Face ID)
↓
Capture → Image
↓
Recogn
↓
Phone Lock → Face
↓
Phone Unlock

→ NLP
→ Computer Vision
> Gen AI

∴ Gen AI is a subset of DL

Social media → Facebook, Whatsapp, Insta
↓
Account Create

Amazon → Iphone
↓
Facebook → Recommendation
↓
Iphone

Data → Exponentially ↑↑
[Big Data] → Efficiently

Data

SBI → 50 CR → Account → Data use

credit card

Loan

NVIDIA → GPU → Hardware

	ML	VS	DL
Feature Engineering	Manually		Automatically → Feature Select Important Feature
Model complexity	Data ↑↑		Neural Network
Performance	↑↑, complex ↓↓		NLP, computer vision =

Speech Recognition

Google Translator

NLP

Siri

Google Assistance =

① Artificial Neural Network (ANN)

→ tabular Data → Image Reog.

② Convolutional Neural Network (CNN)

→ MNIST → 4 3 2 1 9

Object Detection, Image classification

(3) Recurrent Neural Network → NLP
↓
Speech Recog.

(4) Generative Adversarial Network
(GAN) → Gen AI
↓
huge topic

prompt → Images