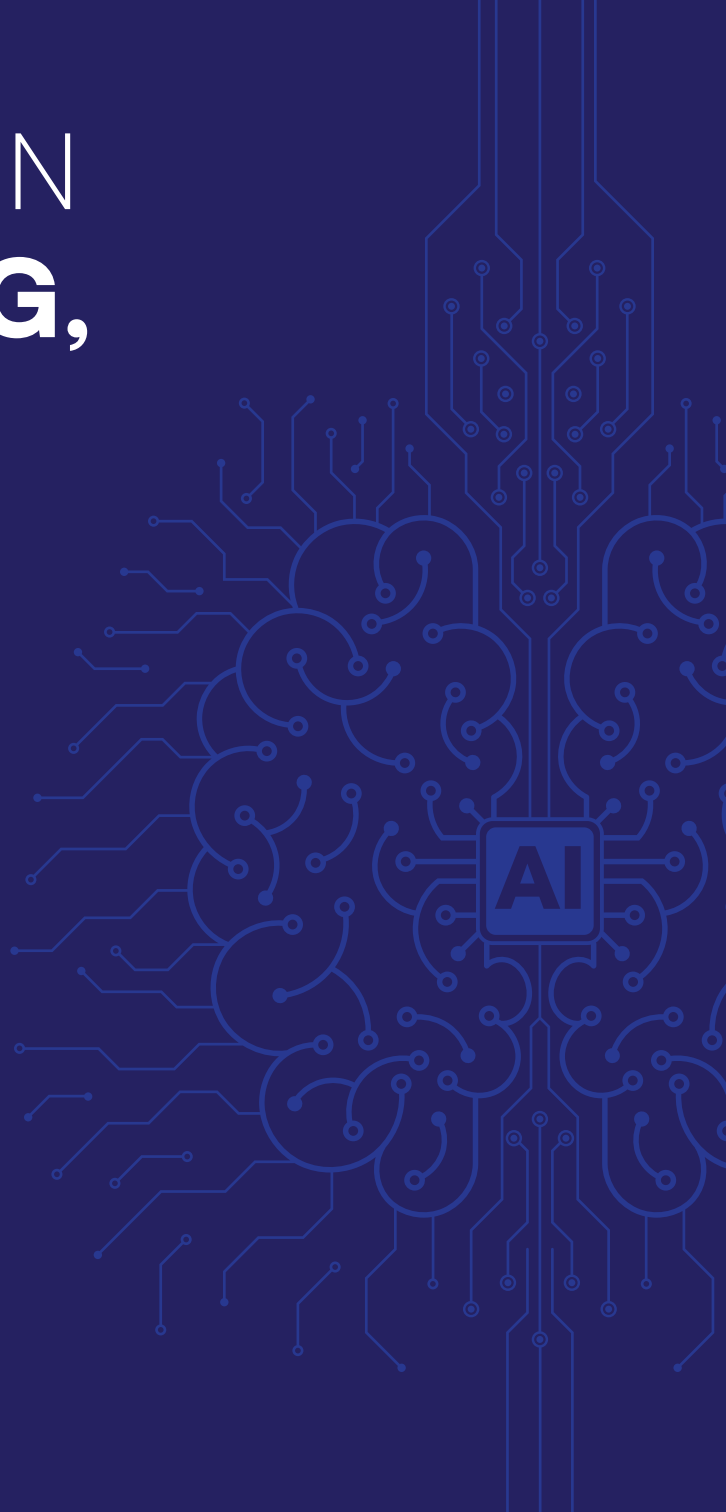
DIFFERENCE BETWEEN **MACHINE LEARNING, DEEP LEARNING, & GENERATIVE AI !**



by Zubair Ahmed

Machine Learning (ML)

A subset of AI that uses algorithms to learn from data and make predictions or decisions. It often requires manual feature engineering and works well with structured data.

Deep Learning (DL)

A specialized ML field using multi-layered neural networks to automatically extract features from large, unstructured datasets. It excels in complex tasks like image and speech recognition.

Generative AI

A subset of AI, often built on DL, focused on creating new content like text, images, or audio. It uses models like GANs or transformers to mimic human creativity.

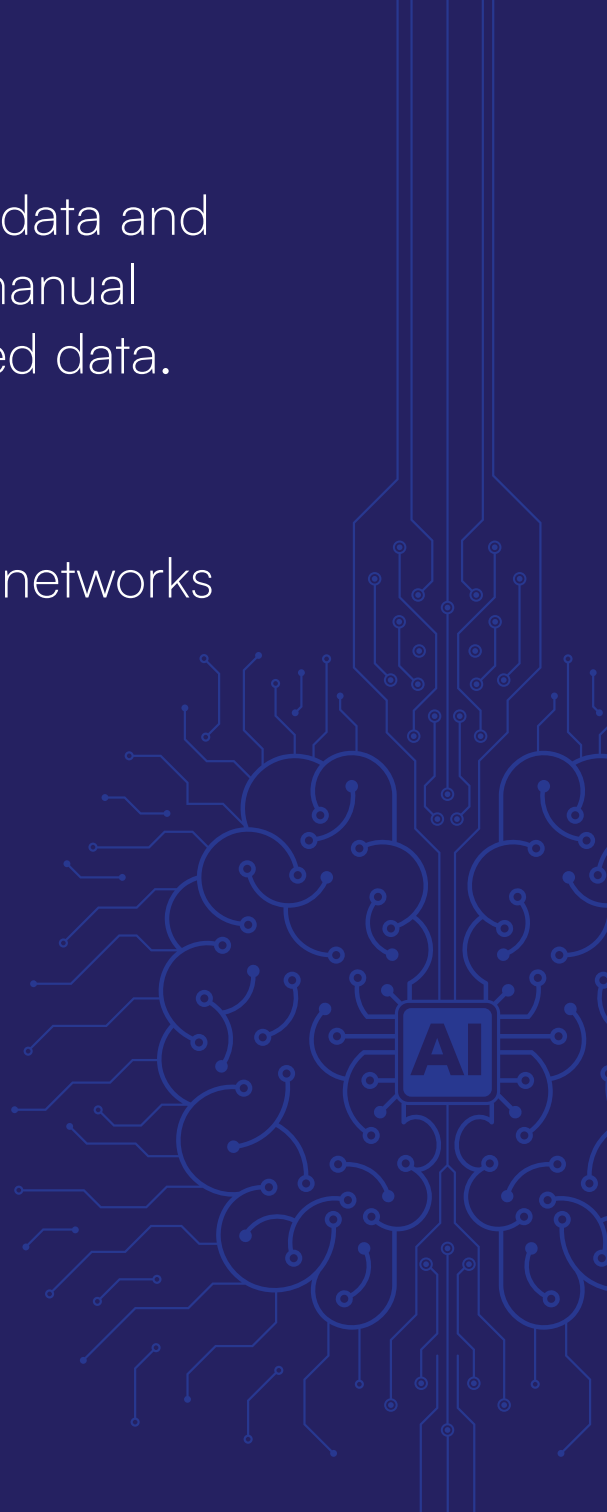


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Table of Differences

Aspect	Machine Learning	Deep Learning	Generative AI
Definition	Algorithms learn from data to predict/decide	Neural networks model complex patterns	Creates new content mimicking data
Data Needs	Moderate, structured data	Large, unstructured data	Large, often unstructured data
Feature Engineering	Often manual	Automatic	Automatic
Compute Power	Moderate	High (GPUs/TPUs)	Very high (cloud-based)
Output	Predictions, classifications	Complex pattern recognition	New content (text, images, Videos, etc.)
Example Models	SVM, decision trees	CNNs, RNNs	GANs, transformers (e.g., GPT)

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Artificial Intelligence

is a set of technologies that enable computers to perform a variety of advanced functions.

Machine Learning

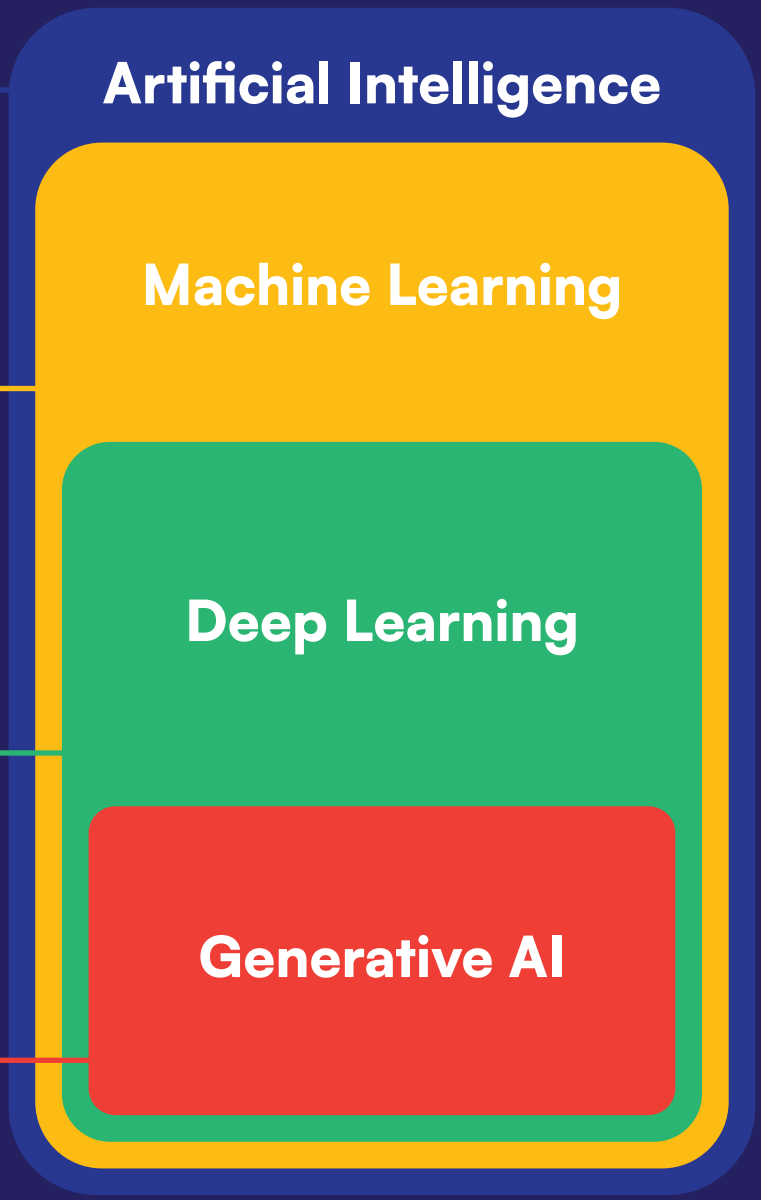
Is a branch of AI that focuses on the creation of intelligent machines that learn from data. Another very well know branch inside AI is Optimization.

Deep Learning

Is a subset of Machine Learning methods, based on Artificial Neural Networks. Examples: CNNs, RNNs.

Generative AI

A type of AI that generate data that is similar to the data it was trained on. Examples: GANs, LLMs.



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THANK YOU