

# Breaking the Buzz Words of AI Field

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AI : Simulating any tasks that needs Human or Human-like Intelligence through any program is called Artificial Intelligence

We have lots of words in this industry like

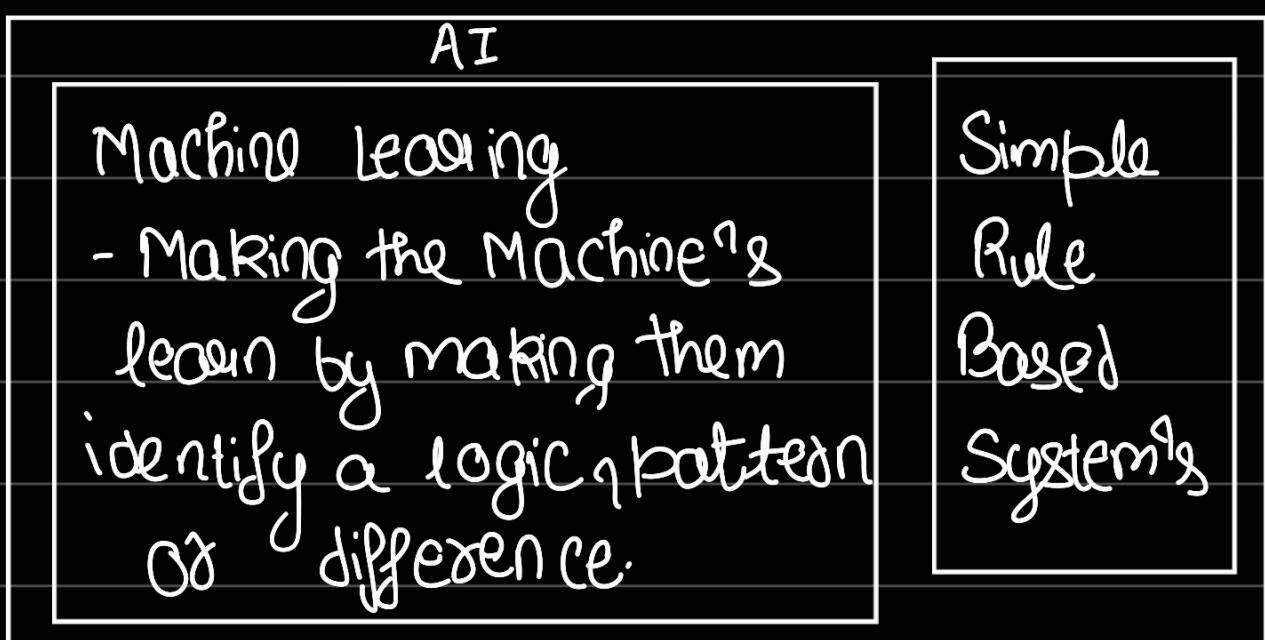
Machine Learning

Generative AI

Deep Learning

Data Science

We will understand these step by step & know their hierarchy using Venn Diagrams



While Developing AI Systems we use ML when

- We need the system to learn from data or improve over time
- The rules are too complex to write manually
- Each input can have different cases

and we use Simple - rule-based Systems  
when the logic is clear & doesn't change much

Example: Traffic control systems that work on simple logics like

- If 30 seconds passed at current light more it turns the adjacent light green

Now, As we covered till here. we will now cover ML in detail.

## MACHINE LEARNING



Statistical ML / Classical ML



Deep learning

## Statistical / Classical ML

- We use this when we have one type of Structured Data

In this method, we have techniques to infer patterns from the Data like

- Linear Regression : Predict house prices based on size, no. of rooms etc
- Decision tree / Random Forest : Classify whether a customer will buy or not

But, The Big Guy Deep learning enters the space when

- When we have a large amount of unstructured Data with more than one datatype (images, audio, text)

Deep learning works on a mechanism of neural networks that is basically a computer model inspired by human brain that learn patterns from data by adjusting connections between layers of simple units called neurons

- So Basically Deep learning learns patterns automatically without needing manual feature design

lets understand a case of StatML vs Deep Learn

Case: whether the image is a dog

StatML

You need to describe the image before giving it on things like

- No. of brown pixel
- No of legs, Tail

Deep learning,

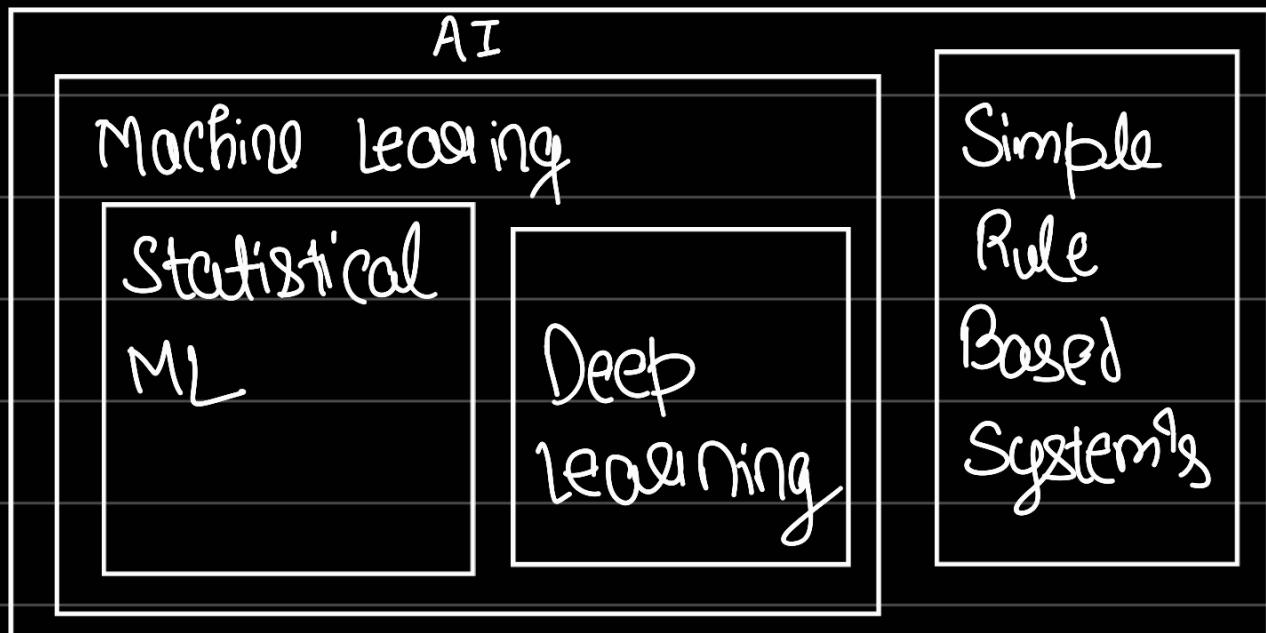
Here you just need to gives a large amount of dog photos

-Design of claws

Using those all it will create a model & gives the ans on that calculation

By studying those photos the model figures out that the image is dog or not all by itself

So, Now the Venn diagram becomes



In Deep learning we have a lot of Neural Networks like

→ CNNs

→ RNNs

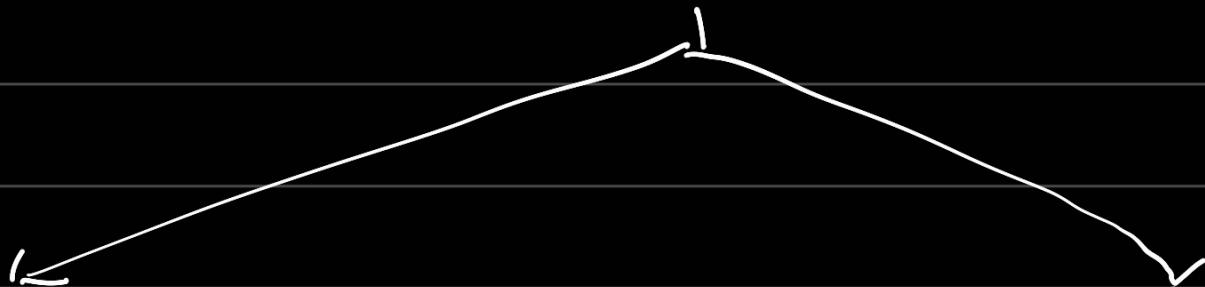
→ Transformers

Using Transformers, the AI would get some crazy thing called as

## Foundational Models

These were large AI models trained on massive amounts of diverse data, which can be adapted for many different tasks.

### Foundational Models



Discriminative Models  
(Classification Model)

Generative Models

Classification Models predict labels or classify inputs into categories

Example: Spam or Not Spam, Sentiment Analysis

## - Generative Models

These models generates new content using user instruction said as prompt acc to user needs

All the LLMs comes under these Generative Models as they are designed to

- generate text
- continue conversations
- summarizes text

We have many types of Generative Models like

Text to Text : GPT 3.5

Text to Image : Dalle

Text to Video : Sora, Veo

Text to Speech : Eleven lab, Deepgram

All these generative Model's comes under the Gen AI Field inside the Deep learning Architecture

- Now the Venn Diagram becomes

Now last thing is left that is Data Science

Data Science is basically using all these AI tools with some maths like Prob, Stats and calculus to get some data-driven insights useful for decision making

