

1.

Machine learning is a branch of artificial intelligence that develops algorithms by learning the hidden patterns of the datasets used it to make predictions on new similar type data, without being explicitly programmed for each task.

A computer program which learns from experience is called a machine learning program or simply a learning program.

Machine learning is used in many different applications, from image and speech recognition to natural language processing recommendation systems, fraud detection, portfolio optimization, automated risk and so on. Machine learning models are also used to power autonomous vehicles, drones and robots, making them more intelligent and adaptable to changing environments.

2.

when we talk about linear Regression we talk about relation between y and coefficients of features and degree of coefficient is still one and thus relation between y and coefficient is still linear

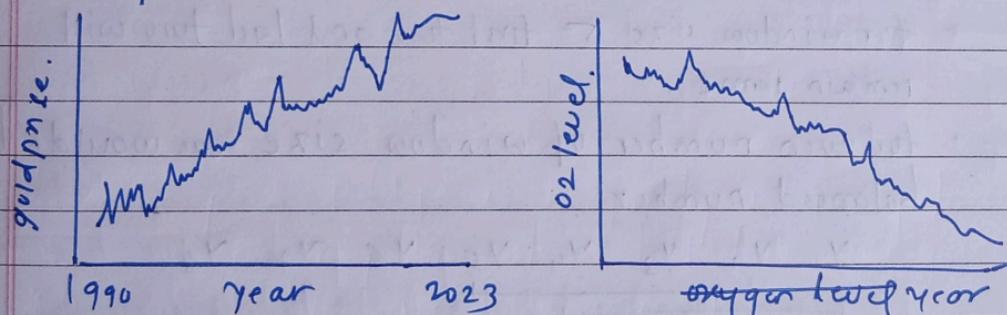
3.

- Time Series :- it is data which is index by time.
 . the most important part of time series is sequence.

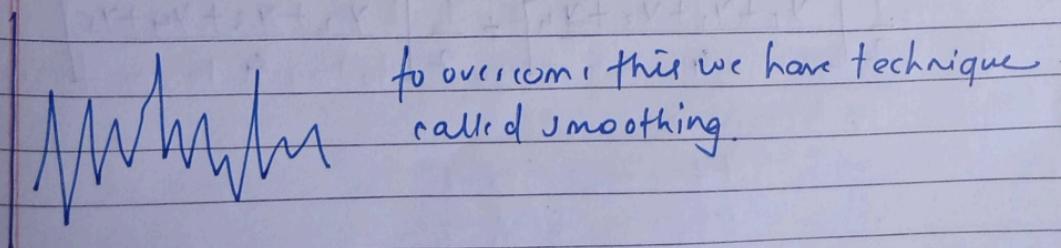
what we do with time series :- we capture the past data & based on that we predict for future this entire procedure is called forecasting

- A) plotting time series
- B) component of time series
- C) forecasting in time series
 - (1) Data based prediction
 - (2) Model based prediction

A) line plot :-



- line plot gives holistic view or overall view.
- line plot gives having understanding about long term i.e. for long term what happened to my data.
- often time line plot are difficult to understand.



4.

Model	when we can apply	what should be future prediction	hyperparameters
Simple	No trend	last possible local Avg =	1
Exponential	No seasonality.	all future prediction	
Double	only trend	last possible local Avg &	2
Exponential	No seasonality	changed trend	
Triple	both trend and local Average + trend +		3.
Exponential	Seasonality .	Seasonality.	

5.

