

21

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df.isnull().sum()

①

## Machine learning

machine learning  $\Rightarrow$  study of  
Human की तरह उसमें Human behavior  
or Decision making  
प्रैक्टिसे  $\Rightarrow$  3/12/23 (सिवंगी)

Traditional Programming :-

$\rightarrow$  Program लिखते हैं  $\rightarrow$  किए गए output

Machine learning  $\Rightarrow$  automated program

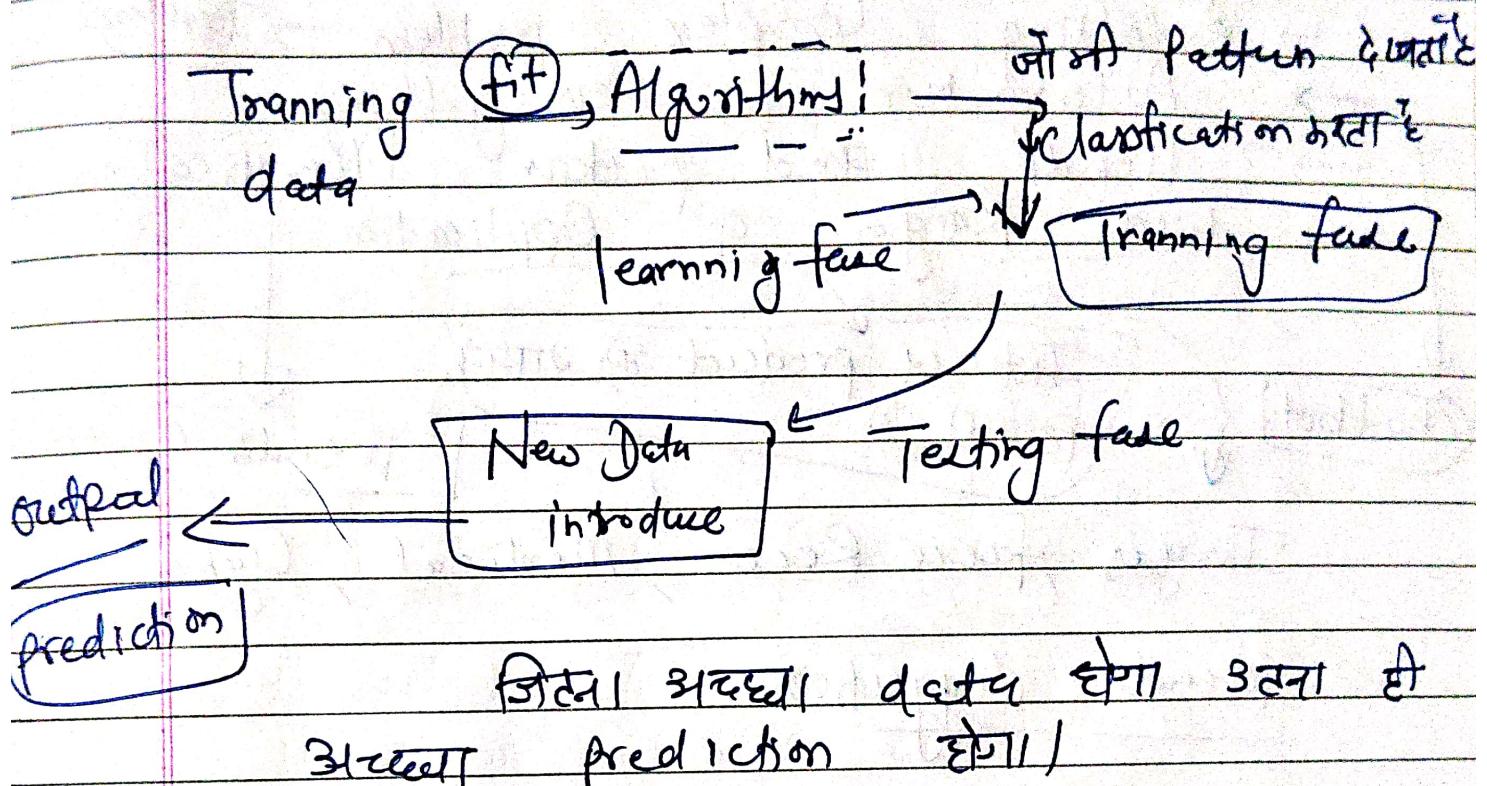
① input  $\rightarrow$  Data } logic or model  
② output - }

Ex:- e-commerce website ने आप का अद्वितीय product शोवॉल किया है।  
History  $\rightarrow$  (data)  $\hookrightarrow$

प्राप्ति data से लिया गया है।



How's it works →



→ Characteristics of Machine Learning →

Automated

① The Data Visualization → Machine is taught

not

② Precise Data Analysis → Accurate Data Analysis

③ Business Intelligence at Its finest

Data to Visualization

③ →

fact → data



## Advantage of Machine Learning

→ Redolving Complex problem → Problem

→ Automation for everything

→ Trends and pattern Identification

→ Wide Range of Application

↓  
Chatbot

Interest product को सिखा,  
प्राप्ति की

↓  
Trends & patterns

Images, face Reco, Medical, Cyber

forwards Suggestion,

## DisAdvantage

↓  
Quality data

i Data Acquisition → वहसु सभी data होता है

ii Highly Error Prone → (in Error, Nominal value)

iii Algorithm Selection → ये developer को बहुत उपयोग में लाते हैं और इनमें अचूकता विद्युतीय रूप से नियंत्रित होती है।

iv Time Consuming, Algo diff.

↓  
Cost of data

↓  
Algo कीटों में Time suff.  
मात्रा के



# Classification of machine learning

Supervised  
Machine  
(learning)

Label data होता

UnSupervised

Learning

कही नहीं है। Teacher की है।

data को Unlabelled &

Unclassified

Reinforcement

Learning

प्रतीक्षा

Exploratory  
देखता है

Input data को Match करता है।

Output data है

SPAM filter

Study करते

output है।

Un(able) → data → pattern होता है।

pattern होता है।

Learning

Affect

होता है

नहिं सही होता

High Reward होता है  
& plenty मिलता है

feedback होता है।  
हरहों के अनुसार होता है

Supervised presence in  
labeled data होता है।

ATM Transaction को ATM

prediction करता है।

एवं

NLP → Natural language processing

## ② Top 10 Application of Machine Learning



Machine learning → ~~not~~ ~~not~~ human की  
सारी जगह धूम - 4/1/2021

- ① Google Maps → Shortest path
- ② Voice Assistant → Voice से regarding  
data
- ③ Search engine
- ④ YouTube → Recommendation System
- ⑤ Facebook → friends suggestion

Recommendation Engine  
→ Netflix → suggestions

→ Self Driving Car  
→ Tesla

→ Humanized Learning and Education

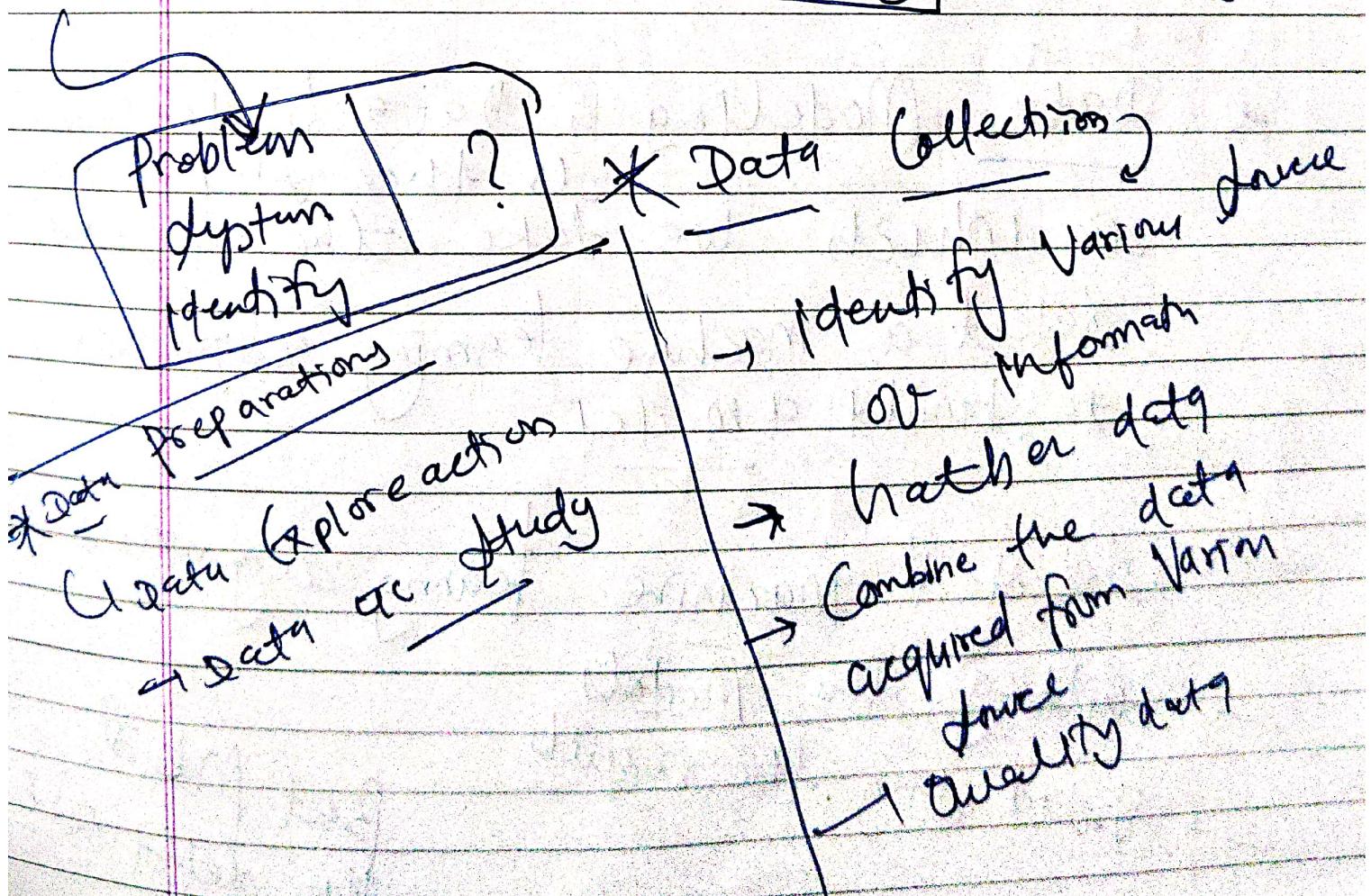
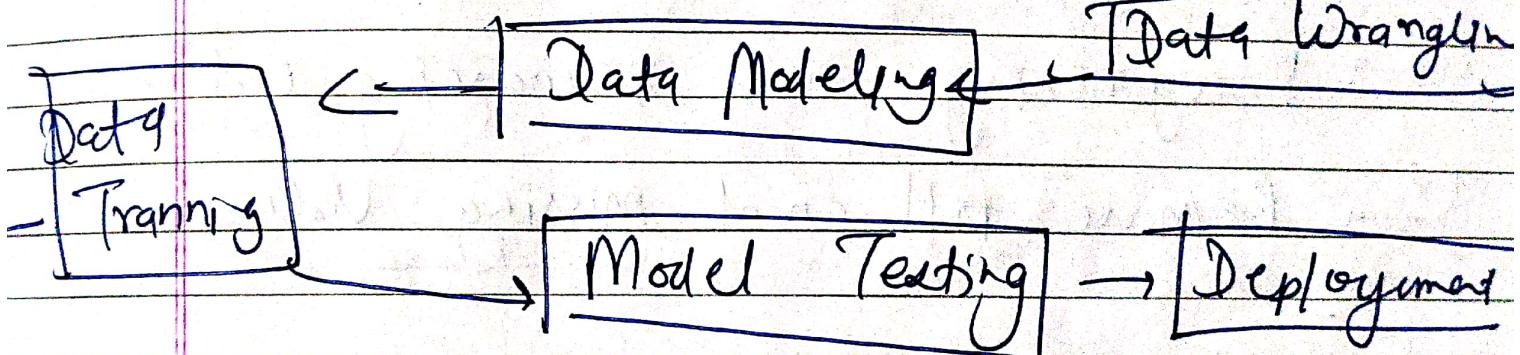
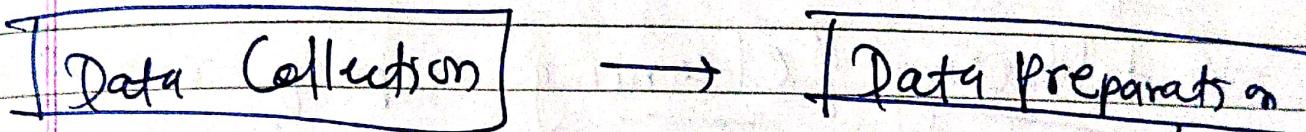
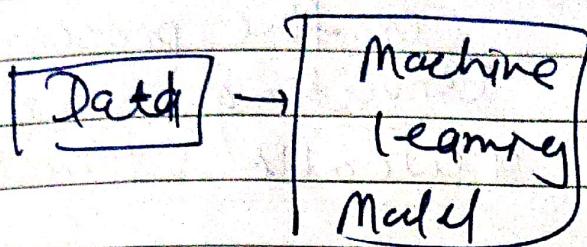
→ Doubling's → Medical  
→ E Commerce website → Orderely Health  
→ Crypto → Georg  
→ Answer

(3)

# Machine Learning Life Cycle

(5)

हमारे में Human को जैसे करते हैं तो Machine को करना चाहिए।



\* Data Wrangling  $\Rightarrow$  Data Wrangling is the process of Cleaning and Converting raw data into a useable format.

I  $\rightarrow$  filtering / cleaning up of raw data

II  $\rightarrow$  filtering Noise

III  $\rightarrow$  Recognizing and removing outliers

IV  $\rightarrow$  Remove full and missing Values

\* Data Modelling  $\Rightarrow$  Data Modelling is the step in which we take the data and select a machine learning algorithm to build a model.

$\rightarrow$  Selected Machine Learning algorithm

$\rightarrow$  Building the Model

$\rightarrow$  Validating the results

Best Model  
Man detection

\* Model Training → Data & Algorithms  
Model की तैयारी

\* Model Verification → Model की Test  
फल देखा।

Model को Validate करें ये कि यह से  
prediction कैसे होते हैं और Accuracy  
से जुड़ा क्या है Model Training का

\* Model Deployment ⇒ Brilliant Model  
Deployment करें।  
3rd Monitor करें।

③

④

# Best language to Machine Learning

- ① Python
- ② Java
- ③ R
- ④ JavaScript

⑤ Scala

⑥

## AI & ML & DL Difference

\* ① Artificial Intelligence



① Applied AI  
(weak AI)

② Generalized AI  
(strong AI)

Strong AI

→ Human की तरह की Behaviour को देने का  
Copy Machine → Copy GM की कार्यक्रम  
Copy एवं प्रैग

~~Machine Learning~~ → किसी मशीन सिवें डेटा / व्यापार

Learning

① Supervised Learning

② Unsupervised Learning

③ Reinforcement Learning

ML is subset of  
weak AI

Deep Learning → Machine Learning in Detail  
Learn ~~Detail~~ & Human ~~Detail~~  
DLE

- Automatic Machine Translation } Neural Network
- Colorization of Black & White }
- Fraud News Detection }

## ⑥ What is Data set

→ How to get Data set for ML.

A dataset is a collection of records usually presented in tabular form

format

→ - CSV, JSON, Excel

### Types of Dataset

#### Numerical data

Temp → 23°C 45°C

Categorical data

ordinal data

- Yes / No
- True / False
- Day / Night
- Male / Female
- 0 / 1

Hybrid

Ex: Ford and

Ex: Apple and

Ex: Excellent