

# MACHINE LEARNING

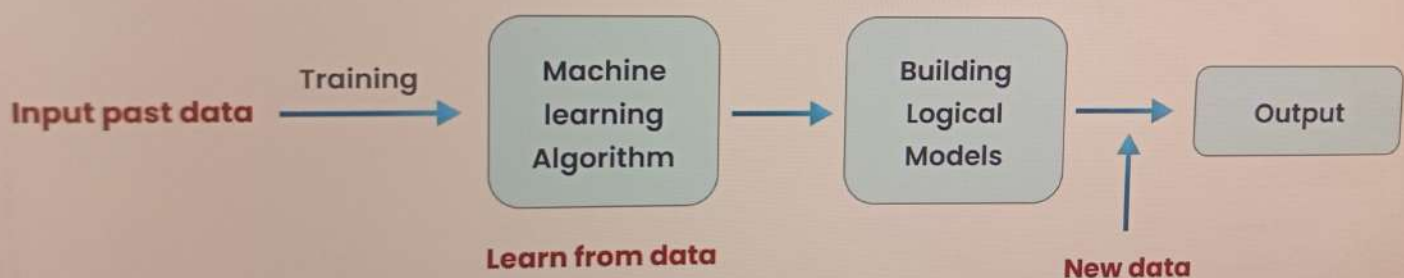


**Machine Learning** is the science of getting computers to learn and act like humans do, and improve their learning over time in autonomous fashion, by feeding them data and information in the form of observations and real-world interactions.

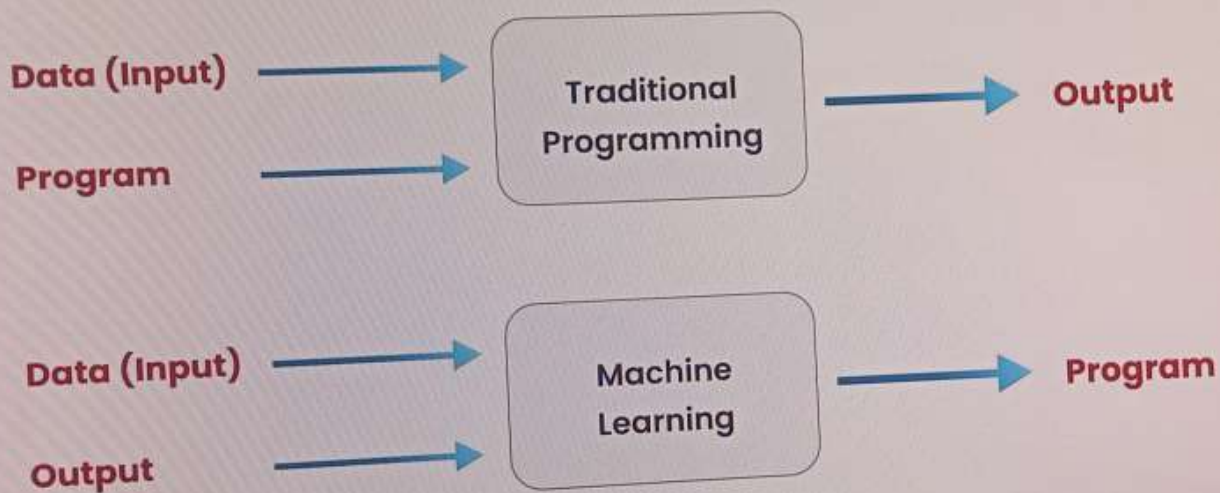


# HOW DOES MACHINE LEARNING WORK?+

A Machine Learning system learns from historical data, builds the prediction models, and whenever it receives new data, predicts the output for it.



# HOW DOES MACHINE LEARNING WORK?+



# CLASSIFICATIONS OF MACHINE LEARNING



Supervised Learning



Unsupervised Learning



Reinforcement Learning

# ADVANTAGES OF + MACHINE LEARNING

1. Easily identifies trends and patterns
2. No human intervention needed (automation)
3. Continuous Improvement
4. Handling multi-dimensional and multi-variety data
5. Wide Applications

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# **DISADVANTAGES OF MACHINE LEARNING**

1. Data Acquisition
2. Time and Resources
3. Interpretation of Results
4. High error-susceptibility



# USE OF MACHINE LEARNING



Automatic language Translation

Medical Diagnosis

Stock Market trading

Online Fraud Detection

Virtual Personal Assistant

Email Spam & Malware Filtering



Self driving cars

Product recommendations

Traffic Prediction

Speech Recognition

Image Recognition

# MACHINE LEARNING



1. Exploratory Data Analysis
2. Handling Missing value
3. Handlings outliers
4. Categorical Encoding
5. Normalizing & standardization.

1. Correlation
2. Forward Elimination
3. Backward Elimination
4. Univariate Selection
5. Random Forest Importance
6. Feature selection with Decision Trees

End to End ML Projects

Model Deployments

Dockers And Kubernetes

Gridsearch, RandomisedSreach, Hyperopot, Genetics Algorithms

Hyper parameter Tuning

Linear, Logistic Regression, Decision Tree, Random Forest, Kmeans,

Machine Learning Algorithms- Regression And classification, Clustering

Feature Selection

Feature Engineering

Exploratory Data Analysis

Progammig Language- Python, R



# MACHINE LEARNING

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WScUB  
Up



TensorFlow

Pandas



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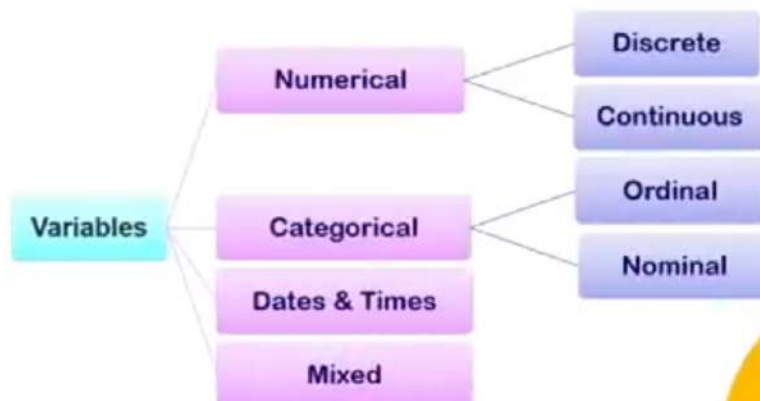
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# **Data Types In Machine Learning**

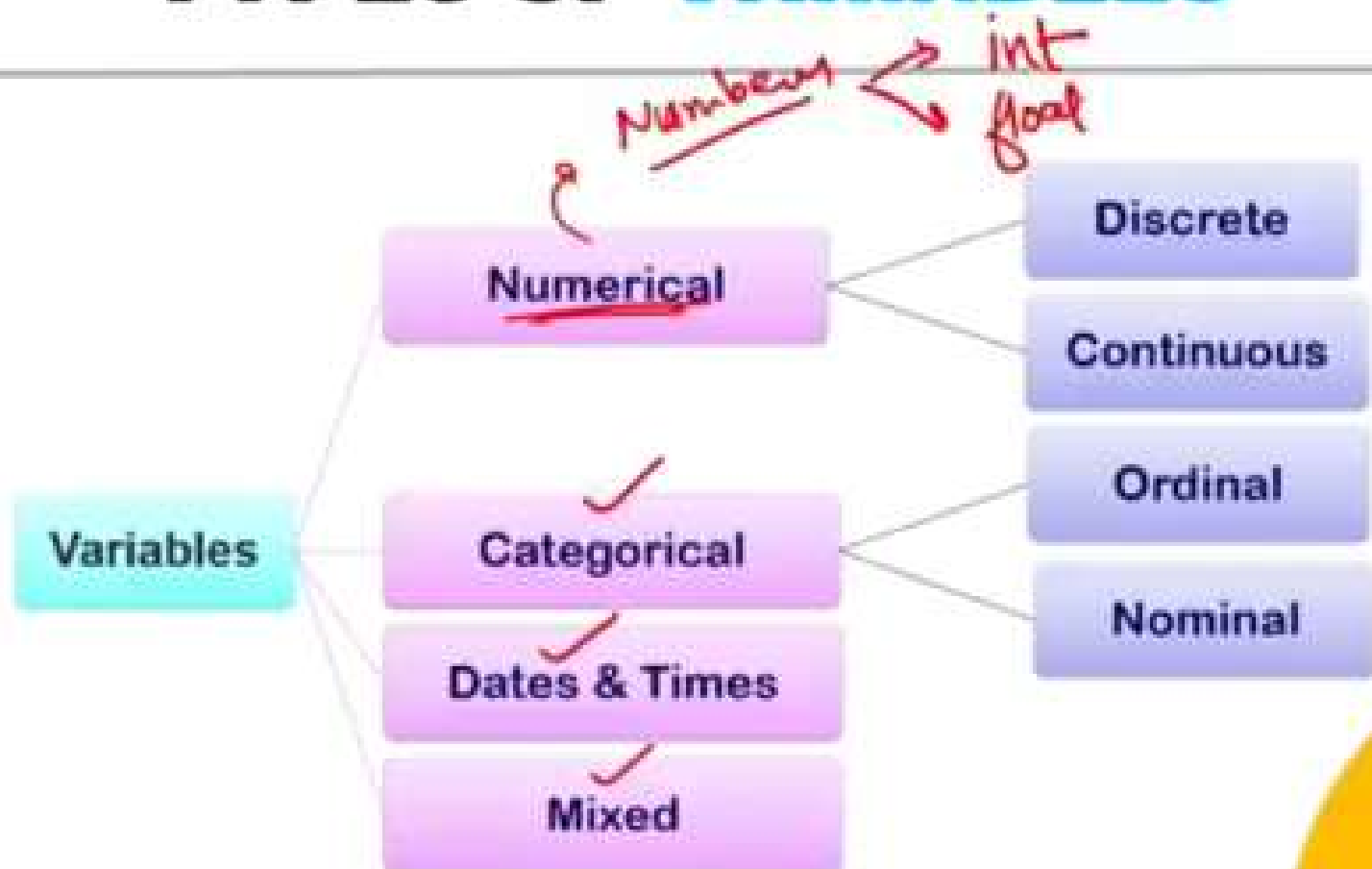
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# TYPES OF VARIABLES



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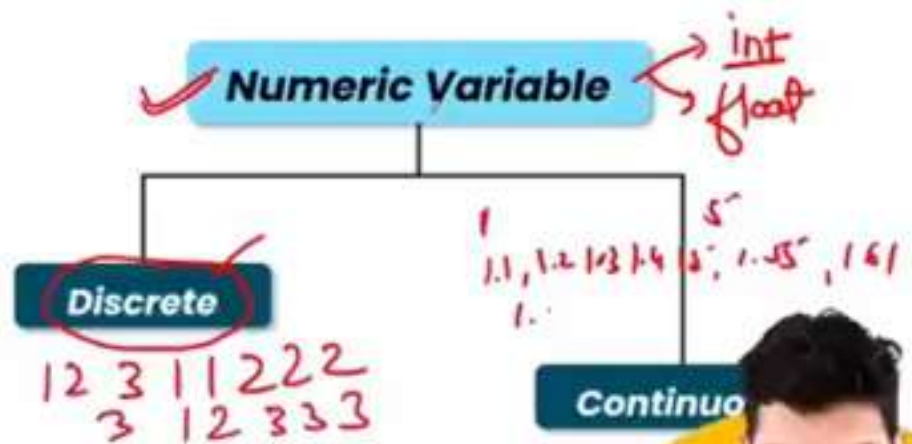
# TYPES OF VARIABLES



# NUMERICAL VARIABLES

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	A	B	
1	Age	Salary	exp
2	15	10000	1
3	20	20000	2
4	25	25000	3
5	30	30000	4
6	35	35000	5
7	40	40000	6
8	45	45000	7
9	50	50000	8
10	55	55000	1

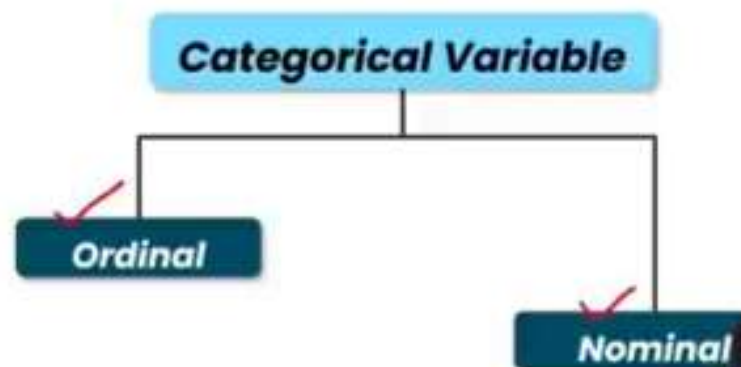


# CATEGORICAL VARIABLES

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	A ✗	B ✓	C ✓	D ✓
1	Emp_id	<u>Gender</u>	<u>Remarks</u>	<u>Language</u>
2	12	Male	Nice	Python
3	13	Female	Good	Java
4	14	Female	Great	C++
5	15	Male	Great	C#
6	16	Female	Nice	HTML







# DATE TIME & MIXED VARIABLES

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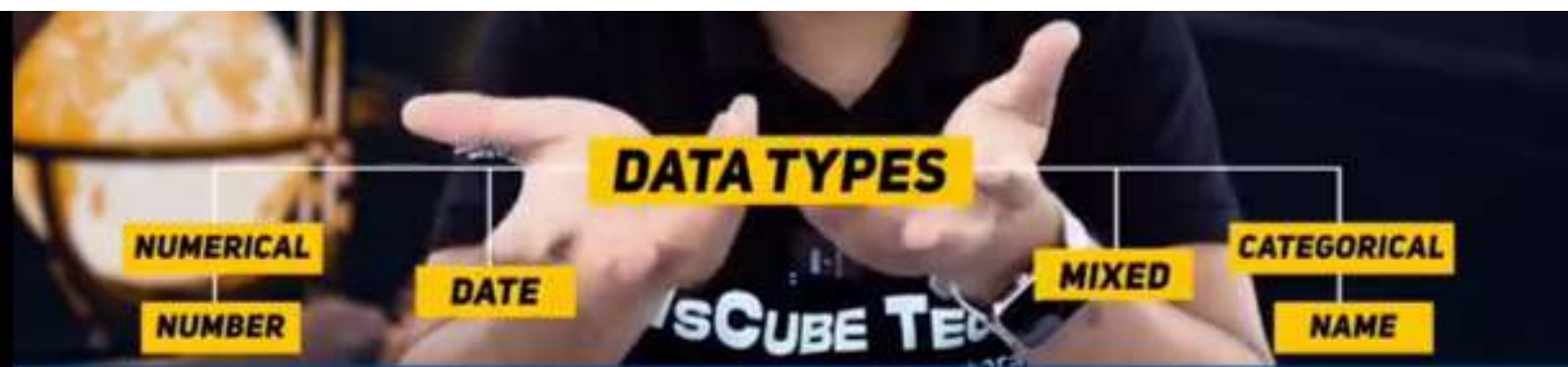
1. **Date Time Variables :**

Date Time can contain date only , time only.

2. **Mixed Variables :**

Variables which contains numbers and categories data.





## Data Cleaning

- ❑ Data cleaning is the process of preparing data for analysis / ML / DL by removing or modifying data that is incorrect, incomplete, irrelevant, duplicated, or improperly formatted.

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- **Handling Missing Data**
- **Outlier Detection and Handling**
- **Data Scaling and Transformation**
- **Encoding Categorical Variables**
- **Handling Duplicates**
- **Dealing with Inconsistent Data**

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Data Cleaning in Machine Learning >