DATA PREPROCESSING

WWW.TANTROSTAV.CO.IN

Dataset

- In machine learning, a dataset is a collection of data used to train and evaluate a machine learning model. It typically consists of a set of observations, each of which contains **one or more features or attributes.**

- Dataset forms in machine learning include **tabular data** (e.g., CSV), **image data** (e.g., JPEG, PNG), **audio data** (e.g., WAV, MP3), **text data** (e.g., plain text, HTML), and **hierarchical data** (e.g., JSON, XML).

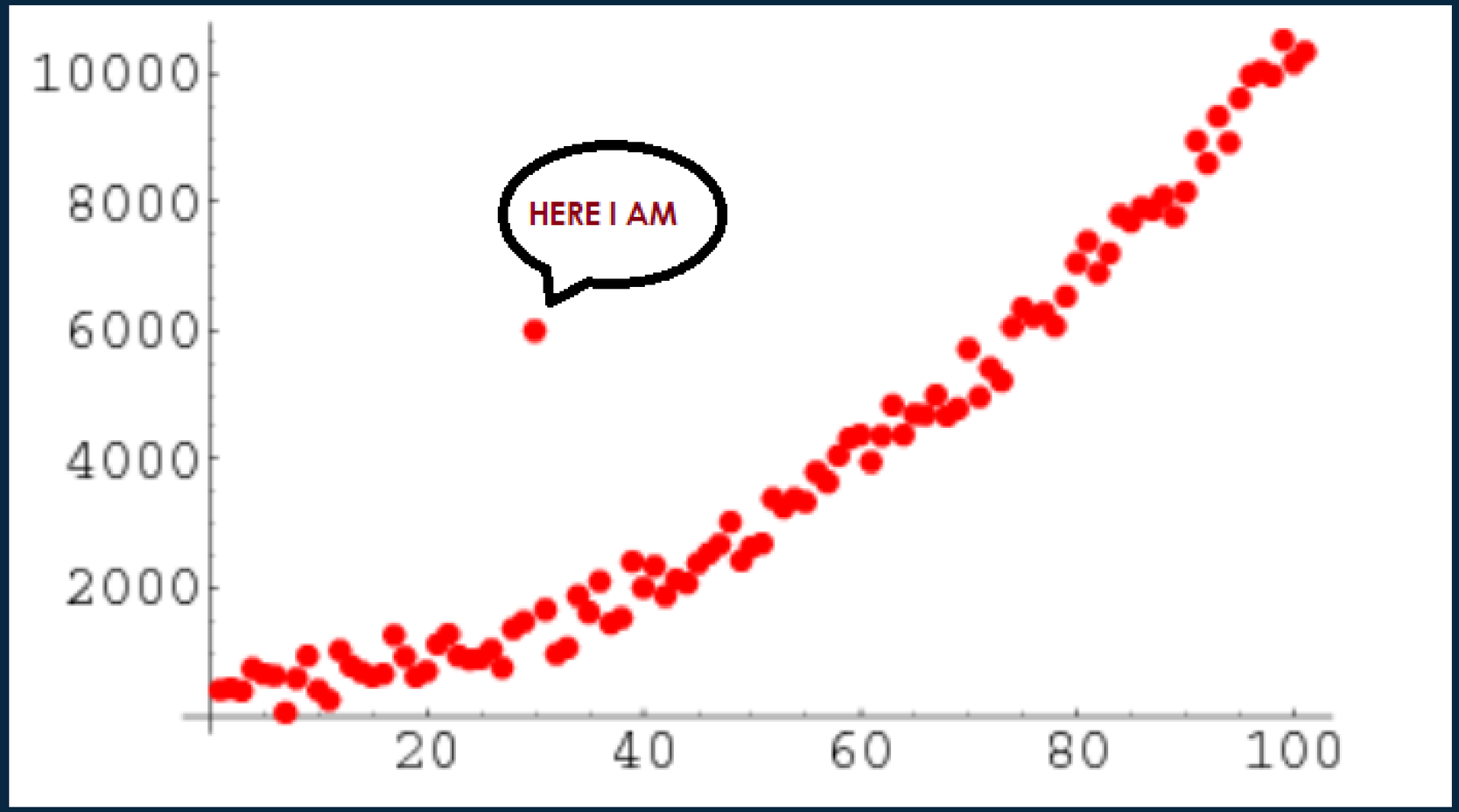
- CSV (Comma Separated Values) is a file format commonly used for storing and exchanging tabular data, where each row **represents an instance or observation**, and each column represents a **feature or attribute.**

Preprocessing steps

- Data loading - Reading the data
- Data wrangling - Checking for null,duplicate values and dropping coloumns
- Data visualization - Graphical understanding of the data bar graphs, histograms,piecharts,scatterplots etc..
- Data imputation - Replacing missing values with mean values
- Data scaling - Removing bias towards a particular field(Normalization or standardization)

Handling Outliers

Handling the data that is very different from the others



Data partioning

- In machine learning, the dataset is often partitioned into training and testing sets.
- The model is trained on the training dataset and then tested on the testing dataset.
- The testing dataset thus acts as the unseen dataset, which can be used to estimate a generalization error (the error expected when the model is applied to a real-world dataset after the model has been deployed).

Data partioning

Subject	*t*	**Feature 1**	**Feature 2**	**Target**
Paul	1	1000	male	0
Paul	2	1100	male	0
Paul	3	1200	male	1
Paul	4	1300	male	1
Crista	4	20	female	0
Crista	5	100	female	0
Paulina	1	10000	female	0
Paulina	2	100000	female	1
Paulina	3	95000	female	1
Paulina	4	97000	female	1
Paulina	5	99000	female	1
Paulina	6	101000	female	1
George	1	50000	male	1
George	2	50000	male	1
George	3	50000	male	1
George	4	50000	male	1
George	5	50000	male	1
George	6	50000	male	1

Subject	*t*	**Feature 1**	**Feature 2**	**Target**
Paul	1	1000	male	0
Paulina	1	10000	female	0
George	1	50000	male	1
Paul	2	1100	male	0
Paulina	2	100000	female	1
George	2	50000	male	1
Paul	3	1200	male	1
Paulina	3	95000	female	1
George	3	50000	male	1
Paul	4	1300	male	1
Crista	4	20	female	0
Paulina	4	97000	female	1
George	4	50000	male	1
Crista	5	100	female	0
Paulina	5	99000	female	1
George	5	50000	male	1
Paulina	6	101000	female	1
George	6	50000	male	1