

ARTIFICIAL INTELLIGENCE

Generative AI

- PYTHON
- NUMPY
- PANDAS
- MATPLOTLIB
- SEABORN
- MATHS & STATISTICS
- ML TEMPLATES & INTERNALS
- DEEP LEARNING
- NLP
- CV



- TIME SERIES
- AZURE
- MLOPS (DEPLOYMENT)
- EXCEL
- POWERBI
- TABLEAU



- OPERATORS
- MATH LIBRARY
- VARIABLES
- DATA TYPES
- TYPECASTING
- BOOLEANS
- STRINGS
- SPECIAL CHARACTERS IN A STRING
- SPIT & STRIP A STRING



- LISTS
- DICTIONARY
- SETS
- TUPLES
- IF, WHILE, FOR, etc.,
- FUNCTIONS
- LAMBDA FUNCTIONS



- Necessity of Numpy over Python

Built in Data Structures

- Creation & Metadata of Numpy Arrays
- Broadcasting
- Built-in Functions
- Data types
- Type casting
- Matrix Multiplication



NumPy

- Change of Numpy Shape
- Numpy Slicing
- Boolean Indexing
- Filter Data
- Statistical Methods
- Sort, Min & Max of Numpy Arrays
- Stacking & Splitting



NumPy



NumPy

- Copy Vs View
- Creation & Metadata of Numpy Arrays
- Broadcasting
- Built-in Functions
- Data types
- Type casting
- Matrix Multiplication
- Copy Vs View



NumPy

- Series
- DataFrame
- Metadata
- Rename Columns & Indices
- Transpose DataFrame
- Slice a DataFrame
- Boolean Indexing



- Missing Values
- Replace Values
- Search, Extract & Create Columns
- Set & Unset Index
- Built-In Customised Functions
- value_counts function
- Groupby & Associated Methods



- Concat & Append
- Merge
- Reshape - Stack & Unstack
- Pivoting
- Melt
- Dummy Variables
- Crosstab() method



- Upper, Extract, Split & Replace Methods
- Regular Expressions
- Contains Method
- StartsWith Method
- Multiple String methods
- Column Name Manipulation
- Show Columns based on Keyword



- `read_csv()` method
- Bad Data
- Select Columns based on `DataType`
- Tabbed File
- Fixed Width File
- JSON Data
- HTML Data



- XML Data
- API
- Export Dataframe to CSV
- Encoded Data Files



- One Axis Plot
- Two Axis Plot
- Line Style & Color
- X and Y Limits
- Line Width
- Multiple Plots in One Chart
- Title, X & Y Labels



- Gridlines
- Annotations
- Ticks
- Spines
- Legend
- Subplots
- Line Plot



- Bar Graph
- Scatter Plot
- Area Plot
- Box Plot
- Histogram
- Pie Chart



- Count Plot
- Box Plot
- Violin Plot
- Swarm Plot
- Overlaying Plot of Univariate Variables
- Facet Grid
- Lmplot & regplot



- Size & Shape of a Plot
- Pair Plot
- Join Plot
- Heat Map



- Types of Data
- Population Vs Sample
- Sampling Methods
- Branches of Statistics
- Distribution
- Variance Vs. Standard Deviation
- Z-Score



- Correlation
- Models
- Probability
- Types of Variables
- Central Tendency
- Measures of Dispersion
- Statistics Library
- Sampling Techniques



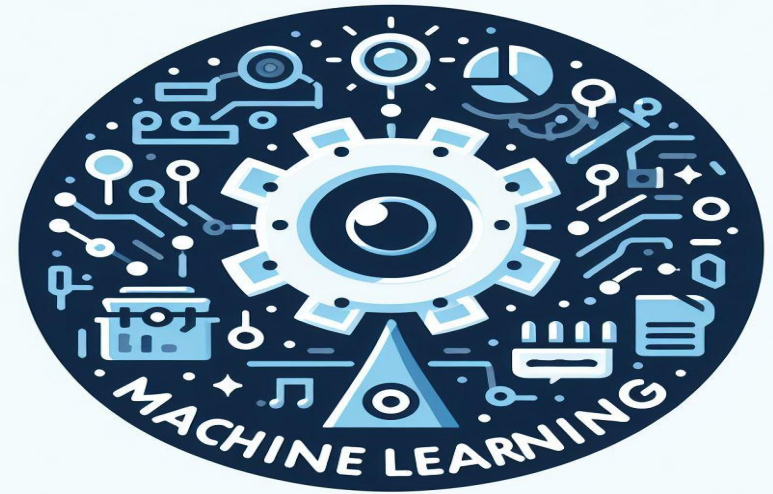
- Covariance
- Central Limit Theorem
- Confidence Interval
- Hypothesis Testing
- Statistical Significance



- Algebra Basics
- Calculus
- Matrices



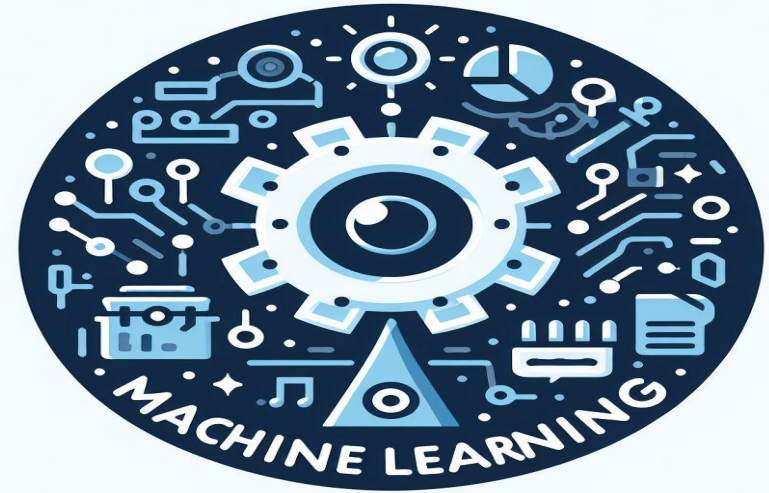
- Labelled Vs Unlabeled Data
- Types of ML Algorithms
- How ML Predict things
- Count Vectorizer
- Difference between fit and fit_transform Methods
- Special & Numerical Chracters
- Remove HTML Tags from Text Data



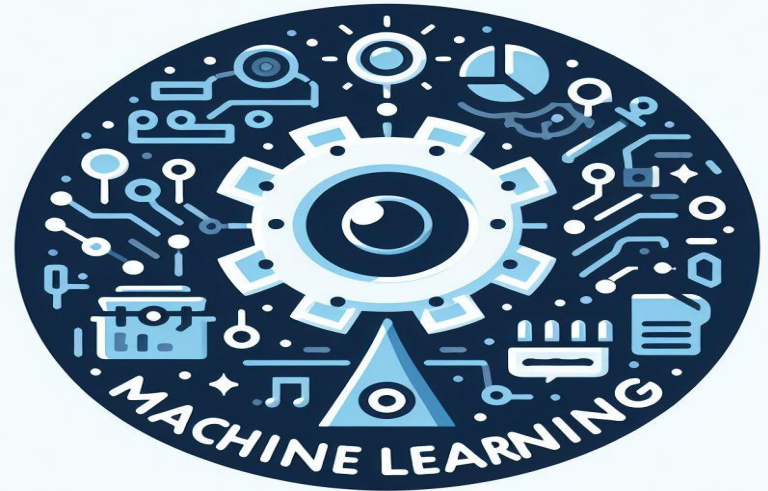
- Remove Stop words from Text
- Stemming
- Train Test Split
- Accuracy – MAE, MSE, RMSE
& Variance Score
- Simple Linear Regression
- Multiple Linear Regression
- Polynomial Regression

& Variance Score

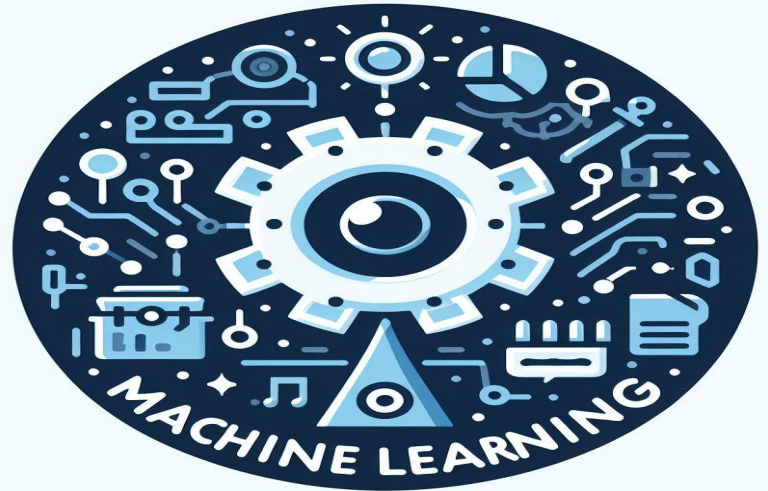
- Simple Linear Regression
- Multiple Linear Regression
- Polynomial Regression



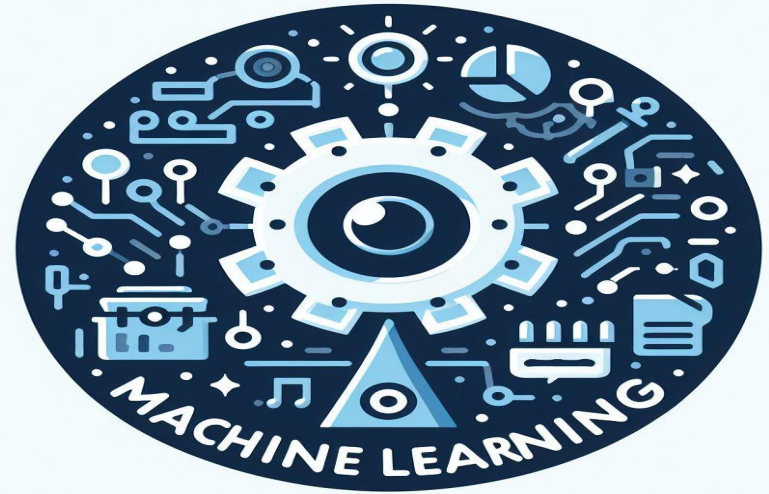
- Classification Algorithms
- Clustering Algorithms
- Univariate Timeseries Analysis
- Loss Functions
- Noise
- Penalty
- Dimensionality Reduction



- Principal Component Analysis
- r^2 score
- ROC & AUROC
- HyperParameters
- Project Skeletons
- Average Ensemble Method
- Weighted Ensemble Method



- Conditional Ensemble Method
- Bagging Ensemble Method
- Boosting Ensemble Method
- ML Template Regression
- ML Template Classification
- Principal Component Analysis
- Eigen Values
- Eigen Vectors



- Artificial Neural Network
- Deep Neural Network
- Weight
- Bias
- Neuron
- Hidden Layers
- Input Layers
- Output Layer



- RNN
- LSTM
- CNN
- Practical Projects, etc.,



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- NLP (Natural Language Processing)
- Generative AI
- What are LLM Apps
- ChatGPT vs LLM Apps
- Tokens
- Prompts
- Context
- Prompt Engineering
- LLM App Architecture
- LLM Tool Stack
- RAG (Retrieval Augmented Generation)



- Orchestration Framework
- Langchain
- Llama Index
- OpenAI API
- LLM Projects (Chatbots)
- LLMOps
- LangSmith
- Large Context LLM Models
- Performance Improvement Tips



- MLOps Vs DevOps
- Local Repo (Git)
- Azure Repo
- Azure Boards
- Azure CI/CD
- Azure AKS
- Azure ACR
- Azure SQL
- Azure Data Factory (Data Engineering)
- Azure Blob Storage



