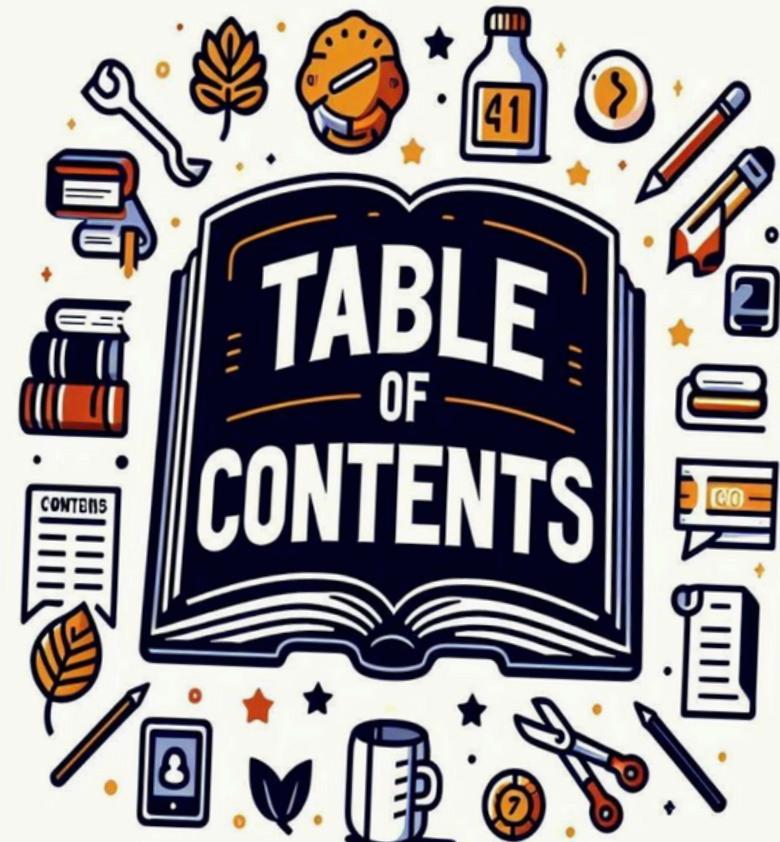


# **ARTIFICIAL INTELLIGENCE**

**Generative AI**

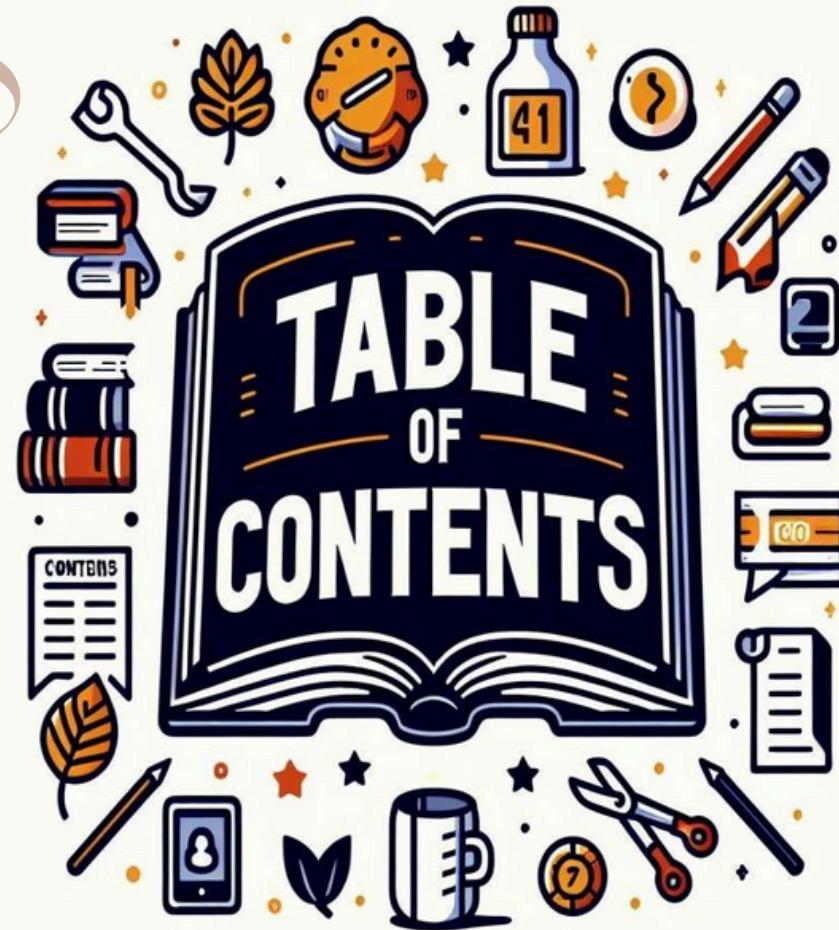
- PYTHON
- NUMPY
- PANDAS
- MATPLOTLIB
- SEABORN
- MATHS & STATISTICS ML
- TEMPLATES & INTERNALS
- DEEP LEARNING
- NLP
- CV

DATA SCIENCE



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

CONTENIDOS



- 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

- 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



# pandas

- 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



*Conhecimentos*

- 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

ESTRUTURAS DE DADOS



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

matplotlib



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



# CODING CREATIVOS

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



seaborn

- 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



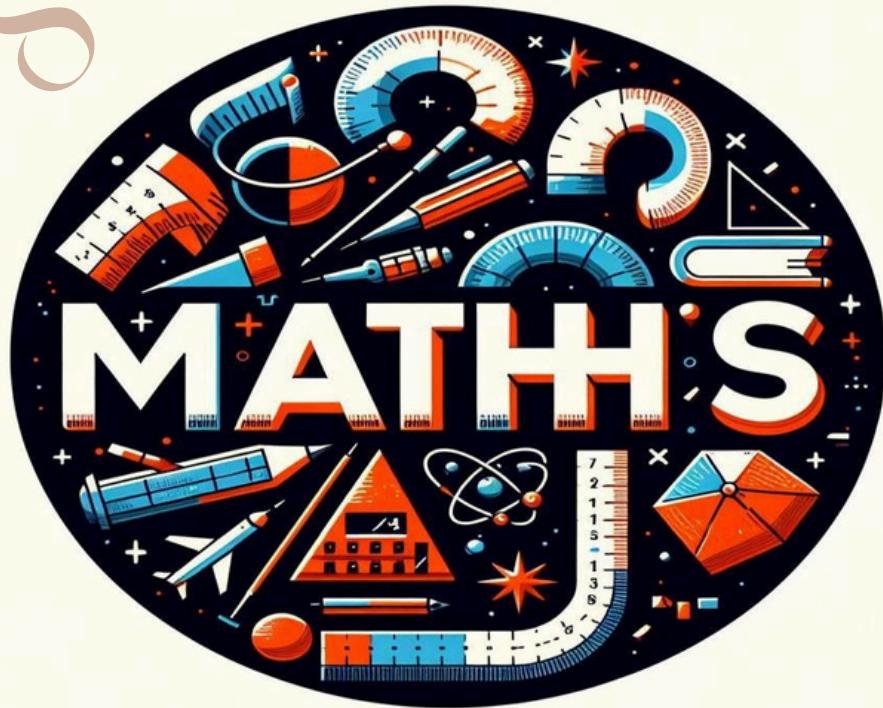
- Covariance
- Central Limit Theorem
- Confidence Interval
- Hypothesis Testing
- Statistical Significance

CONTENIDOS



CODING CREATIROS

- Algebra Basics
- Calculus
- Matrices



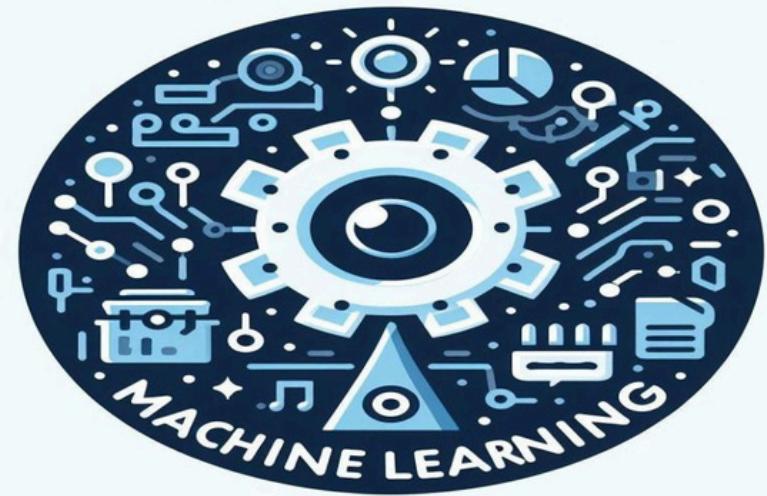
- Labelled Vs Unlabeled Data
- Types of ML Algorithms
- How ML Predict things
- Count Vectorizer
- Difference between fit and fit\_transform Methods
- Special & Numerical Characters
- Remove HTML Tags from Text Data



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



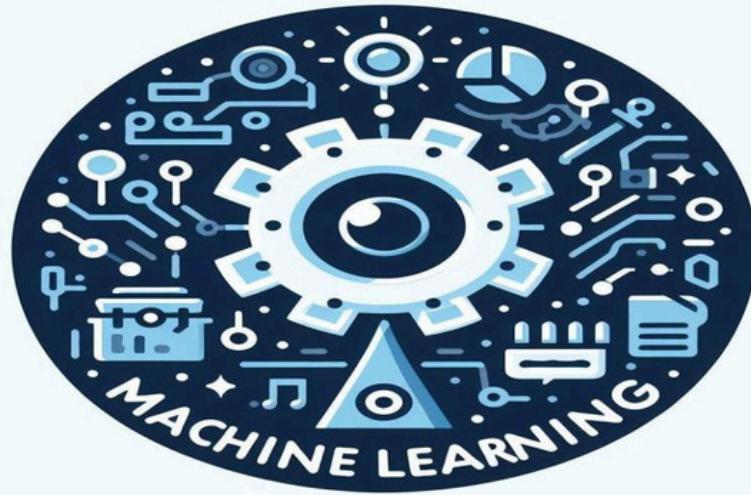
- Classification Algorithms
- Clustering Algorithms
- Univariate Timeseries Analysis
- Loss Functions
- Noise
- Penalty
- Dimensionality Reduction



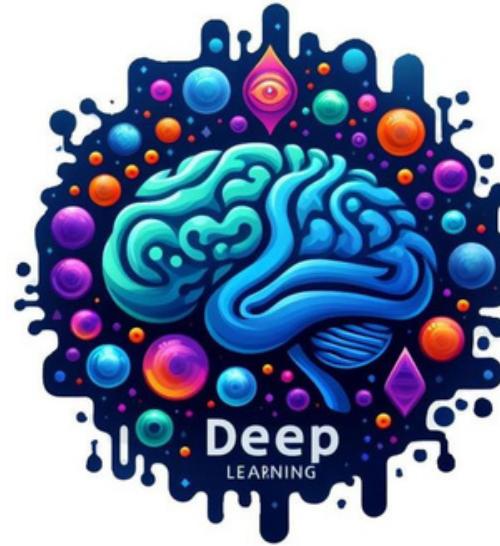
- Principal Component Analysis
- $r^2$  score
- ROC & AUROC
- HyperParameters
- Project Skeletons
- Average Ensemble Method
- Weighted Ensemble Method



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

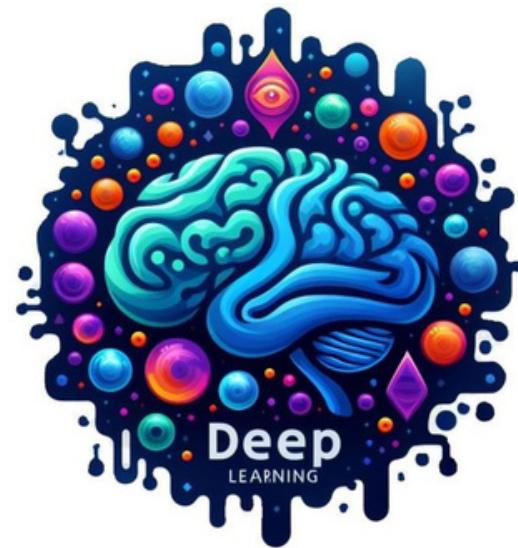


- Artificial Neural Network
- Deep Neural Network
- Weight
- Bias
- Neuron
- Hidden Layers
- Input Layers
- Output Layer



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

CODING & PROJECTS



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



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



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



- 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



