Operators in Python

Input / Output

Control statements
- ❒ if statement
- ❒ if...else statement
- ❒ if...elif...else statement
- ❒ while loop
- ❒ for loop
- ❒ break statement
- ❒ continue statement
- ❒ pass statement

Numpy Arrays
- ❒ Array creation
- ❒ Array attributes
- ❒ 1D and 2D
- ❒ Matrices

Functions in Python
- ❒ Built in and User defined functions
- ❒ Writing our own functions
- ❒ importing functions

Modules and Packages

Data Analysis in Python using pandas
- ❒ Series
- ❒ Dataframes
- ❒ Creation of Dataframes from different sources
- ❒ Viewing data in Dataframe
- ❒ Operations on Dataframe
- ❒ Handling missing data

Data visualization using matplotlib
- ❒ Line plot
- ❒ Bar graph
- ❒ Pie chart
- ❒ Sub plots
- ❒ Histogram

Data visualization using seaborn
- ❒ Distribution plot
- ❒ Kde plot
- ❒ Countplot
- ❒ Box plot
- ❒ Scatter plot
- ❒ Sub plots
- ❒ Lmplot
- ❒ Pair plots

MODULE 5: MACHINE LEARNING IN AI

Exploratory data analysis (EDA)

Outliers and their treatment

Supervised Learning vs Unsupervised Learning

Feature extraction and conversion
- ❒ One hot encoding using dummy variables
- ❒ One hot encoding using One hot encoder

Regression Models
- ❒ Simple Linear regression
- ❒ Multiple Linear regression
- ❒ Polynomial Linear regression
- ❒ Ridge regression
- ❒ Bias and Variance tradeoff
- ❒ Lasso regression
- ❒ ElasticNet regression

Classification Models
- ❒ Logistic regression
- ❒ Naïve Bayes (Gaussian NB and Multinomial NB)
- ❒ KNN Classifier
- ❒ SVM
- ❒ Regularization
- ❒ Kernel Trick
- ❒ Decision Tree
- ❒ Entropy
- ❒ Gini Index
- ❒ Random forest
- ❒ Confusion Matrix
- ❒ Bootstrapping, Bagging and Boosting

Unsupervised Learning
- ❒ K-Means clustering
- ❒ Elbow technique

Association Rule Learning
- ❒ Apriori Algorithm

Model selection
- ❒ Selecting appropriate model for our data

MODULE 6: DEEP LEARNING IN AI

Introduction to Deep Learning
- ❒ Biological Neural Network
- ❒ Artificial Neural Network
- ❒ Perceptrons
- ❒ Layers of a Network

Activation functions
- ❒ Identity function
- ❒ Binary step function or Threshold function
- ❒ Logistic function or Sigmoid function
- ❒ ReLU function
- ❒ Hyperbolic Tangent function
- ❒ Softmax

Creating Neural Network in Python
- ❒ ANN
- ❒ ANN with Activation functions

Tensor Flow and Keras
- ❒ Variables
- ❒ Constants
- ❒ Placeholders
- ❒ Graph / Tensor / Session

ANN in Tensorflow and Keras

Convolutional Neural Network

Recurrent Neural Network

MODULE 7: NATURAL LANGUAGE PROCESSING IN AI

NLP Concepts
- ❒ Tokenization
- ❒ Stemming
- ❒ Lemmatization
- ❒ Stop words
- ❒ POS

Feature Extraction
- ❒ CountVectorizer
- ❒ TfidfVectorizer

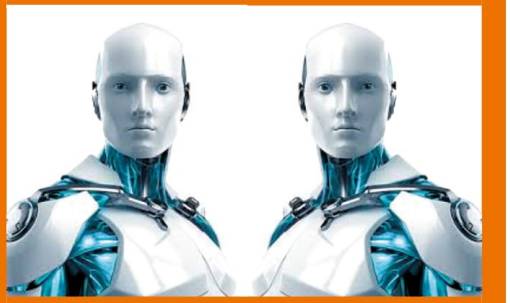
Text Classification using NLP

MODULE 8: COMPUTER VISION IN AI

Object detection by Computer

DIPLOMA IN DATA SCIENCE

[Data Analytics, Machine Learning and Artificial Intelligence]



HIGH LIGHTS OF THIS COURSE
- ❖ 100+ industry oriented tasks are solved that actually needed by a Data Scientist.
- ❖ Datasets with code.
- ❖ A Project.
- ❖ Resume preparation.
- ❖ All Interview Questions are discussed.
- ❖ Mock tests.
- ❖ Placement Assistance.

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Diploma in Data Science

MODULE 1 : PROGRAMMING IN R

Fundamentals of R
- ❒ Installation of R & R Studio
- ❒ Features of R
- ❒ Variables in R
- ❒ Constants in R
- ❒ Operators in R
- ❒ Datatypes and R Objects
- ❒ Accepting Input from keyboard
- ❒ Important Built-in functions

Vectors
- ❒ Creating Vectors
- ❒ Accessing elements of a Vector
- ❒ Operations on Vectors
- ❒ Vector Arithmetic

Control Statements
- ❒ if statement
- ❒ if...else statement
- ❒ if else() function
- ❒ switch() function
- ❒ repeat loop
- ❒ while loop
- ❒ for loop
- ❒ break statement
- ❒ next statement

Functions in R
- ❒ Formal and Actual arguments
- ❒ Named arguments
- ❒ Global and local variables
- ❒ Arguments and lazy evaluation of functions
- ❒ Recursive functions

Matrices
- ❒ Creating matrices
- ❒ Accessing elements of a Matrix
- ❒ Operations on Matrices
- ❒ Matrix transpose

Strings
- ❒ Creating strings
- ❒ paste() and paste0()
- ❒ Formatting numbers and strings using format()
- ❒ String manipulation

Lists
- ❒ Creating lists
- ❒ Manipulating list elements
- ❒ Merging lists
- ❒ Converting lists to vectors

Arrays in R
- ❒ Creating arrays
- ❒ Accessing array elements
- ❒ Calculations across array elements

R Factors
- ❒ Understanding Factors
- ❒ Modifying factors
- ❒ Factors in Data frames

Data frames in R
- ❒ Creating data frame
- ❒ Operations on data frames
- ❒ Accessing data frames
- ❒ Creating data frames from various sources

Data visualization in R
- ❒ Need for data visualization
- ❒ Bar plot
- ❒ Plotting categorical data
- ❒ Stacked bar plot
- ❒ Histogram
- ❒ plot() function and line plot
- ❒ pie chart / 3D pie chart
- ❒ Scatter plot
- ❒ Box plot

MODULE 2: STATISTICAL METHODS

Introduction to Statistics
- ❒ What is statistics?
- ❒ Types of statistics
- ❒ Descriptive statistics
- ❒ Inferential statistics

Statistical terms
- ❒ Population
- ❒ Sample
- ❒ Variable (discrete and continuous)
- ❒ Data and types of data
- ❒ Qualitative (nominal and ordinal)
- ❒ Quantitative (interval scale and ratio scale)

Measures of Central Tendency
- ❒ Mean
- ❒ Median
- ❒ Mode

Probability
- ❒ Probability with replacement
- ❒ Probability without replacement
- ❒ Probability Mass Function (PMF)
- ❒ Probability Density Function (PDF)

Measures of Shape
- ❒ Skewness
- ❒ Kurtosis

Measures of Dispersion or Variability
- ❒ variance
- ❒ std
- ❒ percentile
- ❒ quartile
- ❒ range
- ❒ IQR

Application of Variance or Std
- ❒ Empirical Rule
- ❒ Problems on Empirical Rule
- ❒ Chebyshev's Theorem

Probability Distributions
- ❒ Normal distribution
- ❒ Standard normal distribution
- ❒ Sampling distribution of Sample means
- ❒ Central limit theorem
- ❒ T- Distribution
- ❒ Student T- Test
- ❒ Chi Square Test (Goodness of Fit)
- ❒ Binomial distribution
- ❒ Bernoulli distribution
- ❒ Geometric distribution
- ❒ Hypergeometric distribution
- ❒ Poisson distribution

Hypothesis Testing
- ❒ Upper tail test
- ❒ Lower tail test
- ❒ Two tail test

ANOVA

MODULE 3: TABLEAU

Introduction to Tableau
- ❒ Tableau tools
- ❒ Datatypes in Tableau
- ❒ Viewing data

Creating Pivot table

Data blending

Cross Database joins

Calculations on data
- ❒ Aggregate functions

Data visualizations in Tableau
- ❒ Symbol maps
- ❒ Bar chart
- ❒ Stacked bar chart
- ❒ Line chart
- ❒ Pareto chart
- ❒ Heat map
- ❒ Pie chart
- ❒ Scatter plot
- ❒ Area chart
- ❒ Dual Axis chart
- ❒ Histogram
- ❒ Bubble chart

Dash Board Creation

MODULE 4: PYTHON FOR DATA SCIENCE

Fundamentals of Python
- ❒ Advantages of Python
- ❒ Python compiler and PVM
- ❒ Python installation and environment

Datatypes in Python
- ❒ strings
- ❒ char
- ❒ lists
- ❒ tuples
- ❒ range
- ❒ sets
- ❒ dictionaries