Data Science Modeling & Machine Learning Using Python: (5 Days)

Session 1:

Introduction

Installation Guide and Interface used for class

Basic of programming and file handling

Data Types in Python and their usages

✓ Numeric, String, List, Tuple, and Dictionary

List in Python

✓ Creating List and Sub-list, Indexing and slicing list, List Manipulation, Functions used on list

Decision Making Statement in Python

✓ If and nested if, While loop, For loop, Break and Continue Statement

User defined function

Manipulation using User Defined functions

Hands On Assignments and Case Study Discussion

Session 2:

Modules Introductions

✓ Numpy module

✓ Pandas module

Extraction in Python

✓ Text file, Csv file, Excel file, SAS, SQL

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Descriptive Statistics Using Python

- ✓ Central Tendency, dispersion, skewness, kurtosis, Normality Test

Correlation

- ✓ What is Correlation, Covariance, Correlation Hypothesis, Correlation Matrix
- ✓ Correlation using Numpy, Pandas, Scipy

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Data Manipulations

- ✓ Lambda functions, Map Functions, Reduce Functions, Filter functions, List comprehensions
- ✓ Missing Value check and treatments
- ✓ Outlier checks and treatments

Chi Square Tests

- ✓ Test of Association, Goodness of Fit Test

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Significance Test

- ✓ T-Test: One Sample Test, Two Sample Test,
- ✓ Paired T-Test, Unpaired T-Test
- ✓ ANOVA

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Session 6:

Regression Algorithms

Data Cleaning and Preparation of Datasets for Modeling

Different Regression Types :

- ✓ *Linear Regression Algorithm and its Application using Python*

- ✓ *Multiple Regression Algorithm and its Application using Python*

- ✓ *Logistic Regression Algorithm and its Application using Python*

Regression using OLS, Linear regression

Model Validation

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Session 7:

- ✓ *Ridge Regression Algorithm and its Application using Python*

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Session 8:

- ✓ *Lasso Regression Algorithm and its Application using Python*

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Session 9:

- ✓ *Decision Tree Algorithm and its Application using Python*

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Session 10:

- ✓ *Random Forest Algorithm and its Application using Python*

✓ *Gradient Boosting (GBM) Algorithm and its Application using Python*

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Session 11:

✓ *Ada Boosting Algorithm and its Application using Python*

✓ *XG Boosting Algorithm and its Application using Python*

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Session 12:

✓ *SVM Algorithm and its Application using Python*

✓ *KNN Algorithm and its Application using Python*

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Session 13:

✓ *Unsupervised Machine Learning: Cluster Analysis*

   ✓ *Kmeans Algorithm and its Application using Python*

✓ *PCA(Principal Component Analysis)*

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Session 14:

✓ *Introduction to Deep Learning & Neural Network USING TENSORFLOW & KERAS*

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Session 15:

✓ *Backward Propagation Algorithm and its Application using Python*

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Session 16:

- ✓ **CNN Algorithm and its Application using Python**

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Session 17:

- ✓ **RNN (LSTM) Algorithm and its Application using Python**

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Session 18:

- ✓ **Introduction to Natural Language Processing (NLP)**
  - ✓ **Text Analytics**
  - ✓ **Sentiment Analysis**

    Hands On Assignments and Case Study Discussion

Session 19:

- ✓ **SPAM Detection**

  Hands On Assignments and Case Study Discussion

Session 20:

- ✓ **Doubt Clearing Session**
- ✓ **Test Paper Discussion**

Assessments:

Daily Assessment to be taken at the end of each Day: Total 5 Assessments

PACKAGES USED:

- ✓ **Numpy, Pandas, Math, OS, Matplotlib, Seaborn,**
- ✓ **Scipy, ScikitLearn, StatsModel.api,**
- ✓ **TensorFlow, Keras,**
- ✓ **NLTK etc**

HAPPY LEARNING

THANK YOU