Data Analytics using R Programming

1. R Programming (Duration: 30 hours)

Part-A: Fundamentals of R

Section 1: Introduction to Basics of R programming

- About R, advantages of using R
- Setting up R studio and installation of packages
- Basics of R programming: Assignment, variable declaration etc
- Operators in R
- Control flow
- Loops in R

Part-B: Data Structures in R

Section 1: Vectors

- Introduction to vectors.
- Create, name and select elements from vectors.

Section 2: Matrices

- Learn how to work with matrices in R.
- Create, name and selection

Section 3: Factors

- R stores categorical data in factors. Learn how to create, subset and compare categorical data.

Section 4: Lists

- Lists allow you to store components of different types.
- Learn create, subset and select from lists

Section 5: Data Frames

- Declaration of dataframes

- Conversion from other data structures to dataframes
- Reading and summarizing dataframes
- Merging row wise and column wise (rbind, cbind)
- Special operation on dataframes

Part-C: Data Manipulation in R

- Data cleaning techniques
- Subsetting data
- grep, grepl etc

Part-D: Database interaction using R

- Reading from CSV
- Reading from excel
- Reading from web
- Reading from database
- Using SQL in R

Part-E: Data Visualization

Section 1: Basic Graphics

- Discover R's packages to do graphics and create your own data visualizations.

Section 2: Introduction to Advanced Graphics

- Using ggplot2 and other packages.

2. Data Analysis (Duration: 15 hours)

- Basic Statistics
- Concept of sampling
- Regression: Linear Rgeression (Project-1)
- Classification: Logistic Regression (Project-2)
- Concept of classification metrics such as Confusion matrix, Accuracy, Sensitivity, Specificity, Precision etc.