

Data Analytics with R Programming

1. Introduction and Orientation
 - a. Introduction to Data Science and R. Application and Uses case of R
 - b. Introduction R/R-Studio - GUI
 - c. Concept of Packages - Useful Packages (Base & other packages) in R
2. R Data Structure and its operation
 - a. Variable & Value Labels – Date Values
 - b. Data Types- Numeric, Integer, Factor, Boolean, Dates and Logical
 - c. Vectors, Matrices, factors, Data frames, and Lists
 - d. Importing Data from various sources
 - e. Exporting Data to various formats)
 - f. Viewing Data (Viewing partial data and full data)
 - g. Missing Values
 - h. Sequences of Numbers
3. Data Wrangling
 - a. Data Manipulation steps- Sorting, Filtering, Duplicates, Merging, Appending, Sub-setting, Derived variables, Sampling, Data type conversions, renaming, formatting.
 - b. Control Structures-if, If-else, Nested if-else
 - c. Control Structures - Loops and advance loop functions
 - d. R User Defined functions- Create your own functions
 - e. R Operators

- f. Data Reshaping- Long to wide vice-versa
- g. Playing with Textual Data-Editing Textual data, regular expressions
- h. Data Aggregation and Summarization

4. Intro to Stats and Data Analysis

- a. Introduction exploratory data analysis (EDA)
- b. Descriptive statistics-Random sampling, Correlation, Central Limit Theorem, Variance Frequency Tables and summarization
- c. Univariate Analysis (Distribution of data & Graphical Analysis)
- d. Bivariate Analysis(Cross Tabs, Distributions & Relationships)
- e. Data Visualization
- f. Base Plotting System
- g. Exploratory data analysis using plots
- h. Univariate and Bi-variate plots
- i. Creating Graphs- Bar/pie/line chart/histogram/boxplot/scatter/density)
- j. Advance Plotting Packages- ggplot

5. Capstone Projects (Any 2)

- a. Loan Prediction- Helping a credit card company in automating the loan approval request i.e. whether an applicant should be granted loan or not by training machine on company's historical data.
- b. Heart Disease Prediction Using ML - Help a healthcare expert to predict the propensity of a patient to have heart disease.