

G. Course contents

UNIT I Introduction to Machine Learning and R

L-3

The origins of machine learning - Machine learning with R: Loading and unloading R packages, R data structures, Managing data with R-Applications of R Programming in Real world.

UNIT II Predictive Model

L-6

Supervised Learning Algorithm: Classification using Nearest Neighbors, Naive Bayes and Decision Trees - Regression Methods -Support Vector Machines.

Unit III Descriptive Model

L-6

Unsupervised Learning Algorithm: Market Basket Analysis Using Association Rules, Clustering with k-means - Evaluating Model Performance - Improving Model Performance.

Lab Experiments:

P-60

1. Implement Factors and Vector Manipulation.
2. Implement Matrix Arithmetic Operations.
3. Implement the concepts of Lists and Data Frames.
4. Implement Functions and String Construction.
5. Reading and Writing Files.
6. Implement Classification using Nearest Neighbors.
7. Implement Classification using Naive Bayes.
8. Implement Classification using Decision Trees.
9. Implement Linear Regression.
10. Implement Support Vector Machines.
11. Implement Market Basket Analysis using Association Rules.
12. Implement K-means Clustering Algorithm.
13. Implement Hierarchical Clustering Algorithm.
14. Write a program to measure performance for classification.
15. Write a program for improving model performance using random forest.

Total: 75

H. Learning Resources:

i)Textbooks

1. Brett Lantz,"Machine Learning with R", Second Edition, Packt Publishing Ltd, 2015.
2. Scott V. Burger," Introduction to Machine Learning with R" O'reilly Publication,2018.
3. Wickham, Hadley," Advanced R" CRC Press, 2014.

ii. Reference Books

1. Jiawei Han, Micheline Kamber, Jian Pei, "Data Mining Concepts and Techniques" Third Edition, Elsevier Inc, 2012.
2. Nina Zumel and John Mount, "Practical Data Science with R" Manning Publications Co, 2014.
3. Jared P. Lander "R for Everyone -Advanced Analytics and Graphics", Pearson Education, 2014.

iii. Online Resources

(<https://archive.ics.uci.edu/ml/datasets.html>).