Machine Learning Lab

Course Code	20CS3652	**Year**	III	**Semester**	II
Course Category	PCC	**Branch**	CSE	**Course Type**	Practical
Credits	1.5	**L-T-P**	0-0-3	**Prerequisites**	Programming for problem solving, Java Programming, Python Programming
Continuous Internal Evaluation :	15	**Semester End Evaluation:**	35	**Total Marks:**	50

Course Outcomes		
Upon successful completion of the course, the student will be able to		
CO1	Apply various preprocessing techniques and Machine Learning methods on different datasets for a given problem.	**L3**
CO2	Implement various experiments in Jupyter Notebook Environment and Google Colab.	**L3**
CO3	Develop an effective report based on various learning methods implemented.	**L3**
CO4	Apply technical knowledge for a given scenario and express with an effective oral communication	**L3**
CO5	Analyze the outputs and visualizations generated for different datasets.	**L4**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1		√												√
CO21					√	√								
CO3										√				
CO4									√		√			
CO5			√			√								

Description (If any):

1. The programs can be implemented in either Python in Anaconda Software Jupyter Note book Environment or Co Lab.

2. Data sets can be taken from standard repositories (https://archive.ics.uci.edu/ml/datasets.html) or constructed by the students.

Syllabus

Expt. No.	Contents	Mapped CO
1	Anaconda Software Installation and introduction to Jupyter and Co Lab.	CO1,CO2,CO3,CO4, CO5
2	Apply Data pre-processing techniques.	CO1,CO2,CO3,CO4, CO5
3	Implement ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.	CO1,CO2,CO3,CO4, CO5
4	Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.	CO1,CO2,CO3,CO4, CO5
5	Implement naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.	CO1,CO2,CO3,CO4, CO5
6	Implement k-nearest neighbours classification using python.	CO1,CO2,CO3,CO4, CO5
7	Implementation of K-means Clustering algorithm.	CO1,CO2,CO3,CO4, CO5
8	Implementation of DBSCAN Clustering algorithm.	CO1,CO2,CO3,CO4, CO5
9	Implementation of hierarchical agglomerative clustering algorithm	CO1,CO2,CO3,CO4, CO5

Learning Resources

Text Books

1. Machine Learning using Python , U Dinesh Kumar and Manaranjan Pradhan, John Wiley & Sons
2. Machine Learning with Python for Everyone, Mark E.Fenner, First Edition, 2020,Pearson.
3. Machine Learning: A Probabilistic Perspective, Kevin P. Murphy, 2012, MIT Press

References

1. Artificial Intelligence: A Modern Approach, Stuart Russell and Norvig, Third Edition, 2015,
2. C Bishop – Pattern Recognition and Machine Learning – Springer, 2006. Machine Learning, Anuradha Srinivasaraghavan , and Vincy Joseph ,Kindle Edition, September 2020, WILEY.
3. Introduction to Machine Learning by ETHEM ALPAYDIN, Fourth Edition, Prentice Hall of India, MIT Press, 2020.

e-Resources and other Digital Material

1. https://www.coursera.org/learn/machine-learning
2. https://github.com/atinesh-s/Coursera-Machine-Learning-Stanford