

MACHINE LEARNING LAB

Course code: 18IS6DLMLL

Credits: 02

L: P: T: S: 0: 2: 1: 0

CIE Marks: 50

Exam Hours: 03

SEE Marks:50

Course Objectives:

1. Implement supervised and unsupervised machine learning algorithms
2. Perform classification on the pre processed dataset.
3. Implement the machine learning concepts and algorithms in Python Programming

Course Outcomes: At the end of the course, student will be able to:

CO1	Understand and implement supervised and unsupervised machine learning algorithms
CO2	Analyze and Implement Machine Learning algorithms on a given dataset
CO3	Construct the linear regression model as a method for prediction
CO4	Develop Bayesian concepts and clustering algorithms using Python program
CO5	Design and implement decision tree using information gain and entropy calculations
CO6	Analyze and build Artificial neural network.

Mapping of Course outcomes to Program outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	3	-	-	-	-	-	-	2	2	-	-
CO2	3	3	-	-	3	-	-	-	-	-	-	2	2	-	-
CO3	3	2	2	-	3	-	-	-	-	-	-	2	2	-	-
CO4	3	2	2	-	3	-	-	-	-	-	-	2	2	-	-
CO5	3	2	2	-	3	-	-	-	-	-	-	2	2	-	-
CO6	3	2	2	-	3	-	-	-	-	-	-	2	2	-	-

Unit	Course Content	Hours	COs
1.	Implement simple linear regression using python program and estimate statistical quantities from training data	3	CO1, CO2, CO3
2.	Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data	3	CO1,

	from a .CSV file.		CO2																																																																								
3.	For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.	3	CO1, CO2																																																																								
4.	Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.	3	CO1, CO2																																																																								
5.	Write a program to implement the 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.	3	CO2, CO5																																																																								
6.	Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set.	3	CO2, CO4																																																																								
7.	For the given table, write a python program to perform K-Means Clustering. <table><tr><td>X</td><td>3</td><td>1</td><td>1</td><td>2</td><td>1</td><td>6</td><td>6</td><td>6</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>8</td><td>9</td><td>9</td><td>8</td></tr><tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>X</td><td>5</td><td>4</td><td>6</td><td>6</td><td>5</td><td>8</td><td>6</td><td>7</td><td>6</td><td>7</td><td>1</td><td>2</td><td>1</td><td>2</td><td>3</td><td>2</td><td>3</td></tr><tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	X	3	1	1	2	1	6	6	6	5	6	7	8	9	8	9	9	8	1																		X	5	4	6	6	5	8	6	7	6	7	1	2	1	2	3	2	3	2																		3	CO2, CO4
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X	5	4	6	6	5	8	6	7	6	7	1	2	1	2	3	2	3																																																										
2																																																																											
8.	Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same dataset for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering.	3	CO2, CO4																																																																								
9.	For the given customer dataset, using the dendrogram to find the optimal number of clusters and finding Hierarchical Clustering to the dataset		CO2, CO4																																																																								
10.	Build an Artificial Neural Network by implementing the Backpropagation algorithm and test the same using appropriate data sets.	3	CO2, CO6																																																																								

TEXT BOOKS

1. EthemAlpaydın: Introduction to Machine Learning, 2nd Edition, The MIT Press Cambridge, Massachusetts London, England, 2010.
2. Tom M. Mitchell, "Machine Learning", McGraw-Hill Education (INDIAN EDITION), 2018

Assessment Pattern:

CIE –Continuous Internal Evaluation Lab (50 Marks)

Continual Internal Evaluation Marks (25)	IA Test Marks (25)	Final Marks (50)
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SEE –Semester End Examination Theory (50 Marks)