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| Department: Computer Science & EngineeringCourse: M.Tech (CSE) | | | **Semester:** | **2** |
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| **Subject: Machine Learning Lab** | | | | |
| **CSE2LB2** | **22CS2LB2** |  | **L – T – P - C:** | **0 – 0 – 3 –1.5** |
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| **Sl. No** | **Course Objectives** |
| 1 | Understand key algorithms and theorems that form the core of machine learning. |
| 2 | Hands on experience on the implementation of machine learning concepts and algorithms in any suitable language of choice. |
| 3 | Design and analyze the performance of various machine learning algorithms. |
| 4 | Identify real-world problems that can be solved by applying machine learning algorithms. |

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| **S.No.** | **Experiment** |
| 1 | Write a program to implement the naive Bayesian classifier for a sample training  data set stored as a .CSV file. Compute the accuracy of the classifier, considering few  test data sets. |
| 2 | Assuming a set of documents that need to be classified, use the naive Bayesian  Classifier model to perform this task. Built-in Java classes/API can be used to write  the program. Calculate the accuracy, precision, and recall for your data set. |
| 3 | 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. You can use Java/Python ML library classes/API. |
| 4 | Implement an algorithm to demonstrate Polynomial Classifier. |
| 5 | Build an Artificial Neural Network by implementing the Backpropagation  algorithm and test the same using appropriate data sets. |
| 6 | Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data  set for clustering using k-Means algorithm. Compare the results of these two  algorithms and comment on the quality of clustering. You can add Java/Python ML  library classes/API in the program. |
| 7 | Write a program to implement k-Nearest Neighbor algorithm to classify the iris  data set. Print both correct and wrong predictions. Java/Python ML library classes can  be used for this problem. |
| 8 | Implement an algorithm to demonstrate Decision Tree Classifier. |
| 9 | Implement an algorithm to demonstrate the significance of Genetic Algorithm in python. |
| 10 | Case Study: You are owing a supermarket mall and through membership cards , you have some basic data about your customers like Customer ID, age, gender, annual income, and spending score. Spending Score is something you assign to the customer based on your defined parameters like customer behavior and purchasing data. |

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| **Course outcome** | **Descriptions** |
| **CO1** | Apprehend the implementation procedures for the machine learning algorithms. |
| **CO2** | Develop programs for various Machine Learning algorithms. |
| **CO3** | Apply appropriate data sets to various Machine Learning algorithms. |
| **CO4** | Identify and apply Machine Learning algorithms to solve real world problems. |

**Course Outcomes:**

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| **Signature of the course**  **coordinator** | **Signature of the HoD** | **Signature of the Dean (Academic Affairs)** |