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| **No** | **Title of the Experiment** | **Tools and Techniques** | **Expected Skill**  **/Ability** |
| **1.** | Decision Tree Classifier  Implement and demonstrate a Decision Tree Classifier to classify the instances of dataset. Display the classification results. Also, try the same algorithm to classify the instances for any given medical diagnosis dataset.. | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Analytical/Problem solving through coding |
| **2** | Feature extraction using Principal Component Analysis (PCA)  Implement and demonstrate the Principal Component Analysis algorithm for dimensionality reduction for any dataset. | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Analytical/Problem solving through coding |
| **3** | K nearest neighbour (KNN)  Implement and demonstrate the k-Nearest Neighbour algorithm (k-NN) to classify the iris data set. Display the Confusion matrix and classification report. Also, try the same algorithm of the social networks dataset to predict a customer can purchase an item or not. | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Data Analysis/  Problem solving through coding |
| **4** | Support Vector Machine (SVM)  Implement and demonstrate a Support vector machine classifier to classify the instances of any dataset. Display the classification results. Also, try the same algorithm to classify the instances for any given dataset | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Data Analysis/  Problem solving through coding |
| **5** | Short Title: Regression  Implement and demonstrate linear regression and logistic regression algorithms for any given dataset(s). Visualize the results using graphs.  (Salary prediction, Price Prediction) | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Data Analysis/  Problem solving through coding |
| **6** | Random Forest (RF)  Implement and demonstrate a Random Forest classifier to classify the instances of dataset.  Display the classification results. Also, try the same algorithm to classify the instances for any given dataset | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Data Data Analysis/  Problem solving through coding |
| **7** | K-Means Clustering  Implement and demonstrate the k-means clustering algorithms. Visualize the results using graphs. | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Data Analysis/  Problem solving through coding |
| **8** | Hierarchical clustering  Implement and demonstrate the hierarchical clustering algorithms. Visualize the results using graphs. | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Data Data Analysis/  Problem solving through coding |
| **9** | DBSCAN clustering  Implement and demonstrate the hierarchical clustering algorithms. Visualize the results using graphs. | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Data Data Analysis/  Problem solving through coding |
| **10** | Implement and demonstrate the two hidden layer multilayer perceptron neural network to any given dataset for classification. Apply two different optimizers or activation functions and compare the results. | Python Programming, Pandas, Numpy, Matplotlib, Scikit learn | Data Analysis/  Problem solving through coding |