Ramaiah Institute of Technology

Department of Information Science and Engineering

Course Name: Machine Learning Lab Course Code:ISL66

1. **Model Measurement Analysis**: Create a dataset of your choice with at least 10 records. **E.g**. CoronaVirus patients who were tested, Student assignments subjected to plagiarism check. Assume a sample size of 100. Record the values of TP, TN, FP, FN with varying thresholds set. At each step of varying thresholds calculate the values of Precision, Recall, F1 Score as well as the TPR and FPR. Plot the ROC Curve. Analyze, Interpret.
2. **Artificial Neural Networks - Multi Layer Perceptron:** Build an Artificial Neural Network by implementing the Back Propagation Algorithm. Compare the actual and predicted output. Analyze and write the inference.
3. **Supervised Learning Algorithms - Decision Trees:** Implement ID3 decision trees considering a data set of your choice.
4. **Supervised Learning Algorithms - Linear Regression:** Consider a dataset from UCI repository. Create a Simple Linear Regression model using the training data set. Predict the scores on the test data and output RMSE and R Squared Score. Include appropriate code snippets to visualize the model. Interpret the result.
5. **Supervised Learning Algorithms - Logistic Regression:** Implement logistic regression and test it using any dataset of your choice. The output should include Confusion Matrix, Accuracy, Error rate, Precision, Recall and F-Measure.
6. **Supervised Learning Algorithms - KNN:** Implement k-Nearest Neighbor (KNN) by writing the algorithm on your own , without using pre-built code or library, for classifying a dataset. Interpret the result.
7. **Supervised Learning - Naive Bayes:** Use the "PlayTennis" image or any dataset given to you. Apply Naive Bayes Classifier and predict if we can play tennis for a new day with different features for Outlook, Temp, Humidity and Wind
8. **Un-Supervised Learning Algorithms - K-Means Clustering:** Build a K-Means Model for the given dataset. Implement Elbow Method to choose the K value and interpret the result.
9. **Un-Supervised Learning Algorithms - PCA:** Create your own dataset and apply PCA to find the Eigen Values and Eigen Vectors and create the transformed data.