ADL331 AI & DATA SCIENCE LAB

Experiment List

Cycle 1

1. Write a Python script to implement matrix transpose and matrix addition.
2. Write a Python script to generate a list of random numbers and find their mean median and mode using user-defined functions. Find variance and standard deviation using in-built functions.
3. Write a Python script to visualize normal distribution and uniform distribution.
4. Introduction to the CSV python library. Open a CSV file and sort the content with respect to one column using python
5. Data visualization - histogram of a column in a CSV file using pandas
6. Python script for data preprocessing

Cycle 2

7. Introduction to linear regression
8. Implement a program to perform linear regression for a dataset that prevails in csv format. Evaluate the model and find the Mean Squared Error (MSE)(CAR DATA SET).
9. Implement a program to perform logistic regression to classify a dataset. Print feature importance after building the model.(CLEVELAND HEART DISEASE DATA SET).
10. Perform Naive Bayes classification on the "glass" dataset from Kaggle. Interpret the performance of the classifier. Use CROSS VALIDATION and check new accuracy.
11. Implement dimensionality reduction on Car Evaluation dataset from UCI Machine Learning repository using PCA. Try setting number of PCA components from 2 to 5 and find the best number of PCA components that gives the highest accuracy. Find covariance among all features in the original dataset.
12. Implement k-Nearest Neighbour algorithm to classify any dataset (Social Network Ads).
13. Familiarization of K-Means Clustering using the iris data set.
14. Familiarization with SVM using the iris data set.
15. Write a program to construct a Support Vector Machine considering medical data. Use this model to demonstrate the diagnosis of heart patients using the standard Heart Disease Data Set

16. Write a python code to find the correlation and covariance between different attributes of Cleveland heart disease dataset. Which are the top 5 attributes closely related to the predicted attribute.

17. Classify a set of documents using the decision tree model.