MACHINE INTELLIGENCE APPLICATIONS LAB

Course Code: 20CS1109

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Course Outcomes:

At the end of the Course the student shall be able to

CO1: Understand the Basic operations Manipulating data.(L2)
CO2: Use various Learning techniques for Feature extraction. (L3)
CO3: Apply Statistical approaches for multiple Learning techniques. L3)
 CO4: Construct models for Classification. (L3)
CO5: Build neural network models. (L3)

LIST OF PROGRAMS:

(Any 12 Programs from the following to be performed)

1. Extract data from different file formats and display the summary statistics.

2. Write a program that extracts the words (features) used in a sentence.

3.   Write a program for edge detection to extract edge based features from a sample image.

4. Write a program to extract SURF/SIFT feature descriptors from a sample image.

5.   Write a program to perform Exploratory Data Analysis on real time datasets.
    a) Univariate Analysis
    b) Multivariate Analysis
    c) Visualization using correlation matrix

6. Write a program to perform Dimensionality Reduction using Principle Component Analysis techniques on real time data sets.

7. Write a program to perform Linear Discriminant Analysis for binary classification considering a real time dataset

8.   Write a program to implement the linear Regression for a sample training data set stored as a .CSV file

9. Write a program to implement the Non-linear Regression for a sample training data set stored as a .CSV file. Compute Mean Square Error by considering few test data sets.

10. 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.

11. Write a program to implement k-Nearest Neighbor algorithm to classify the iris data set. Print both correct and wrong predictions.

12. Write a program to implement the Support Vector Machine algorithm to classify the iris data set. Print both correct and wrong predictions.

13. Write a program to construct a Regression tree for cost estimation by assuming any numerical dataset

14. Write a program to perform Model diagnosis and tuning on any real time dataset using ensemblers
   a) RandomForestClassifier
   c) BaggingClassifier
   d) GradientBoostClassifier

15. Implement a single neural network and test for different logic gates.

16. Build an Artificial Neural Network by implementing the Backpropagation algorithm and test the same using appropriate data sets.

REFERENCES:
1. Vijayvargia, Abhishek, *Machine Learning with Python: An Approach to Applied Machine Learning*, BPB Publications, 1st edition,2018.
2. Aurelien Geron, *Hands-On Machine Learning with Scikit-Learn and TensorFlow,* Oreilly, March 2017.
3. Dr. M Gopal, *Applied Machine Learning*, 1st Edition, McGraw-Hill,2018