Bansilal Ramnath Agarwal Charitable Trust's

Vishwakarma Institute of Information Technology, Pune-48

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of Computer Science and Engineering (Artificial Intelligence)

LIST OF LAB ASSIGNMENTS

ACADEMIC YEAR: 2024-25 DATE : 13-01-2025

DEPARTMENT: CSE-AI CLASS: SY-A and SY-B

SEMESTER: II

SUBJECT: CA22231: Machine Learning

Sr. No.	Titles of Lab Assignment	CO	BL
1	Perform the following operations using R/Python on suitable data sets: a) read data from different formats (like csv, xls) b) Find Shape of Data c) Find Missing Values d) Find data type of each column e) Finding out Zero's f) Indexing and selecting data, sort data, g) Describe attributes of data, checking data types of each column, h) counting unique values of data, format of each column, converting variable data type (e.g. from long to short, vice versa)	CO2	L1
2	Perform the following operations using R/Python on the data sets: a) Compute and display summary statistics for each feature available in the dataset. (e.g. minimum value, maximum value, mean, range, standard deviation, variance and percentiles b) Data Visualization-Create a histogram for each feature in the dataset to illustrate the feature distributions. c) Data cleaning, Data integration, Data transformation, Data model building (e.g. Classification)	CO2	L1
3	Apply appropriate ML algorithm on a dataset collected in a cosmetics shop showing details of customers to predict customer response for special offers.	CO3	L2
4	Apply appropriate ML algorithm on a dataset collected in a cosmetics shop showing details of customers to predict customer response for special offer. Create confusion matrix based on above data and find a) Accuracy b) Precision c) Recall d) F-1 score	CO4	L2
5	Write a program to do following: Data Set: https://www.kaggle.com/shwetabh123/mall-customers This dataset givesthe data of Income and money spent by the customers visiting a shopping mall. The data set contains Customer ID, Gender, Age, Annual Income, Spending Score. Therefore, asa mall owner you need to find the group of people who are the profitable customers for the mallowner. Apply at least two clustering algorithms (based on Spending Score) to find the group ofcustomers.	CO6	L2

	a) Apply Data pre-processing b) Perform data-preparation (Train-Test Split) c) Apply Machine Learning Algorithm d) Evaluate Model. e) Apply Cross-Validation and Evaluate Mode		
6	Assignment on Regression technique. Download temperature data from below link. https://www.kaggle.com/venky73/temperaturesof-india?select=temperatures.csv This data consists of temperatures of INDIA averaging the temperatures of all places month wise. Temperatures values are recorded in CELSIUS a) Apply Linear Regression using suitable library function and predict the Month-wise temperature. b) Assess the performance of regression models using MSE, MAE and R-Square metrics c) Visualize simple regression model.	CO5	L3
7	Assignment on Classification technique Every year many students give the GRE exam to get admission in foreign Universities. The data set contains GRE Scores (out of 340), TOEFL Scores (out of 120), University Rating (out of 5), Statement of Purpose strength (out of 5), Letter of Recommendation strength (out of 5), Undergraduate GPA (out of 10), Research Experience (0=no, 1=yes), Admitted (0=no, 1=yes). Admitted is the target variable. Data Set: https://www.kaggle.com/mohansacharya/graduate-admissions The counselor of the firm is supposed check whether the student will get an admission or not based on his/her GRE score and Academic Score. So to help the counselor to take appropriate decisions build a machine learning model classifier using Decision tree to predict whether a student will get admission or not. a) Apply Data pre-processing (Label Encoding, Data Transformation….) techniques if necessary. b) Perform data-preparation (Train-Test Split) c) Apply Machine Learning Algorithm d) Evaluate Model.		

Mini project is to be performed in a group of 3 to 4 students.

CO5 L3 :

Develop a mini project in a group using different predictive models techniques to solve any real life problem.

Rubrics for Progressive Assessment -

Assignment / File submission (10 Marks)	Mock Exam / Test Marks (10 Marks)	Attendance (5 Marks)	Total (25 Marks)

Rubrics for Assignment Submission -

Timely Performance & submission (4 Marks)	Understanding (3 Marks)	Presentation (3 Marks)	Total (10 Marks)

Rubrics for Mock Exam -

Implementation (5 Marks)	Oral (5 Marks)	Total (10 Marks)

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HOD IT