School of Computer Science Engineering and Technology

Course- BTech
Course Code- CSEL301
Year- 2023
Date- 07-08-2023 to 11-08-2023

Type- Core
Course Name-AIML
Semester- Odd
Batch- 5th Sem

Max. Marks: 3

LAB ASSIGNMENT - #1

Objective: To understand the basic library functions and find out the best fit line using LSM.

NUMPY

1. Import numpy as np and see the version.
2. Write program for Creating a 1D array and extract items contains only odd/ even numbers from 1D array.
3. Write program for Creating a Boolean array.
4. Write program for Replace items that satisfy any condition with another value in array? (e.g., replace the odd/ even items with -1)
5. Write program for reshape an array and convert a 1D array to a 2D array.
6. Write program for stacking two arrays vertically?
7. How to remove items from one array those items that exist in another?
8. Write program to get the positions where elements of two arrays match?
9. Using Numpy, import a dataset keeping the text intact and print first 3 rows of the dataset.

PANDAS:

1. Create a program that reads a csv file from a specified source and prints the first 5 rows using the pandas library.
2. Write a program to select a particlar series from diamonds DataFrame. Print the content of the series.
3. Write a program to select a particular series from diamonds DataFrame. Print the content of the series.
4. Create a new 'Quality-color' Series of diamond DataFrame by combing any two columns of the dataframe.
5. Create a program to determine the number of rows and columns, as well as the data type, of each column in the diamonds Dataframe.
6. Create a program that summarises only the diamonds Dataframe's 'object' columns.
7. Create a program to count the number of missing values in each Series of diamonds DataFrame.
8. Create a program to drop a row if any or all values in a row are missing of diamonds DataFrame on two specific columns

Least Square Method

1. Consider the following example: Experience of faculties in a university (number of years) and their performance rating is given.

Exp. in years	16	12	18	4	3	10	5	12
Performance rating	87	88	89	68	78	80	75	83

i. Find and print the slope and intercept by least square method.

ii. Plot the best-fitted line using least square method

iii. Estimate the performance rating for a Faculty with 20 years of experience.

Additional questions

1. Number of man-hours and the corresponding productivity (units) are given below. Fit a simple linear regression equation $\hat{Y} = a + bx$ applying the method of least squares.

Man hours	3.5	4.5	6.5	7.5	8.5
Productivity(units)	9	10.2	11.6	12.1	20.7

i. Find out the value of a and b.

ii. Plot the best-fitted line using least square method.