ME 228 - S1 - Assignment 1

Department of Mechanical Engineering, IIT Bombay
Spring 2024
Due Date: 9:30 AM, Jan 21, 2024, Marks 20

Assignment Date: 10:30 AM, Monday, Jan 15, 2023

Objective and Instructions

1. The objective is to explore datasets using Pandas library and plot basic trends.

2. Show all the elementary steps as needed to fully understand the problem.

3. This needs to be performed using Google Colab Notebook or Jupyter Notebook only.

4. Total 2 files should be uploaded - Python notebook, Python Notebook PDF. Do not submit a zip file.

5. You are *welcome and are encouraged to discuss* with the students of this class.

Q 1. This exercise involves the Auto data set provided with this assignment. Make sure that the missing values have been removed from the data.

(a) Which of the predictors are quantitative, and which are qualitative?

(b) What is the range of each quantitative predictor? You can answer this using the min() and max() methods in numpy.

(c) What is the mean and standard deviation of each quantitative predictor?

(d) Now remove the 10th through 85th observations. What is the range, mean, and standard deviation of each predictor in the subset of the data that remains?

(e) Using the full data set, investigate the predictors graphically, using scatterplots or other tools of your choice. Create some plots highlighting the relationships among the predictors. Comment on your findings.

(f) Suppose that we wish to predict gas mileage (mpg) on the basis of the other variables. Do your plots suggest that any of the other variables might be useful in predicting mpg? Justify your answer.

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