Assignment 3: Regression & Optimisation

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Task 1:

Lines [15-30]

Split data into target and features. Output the minimum and maximum heating and cooling loads from the dataset.

Task 2:

Lines [33-46]

Determine the correct size for the parameter vector using 8 for loops as there are 8 feature vectors.

Lines [49-72]

Calculate the estimated target vector using 8 for loops as there are 8 feature vectors.

Task 3:

Lines [75-91]

Comments included in the code.

Task 4:

Lines [94-104]

Comments included in the code.

Task 5:

Lines [107-119]

Comments included in the code.

Task 6:

Lines [122-180]

[125] Split the targets into heating and cooling targets.

[133] Run KFold for degrees 0, 1, 2.

[140, 145] Get the training and testing features and targets.

[149] Find the p0 for the heating load and cooling load.

[153] Calculate the predictions for the test data.

[157] Find the absolute difference between predictions and actual heating and cooling loads.

[167] Find the mean of the absolute difference for each degree.

[171] Find the best degree.

Task 7:

Lines [182-201]

[183] Calculate the best prediction using the full dataset and the best performing degree.

[189-201] Plot the predicted heating and cooling loads against their true loads.

Sample output:

Minimum heating 6.01.

Maximum heating 43.1.

Minimum cooling 10.9.

Maximum cooling 48.03.

Mean absolute difference between estimated Heating Loads [9.1571166955076, 2.107095917822175, 0.8023662249294148]

Mean absolute difference between estimated Cooling Loads [8.588373873879465, 2.266495969478166, 1.5243382275612076]

Best Degree for Heating Loads: 2

Best Degree for Cooling Loads: 2