

HW #1

Multivariable Regression

Regression Using Sklearn

Dataset – Concrete Compressive Strength (水泥構件抗壓強度)

■ Abstract

- Concrete is an important material in civil engineering.
- The concrete compressive strength is a highly nonlinear function of age and ingredients.

■ Data Set Information:

- Number of instances/samples: 1030
- Number of variables: 9 (8 input variables, and 1 output variable)




Dataset – Concrete Compressive Strength (水泥構件抗壓強度)



Name	Data Type	Measurement	Description
Cement/水泥 (component 1)	Quantitative	kg in a m^3 mixture	Input Variable
Blast Furnace Slag/高爐渣(component 2)	Quantitative	kg in a m^3 mixture	Input Variable
Fly Ash/飛灰(component 3)	Quantitative	kg in a m^3 mixture	Input Variable
Water/水 (component 4)	Quantitative	kg in a m^3 mixture	Input Variable
Superplasticizer/減水劑 (component 5)	Quantitative	kg in a m^3 mixture	Input Variable
Coarse Aggregate/粗粒料(component 6)	Quantitative	kg in a m^3 mixture	Input Variable
Fine Aggregate/細粒料(component 7)	Quantitative	kg in a m^3 mixture	Input Variable
Age/年分	Quantitative	Day (1~365)	Input Variable
Concrete compressive strength (抗壓強度)	Quantitative	MPa (Million Pa)	Output Variable

Code Template

[HW1 Template] Multivariable Regression.ipynb

 PRO

Assignment 1] Multivariable Regression.ipynb ☆

檔案 編輯 檢視畫面 插入 執行階段 工具 說明 最近於 8月8日 編輯

留言 共用 設定

+ 程式碼 + 文字

連線 編輯

Assignment 1. Concrete Strength Regression

This assignment require to perform a multiple variable fitting on a civil engineering dataset. In doing this assignment, you will learn to:

- Load data from a `csv` file using the `pandas` package
- Fit a multiple variable model using the `Dataset – Concrete Compressive S...`
- Evaluate the fit.

Step 1: load the packages you will need.

```
[ ] 1 import numpy as np
    2 import matplotlib
    3 import matplotlib.pyplot as plt
    4 from sklearn import linear_model
    5 import pandas as pd
```

Step 2: Download Data

Concrete is one of the most basic construction materials. In this exercise, you will download a simple dataset for predicting the strength of concrete from the attributes of concrete. The data set comes from this very nice [kaggle competition](https://raw.githubusercontent.com/sdrangan/introml/master/unit03_mult_lin_reg/Concrete_Data_Yeh.csv). Kaggle has many excellent dataset for your project.

You can download the data with the following command. After running this command, you should have the file `data.csv` in your local folder.

```
[ ] 1 fn_src='https://raw.githubusercontent.com/sdrangan/introml/master/unit03_mult_lin_reg/Concrete_Data_Yeh.csv'
    2 fn_dst='data.csv'
    3
    4 import os
    5 from six.moves import urllib
    6
    7 if os.path.isfile(fn_dst):
    8     print('File %s is already downloaded' % fn_dst)
    9 else:
```

作業要求

- 學習與理解Step1-Step4
- 完成Step5-Step9
- 上傳資料: 程式碼、報告
- 繳交作業報告

評分方式: **報告書與作業內容理解(100%)**