



智慧型控制及應用實驗室

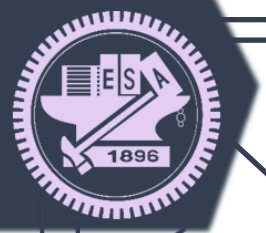
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Machine Learning HW1

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Question 2

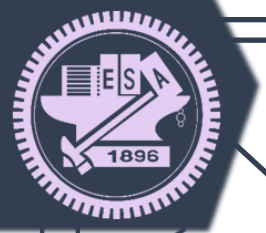
- Library required for HW1:
Pandas
Numpy
Scikit-learn (sklearn)
- Example:

```
In [1]:  import pandas as pd  
         import numpy as np  
         from sklearn.linear_model import LinearRegression  
         from sklearn.metrics import mean_squared_error
```

Import library

```
In [2]:  def rmse(y_true, y_pred):  
         return np.sqrt(mean_squared_error(y_true, y_pred))
```

Define RMSE



Question 2.(b)

input: feature_0, output: label

```
In [3]: data = pd.read_csv('dataset_v2.csv', index_col=False)      # load data

feature_0 = data.loc[:, 'feature_0'].values.reshape(-1, 1)      # select feature_0 as input
label = data.label                                              # select label as output

model = LinearRegression(n_jobs=-1, normalize=True)             # set model
model.fit(feature_0, label)                                       # fit input & output

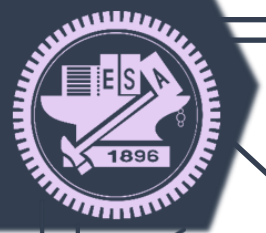
RMSE = rmse(label, model.predict(feature_0))                     # calculate error

result = pd.DataFrame(np.zeros(119), columns=['RMSE'], index=data.columns[:-1])
result.iloc[0, 0] = RMSE
print(result)

result.to_csv('score.csv')                                       # export result to csv
```

	RMSE
feature_0	6.198733
feature_1	0.000000
feature_2	0.000000
feature_3	0.000000
feature_4	0.000000
...	...
feature_114	0.000000
feature_115	0.000000
feature_116	0.000000
feature_117	0.000000
feature_118	0.000000

[119 rows x 1 columns]



Question 2.(b)

- After calculating the RMSE of all features, sort the features according to the magnitude of the RMSE from low to high.

越有用的放越上面

Finally, export the result to .csv

	A	B
1		RMSE
2	feature_0	6.1987327
3	feature_1	0
4	feature_2	0
5	feature_3	0
6	feature_4	0
7	feature_5	0
8	feature_6	0
9	feature_7	0
10	feature_8	0
11	feature_9	0
12	feature_10	0
13	feature_11	0
14	feature_12	0
15	feature_13	0
16	feature_14	0

Low

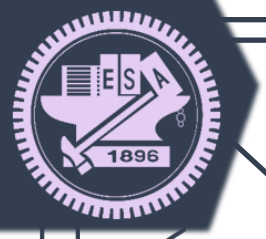
High

Feature name

4

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Submission Format

- Upload .rar (or .zip) include:
 - Q.1 and Q.2 (d) answer in PDF
 - Q.2 code (.py or .ipynb)
 - Q.2 (a)(b)(c)(e) output (.csv)