Multiple Linear Regression. In-class Exercise 1

EL-GY 6143 Intro Machine Learning. Prof. Sundeep Rangan

Question

Complete the following items in the demo, demo1_glucose.ipynb.

In class exercise: What are the (normalized) ages of the first 5 subjects?

```
[18] # TODO
```

In-class exercise: Print the attributes S1-S3 for subjects 10-15

```
[ ]  # TODO
```

Double-click (or enter) to edit

In class exercise: Create a scatter plot of the target variable, `y` vs. the BMI. Does there seem to be a relation? What about `y` vs. the age? Which is a better predictor?

```
[19] # TODO
```

Solution:

In class exercise: What are the (normalized) ages of the first 5 subjects?

Ans. Age is the first attribute, so it is column 0. Note the values are scaled and shifted, so the age is no longer in units such as years.

```
#TODO
# Age is the first attribute
print(X[:5,0])
```

```
[ 0.03807591 -0.00188202  0.08529891 -0.08906294  0.00538306]
```

In-class exercise: Print the attributes S1-S3 for subjects 10-15

Ans. These are columns 4,5 and 6. Note that, in python, you write `X[10:16,4:7]` to end on row 15 and column 6.

```
#TODO
print(X[10:16,4:7])
```

```
[[-1.03389471e-01 -9.05611890e-02 -1.39477432e-02]
 [-7.07277125e-03  4.59715403e-02 -6.54906725e-02]
 [-4.32086554e-03 -9.76888589e-03  4.49584616e-02]
 [-4.32086554e-03 -1.57187067e-02 -2.90282981e-03]
 [ 1.76943802e-02 -6.12835791e-05  8.17748397e-02]
 [ 8.92439288e-02  1.07661787e-01 -3.97192078e-02]]
```

In class exercise: Create a scatter plot of the target variable, `y` vs. the BMI. Does there seem to be a relation? What about `y` vs. the age? Which is a better predictor?

Ans: You can see that, by itself, BMI is a better predictor.

```
#TODO
plt.figure(figsize=(10,5))
plt.subplot(1,2,1)
plt.plot(X[:,2], y, 'o')
plt.xlabel('BMI')
plt.ylabel('Glucose')

plt.subplot(1,2,2)
plt.plot(X[:,0], y, 'o')
plt.xlabel('Age')
plt.ylabel('Glucose')
```

```
Text(0, 0.5, 'Glucose')
```