

homework

March 19, 2021

0.1 Your name here...

0.2 Student_name: xxx

0.3 Student_id: xxxxxx

0.4 Implement least square method for univariable linear regression

```
[6]: from matplotlib import pyplot as plt
```

data

```
[7]: x=[1.156762,2.624116,2.943006,2.499967,3.530516,4.045524,5.60725,5.784322,7.  
      ↪01605,8.304229,7.351775,8.799763,9.3467,10.232547,11.872116]  
     y=[3.949326,1.746431,9.902035,5.32671,10.569117,12.493749,14.531507,15.  
      ↪758228,12.235891,12.536069,19.349313,18.347272,18.812099,19.750414,24.672962]
```

1 univariate linear model

$$a = w * x + b$$

2 1 implement the univariable linear model

```
[8]: def uniLinear(x, w, b):  
     #####  
     ### Your Code Here  
     a = 1  
     #####  
     return a
```

3 2 calculate the w and b of linear model by least square method

```
[9]: def uni_least_square(x, y):  
     #####  
     ### Your Code Here  
     # compute w  
     w = 1
```

```

# compute b
b = 1
#####
return w, b

w, b = uni_least_square(x, y)
print("-"*40)
print("least square method: w={}, b={}".format(w, b))
print("-"*40)

a = [uniLinear(x_i, w, b) for x_i in x]

plt.figure()
plt.plot(x, y, 'o')
plt.plot(x, a, '-')

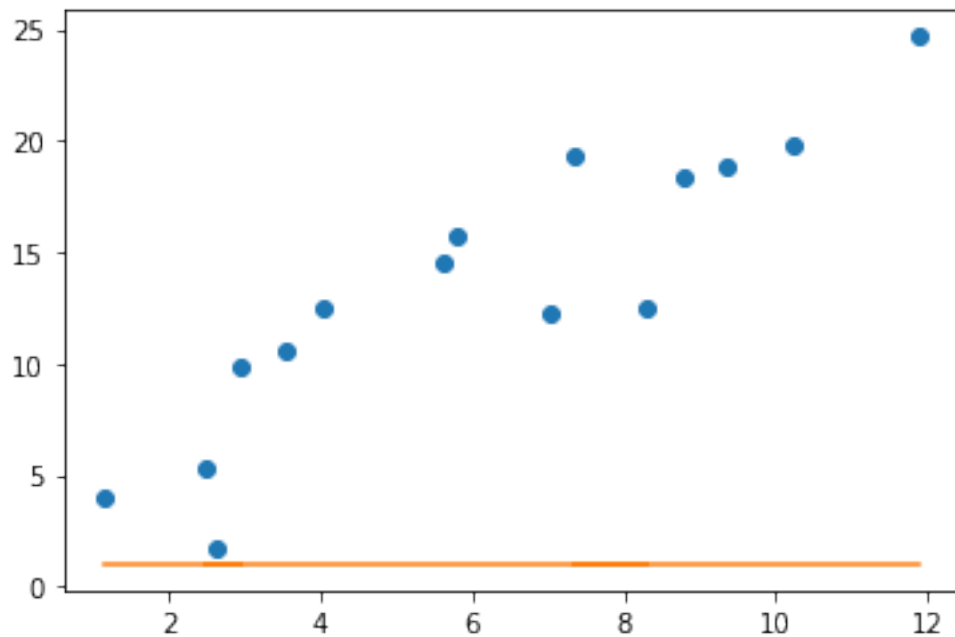
```

```

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least square method: w=1, b=1
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```

[9]: [<matplotlib.lines.Line2D at 0x26516b4d2e0>]



[]:

[]: