

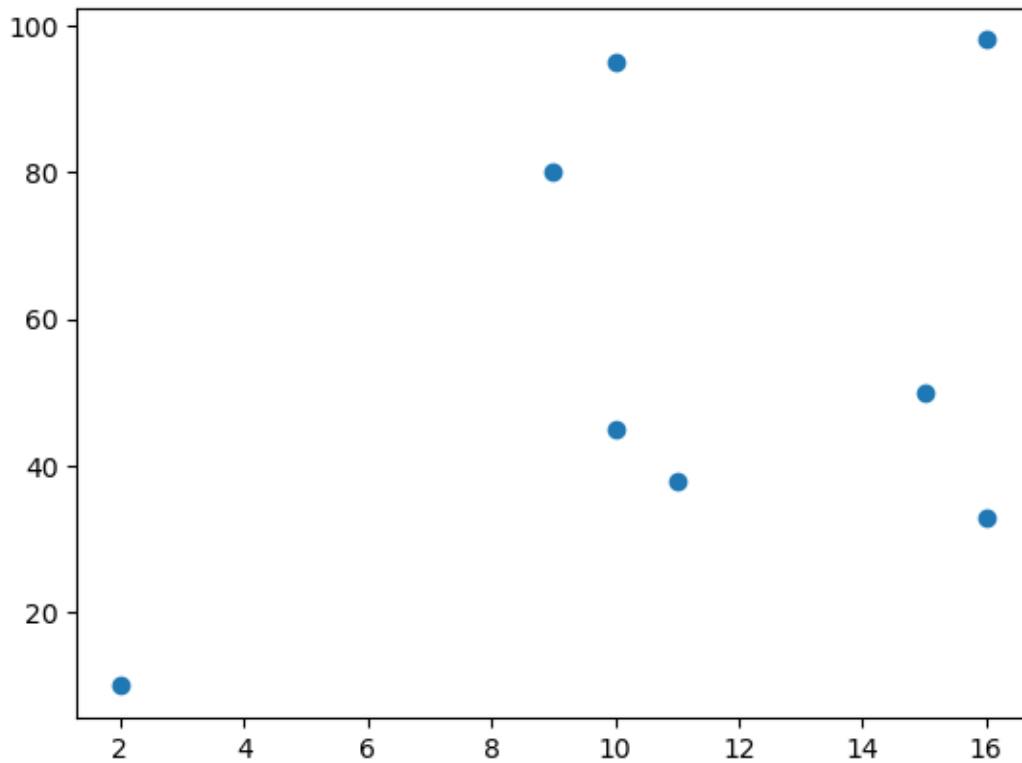
# linear\_polynomial\_regression

March 30, 2024

```
[32]: ## Aditya Agre  
      # 121B1B006  
      ## ML assignment2
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[33]: ## Making sample data  
      data = {  
          'hours' : [10,9,2,15,10,16,11,16],  
          'risk'  : [95,80,10,50, 45,98,38,33]  
      }  
  
      import pandas as pd  
      df = pd.DataFrame(data)
```

```
[34]: ## Visualising data  
      import matplotlib.pyplot as plt  
      plt.scatter(data['hours'], data['risk'])  
      plt.show()
```



```
[35]: ## A. Linear regression
from scipy import stats

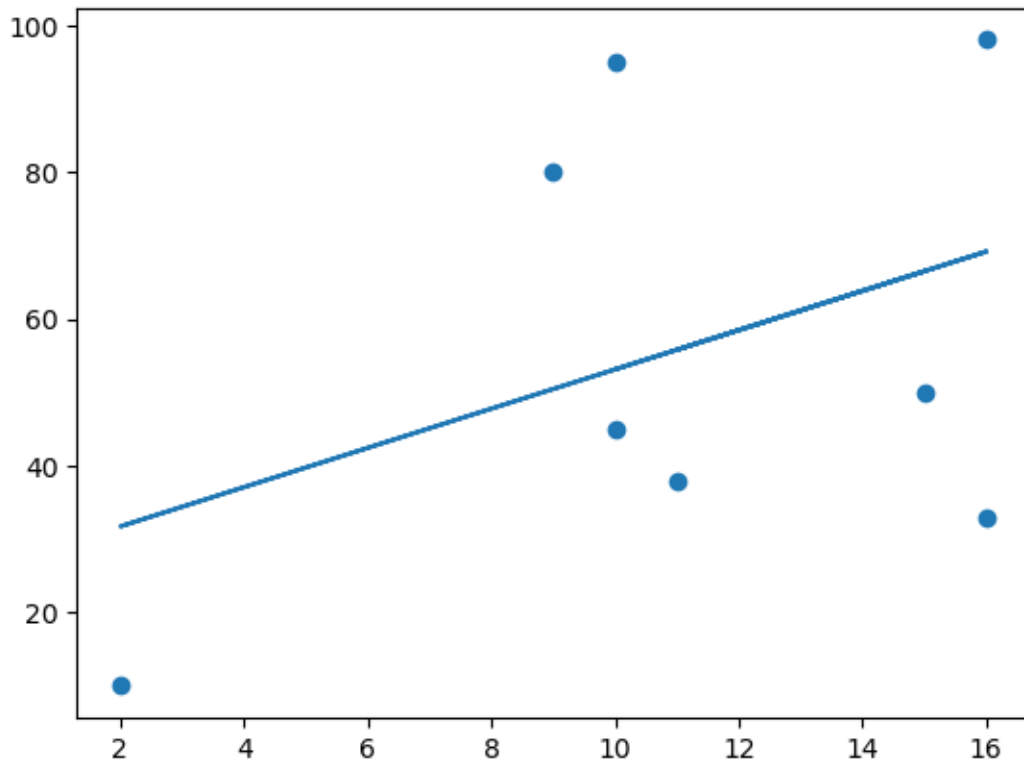
x = data['hours']
y = data['risk']

slope, intercept, r, p, std_err = stats.linregress(x, y)

def myfunc(x):
    return slope * x + intercept

mymodel = list(map(myfunc, x))

plt.scatter(x, y)
plt.plot(x, mymodel)
plt.show()
```



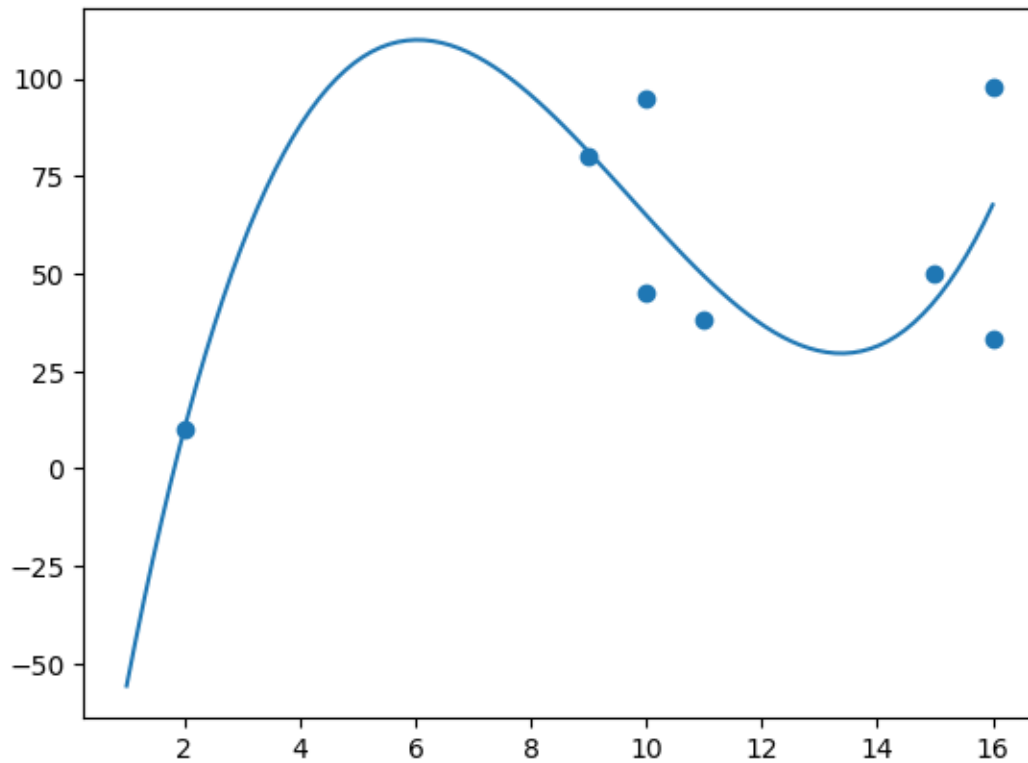
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[42]: ## Polynomial regression

import numpy

mymodel = numpy.poly1d(numpy.polyfit(x, y, 3))

myline = numpy.linspace(1, 16, 100)

plt.scatter(x, y)
plt.plot(myline, mymodel(myline))
plt.show()
```



[41]:

0.39562236551273156

```
[ ]: ## comparing performance of linear and polynomial regression, linear gave r2 =0.
      ↪39 while polynomial
      ## gave r2 = 0.484436
      ## Therefore, best performance was shown by polynomial regression.
```