

Linear Regression Python

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By: Tutorial by Michael Galarnyk
youtube video on how to install anaconda on mac osx:
<https://www.youtube.com/watch?v=B6d5LrA8bNE>

```
In [6]: import numpy as np
import pandas as pd
from sklearn.linear_model import LinearRegression
%pylab inline
import matplotlib.pyplot as plt
```

Populating the interactive namespace from numpy and matplotlib

```
In [7]: raw_data = pd.read_csv("linear.csv")
raw_data.head(3)
```

```
Out[7]:
```

	x	y
0	82.583220	134.907414
1	73.922466	134.085180
2	34.887445	NaN

1) Preprocess the data to remove any points with a missing y value

```
In [8]: filtered_data = raw_data[~np.isnan(raw_data["y"])] #removes rows with NaN in them
filtered_data.head(3)
```

```
Out[8]:
```

	x	y
0	82.583220	134.907414
1	73.922466	134.085180
3	61.839983	114.530638

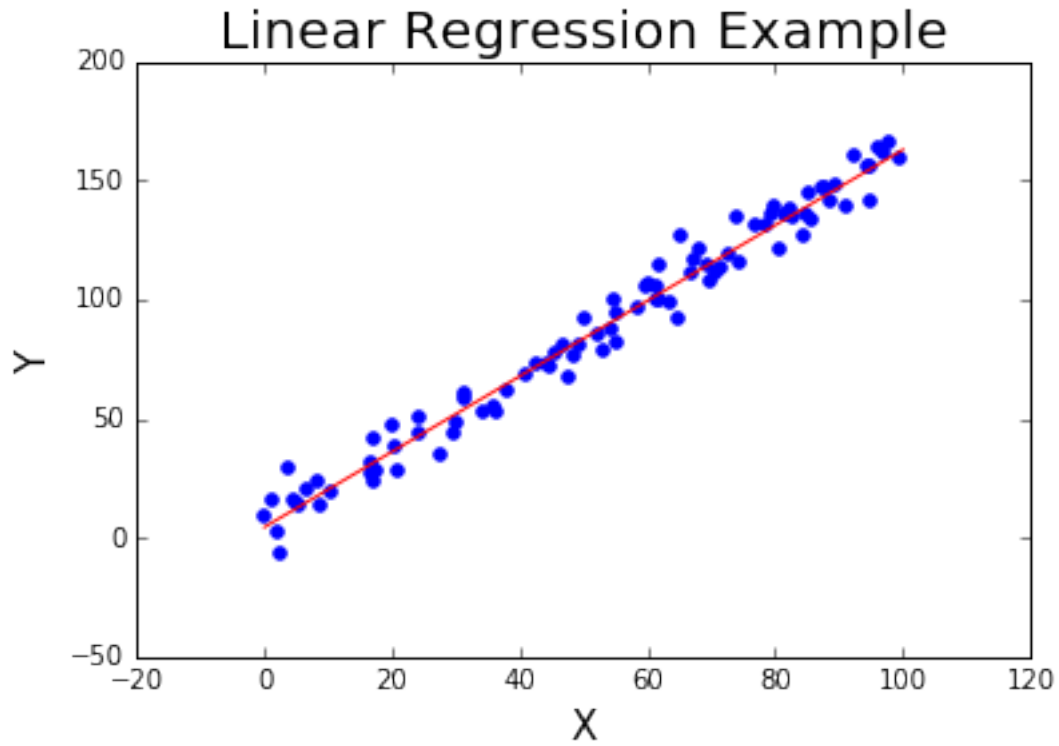
2) Fit a linear regression model using sklearn's LinearRegression package

```
In [9]: npMatrix = np.matrix(filtered_data)
X, Y = npMatrix[:,0], npMatrix[:,1]
mdl = LinearRegression().fit(X,Y) # either this or the next line
#mdl = LinearRegression().fit(filtered_data[['x']],filtered_data.y)
m = mdl.coef_[0]
b = mdl.intercept_
print "formula: y = {0}x + {1}".format(m, b) # following slope intercept form
```

```
formula: y = [ 1.5831968]x + [ 4.4701969]
```

```
In [10]: plt.scatter(X,Y, color='blue')
plt.plot([0,100],[b,m*100+b], 'r')
plt.title('Linear Regression Example', fontsize = 20)
plt.xlabel('X', fontsize = 15)
plt.ylabel('Y', fontsize = 15)
```

Out[10]: <matplotlib.text.Text at 0x10bbd3050>



1 official documentation

http://scikit-learn.org/stable/auto_examples/linear_model/plot_ols.html