## Stock\_Linear\_Regression

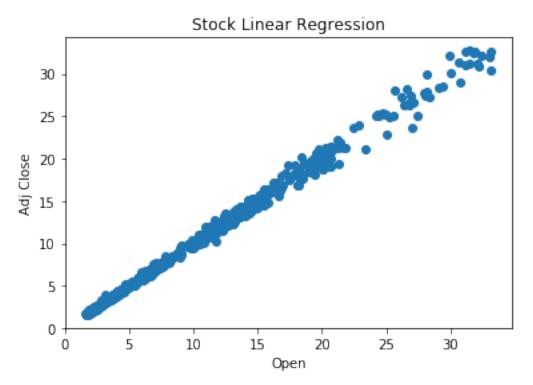
September 29, 2021

## 1 Stock Linear Regression

 $\rightarrow$ shift(1))

```
[1]: import numpy as np
    import pandas as pd
    import matplotlib.pyplot as plt
    import math
    import warnings
    warnings.filterwarnings("ignore")
    # fix_yahoo_finance is used to fetch data
    import fix_yahoo_finance as yf
    yf.pdr_override()
[2]: # input
    symbols = 'AMD'
    start = '2012-01-01'
    end = '2019-01-01'
    # Read data
    dataset = yf.download(symbols,start,end)
    # View Columns
    dataset.head()
    [********* 100%************* 1 of 1 downloaded
[2]:
                Open High
                            Low Close Adj Close
                                                    Volume
    Date
    2012-01-03 5.53 5.59 5.44
                                  5.48
                                             5.48 12675100
                                  5.46
    2012-01-04 5.47 5.49 5.41
                                             5.46 8034900
    2012-01-05 5.45 5.57 5.35
                                  5.46
                                             5.46 11476900
    2012-01-06 5.44 5.52 5.39
                                  5.43
                                             5.43 12938600
    2012-01-09 5.42 5.60 5.38
                                  5.59
                                             5.59 12585400
[3]: dataset['Returns'] = np.log(dataset['Adj Close'] / dataset['Adj Close'].
```

```
[4]: dataset = dataset.dropna()
[5]: X = dataset['Open']
     Y = dataset['Adj Close']
[6]: plt.scatter(X,Y)
    plt.xlabel('Open')
     plt.ylabel('Adj Close')
     plt.title('Stock Linear Regression')
     plt.show()
```



```
[7]: from sklearn.model_selection import train_test_split
 [8]: X_train, X_test, y_train, y_test=train_test_split(X,Y,test_size=0.2,random_state=0)
 [9]: X_train = np.array(X_train).reshape(-1,1)
      y_train = np.array(y_train).reshape(-1,1)
      X_test = np.array(X_test).reshape(-1,1)
      y_test = np.array(y_test).reshape(-1,1)
[10]: X_train.shape
```

[10]: (1407, 1)

```
[11]: from sklearn.linear_model import LinearRegression
      linregression=LinearRegression()
      linregression.fit(X_train,y_train)
[11]: LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None,
               normalize=False)
[12]: |y_pred = linregression.predict(X_test)
      y_pred
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[13]: print('Intercept')
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[14]: print('Slope')
      linregression.coef_
     Slope
```

## [14]: array([[0.99603132]])

```
[15]: import matplotlib.pyplot as plt

plt.scatter(X_train,y_train)
  plt.plot(X_train,linregression.predict(X_train),'r')
  plt.xlabel('Open')
  plt.ylabel('Adj Close')
  plt.title('Stock Linear Regression')
  plt.show()
```

