

Stochastic_Oscillator

September 29, 2021

1 Stochastic Oscillator

<https://www.investopedia.com/terms/s/stochasticoscillator.asp>

```
[1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

import warnings
warnings.filterwarnings("ignore")

import yfinance as yf
yf.pdr_override()
```

```
[2]: # input
symbol = 'AAPL'
start = '2018-09-01'
end = '2019-01-01'

# Read data
df = yf.download(symbol,start,end)

# View Columns
df.head()
```

[*****100%*****] 1 of 1 completed

```
[2]:
```

	Adj Close	Close	High	Low	Open \
Date					
2018-09-04	223.062759	228.360001	229.179993	226.630005	228.410004
2018-09-05	221.607346	226.869995	229.669998	225.100006	228.990005
2018-09-06	217.924789	223.100006	227.350006	221.300003	226.229996
2018-09-07	216.166550	221.300003	225.369995	220.710007	221.850006
2018-09-10	213.265411	218.330002	221.850006	216.470001	220.949997

	Volume
Date	
2018-09-04	27390100

```

2018-09-05 33333000
2018-09-06 34290000
2018-09-07 37619800
2018-09-10 39516500

```

```

[3]: n = 14
      smin = df['Low'].rolling(n).min()
      smax = df['High'].rolling(n).max()
      df['stoch_k'] = 100 * (df['Adj Close'] - smin) / (smax - smin)
      d_n = 3
      df['stoch_d'] = df['stoch_k'].rolling(d_n).mean()

```

```

[4]: df.head()

```

```

[4]:      Adj Close      Close      High      Low      Open  \
Date
2018-09-04  223.062759  228.360001  229.179993  226.630005  228.410004
2018-09-05  221.607346  226.869995  229.669998  225.100006  228.990005
2018-09-06  217.924789  223.100006  227.350006  221.300003  226.229996
2018-09-07  216.166550  221.300003  225.369995  220.710007  221.850006
2018-09-10  213.265411  218.330002  221.850006  216.470001  220.949997

      Volume  stoch_k  stoch_d
Date
2018-09-04  27390100      NaN      NaN
2018-09-05  33333000      NaN      NaN
2018-09-06  34290000      NaN      NaN
2018-09-07  37619800      NaN      NaN
2018-09-10  39516500      NaN      NaN

```

```

[5]: df.tail()

```

```

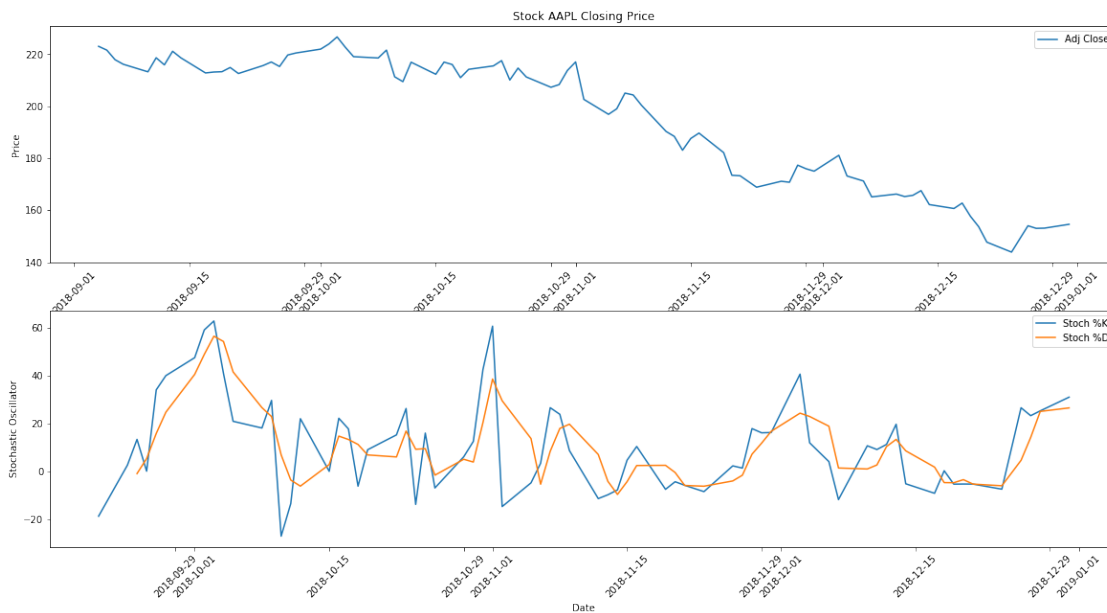
[5]:      Adj Close      Close      High      Low      Open  \
Date
2018-12-24  143.924454  146.830002  151.550003  146.589996  148.149994
2018-12-26  154.059814  157.169998  157.229996  146.720001  148.300003
2018-12-27  153.059998  156.149994  156.770004  150.070007  155.839996
2018-12-28  153.138428  156.229996  158.520004  154.550003  157.500000
2018-12-31  154.618546  157.740005  159.360001  156.479996  158.529999

      Volume  stoch_k  stoch_d
Date
2018-12-24  37169200  -7.445649  -6.028773
2018-12-26  58582500  26.498111   4.573466
2018-12-27  53117100  23.189961  14.080808
2018-12-28  42291400  25.205653  24.964575
2018-12-31  35003500  30.902794  26.432803

```

```
[6]: fig = plt.figure(figsize=(20,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df['Adj Close'])
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')
ax1.legend(loc='best')
ax1.tick_params(axis='x', rotation=45)

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['stoch_k'], label='Stoch %K')
ax2.plot(df['stoch_d'], label='Stoch %D')
ax2.legend(loc='best')
ax2.set_ylabel('Stochastic Oscillator')
ax2.set_xlabel('Date')
ax2.tick_params(axis='x', rotation=45)
```



1.1 Candlestick with Stochastic Oscillator

```
[7]: from matplotlib import dates as mdates
import datetime as dt

dfc = df.copy()
dfc['VolumePositive'] = dfc['Open'] < dfc['Adj Close']
#dfc = dfc.dropna()
dfc = dfc.reset_index()
dfc['Date'] = pd.to_datetime(dfc['Date'])
dfc['Date'] = dfc['Date'].apply(mdates.date2num)
```

```
dfc.head()
```

```
[7]:
```

	Date	Adj Close	Close	High	Low	Open	\
0	736941.0	223.062759	228.360001	229.179993	226.630005	228.410004	
1	736942.0	221.607346	226.869995	229.669998	225.100006	228.990005	
2	736943.0	217.924789	223.100006	227.350006	221.300003	226.229996	
3	736944.0	216.166550	221.300003	225.369995	220.710007	221.850006	
4	736947.0	213.265411	218.330002	221.850006	216.470001	220.949997	

	Volume	stoch_k	stoch_d	VolumePositive
0	27390100	NaN	NaN	False
1	33333000	NaN	NaN	False
2	34290000	NaN	NaN	False
3	37619800	NaN	NaN	False
4	39516500	NaN	NaN	False

```
[8]: from mpl_finance import candlestick_ohlc

fig = plt.figure(figsize=(16,10))
ax1 = plt.subplot(2, 1, 1)
candlestick_ohlc(ax1,dfc.values, width=0.5, colorup='g', colordown='r', alpha=1.
↪0)
ax1.xaxis_date()
ax1.xaxis.set_major_formatter(mdates.DateFormatter('%d-%m-%Y'))
ax1.grid(True, which='both')
ax1.minorticks_on()
ax1v = ax1.twinx()
colors = dfc.VolumePositive.map({True: 'g', False: 'r'})
ax1v.bar(dfc.Date, dfc['Volume'], color=colors, alpha=0.4)
ax1v.axes.yaxis.set_ticklabels([])
ax1v.set_ylim(0, 3*df.Volume.max())
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')
ax1.set_xlabel('Date')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['stoch_k'], label='Stoch %K')
ax2.plot(df['stoch_d'], label='Stoch %D')
ax2.legend(loc='best')
ax2.set_ylabel('Stochastic Oscillator')
ax2.set_xlabel('Date')
ax2.tick_params(axis='x', rotation=45)
```

