

RRI

September 29, 2021

1 Real Range Indicator

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

import warnings
warnings.filterwarnings("ignore")

# yahoo finance is used to fetch data
import yfinance as yf
yf.pdr_override()
```

```
[2]: # input
symbol = 'AAPL'
start = '2018-08-01'
end = '2019-01-01'

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

# View Columns
df.head()
```

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

```
[2]:
```

	Open	High	Low	Close	Adj Close	Volume
Date						
2018-08-01	49.782501	50.439999	49.327499	50.375000	48.706295	271742800
2018-08-02	50.145000	52.095001	50.087502	51.847500	50.130024	249616000
2018-08-03	51.757500	52.185001	51.369999	51.997501	50.275055	133789600
2018-08-06	52.000000	52.312500	51.767502	52.267502	50.536114	101701600
2018-08-07	52.330002	52.375000	51.689999	51.777500	50.062340	102349600

```
[3]: df['RRI'] = (df['Adj Close'] - df['Open']) / (df['High'] - df['Low'])
```

```
[4]: df.head()
```

```
[4]:
```

	Open	High	Low	Close	Adj Close	Volume \
Date						
2018-08-01	49.782501	50.439999	49.327499	50.375000	48.706295	271742800
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```

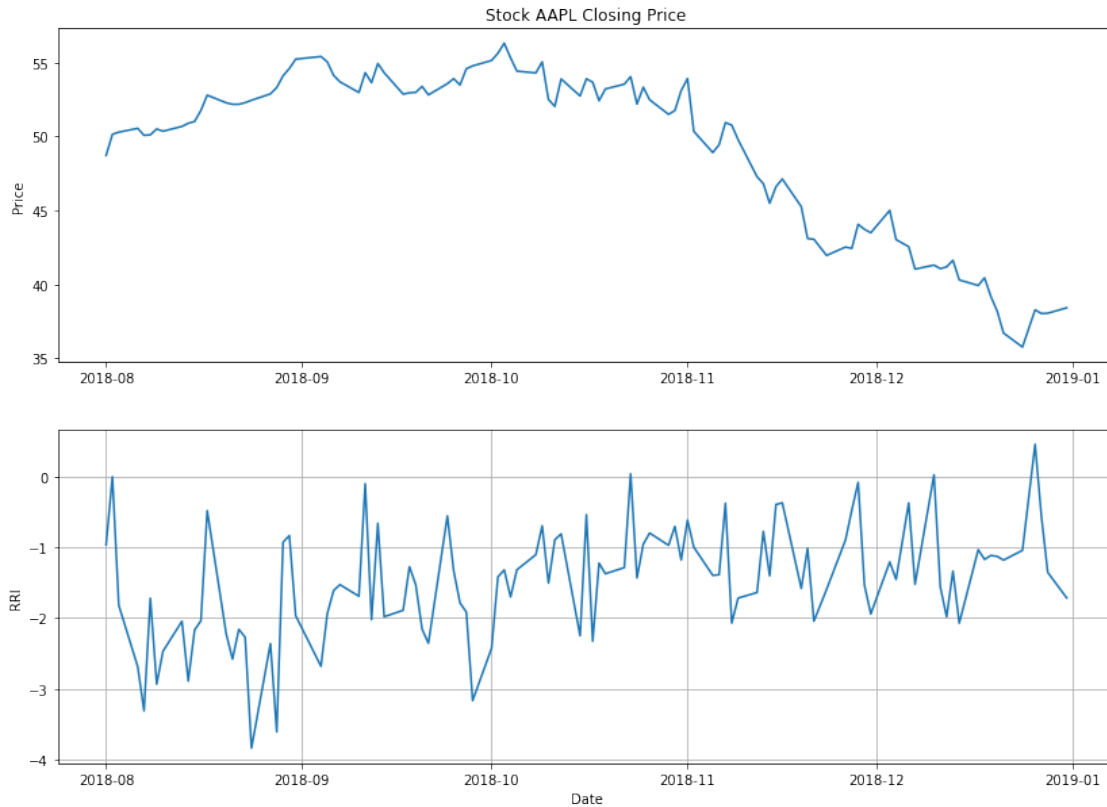
RRI
Date
2018-08-01 -0.967377
2018-08-02 -0.007460
2018-08-03 -1.818945
2018-08-06 -2.686039
2018-08-07 -3.310449

```

```
[5]: fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df['Adj Close'])
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['RRI'], label='Real Range Indicator')
ax2.grid()
ax2.set_ylabel('RRI')
ax2.set_xlabel('Date')
```

```
[5]: Text(0.5, 0, 'Date')
```



1.1 Candlestick with RRI

```
[6]: 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()
```

```
[6]:      Date      Open      High      Low      Close  Adj Close  Volume \
0  17744.0  49.782501  50.439999  49.327499  50.375000  48.706295  271742800
1  17745.0  50.145000  52.095001  50.087502  51.847500  50.130024  249616000
2  17746.0  51.757500  52.185001  51.369999  51.997501  50.275055  133789600
3  17749.0  52.000000  52.312500  51.767502  52.267502  50.536114  101701600
4  17750.0  52.330002  52.375000  51.689999  51.777500  50.062340  102349600
```

RRI VolumePositive

0	-0.967377	False
1	-0.007460	False
2	-1.818945	False
3	-2.686039	False
4	-3.310449	False

```
[11]: from mpl_finance import candlestick_ohlc

fig = plt.figure(figsize=(14,10))
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')

ax2 = plt.subplot(2, 1, 2)
ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['RRI'], label='Real Range Indicator')
ax2.grid()
ax2.set_ylabel('RRI')
ax2.set_xlabel('Date')
ax2.legend(loc='best')
```

```
[11]: <matplotlib.legend.Legend at 0x20ec4880cf8>
```

