CCI

September 29, 2021

1 Commodity Channel Index (CCI)

https://stockcharts.com/school/doku.php?id=chart_school:technical_indicators:commodity_channel_index_cci

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

import warnings
warnings.filterwarnings("ignore")

# fix_yahoo_finance is used to fetch data
import fix_yahoo_finance as yf
yf.pdr_override()
```

[2]:
```
# input
symbol = 'AAPL'
start = '2016-01-01'
end = '2019-01-01'

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

# View Columns
df.head()
```

```
[**********************100%**********************]  1 of 1 downloaded
```

[2]:

Date	Open	High	Low	Close	Adj Close	Volume
2016-01-04	102.610001	105.370003	102.000000	105.349998	99.499107	
2016-01-05	105.750000	105.849998	102.410004	102.709999	97.005730	
2016-01-06	100.559998	102.370003	99.870003	100.699997	95.107361	
2016-01-07	98.680000	100.129997	96.430000	96.449997	91.093399	
2016-01-08	98.550003	99.110001	96.760002	96.959999	91.575073	

```
2016-01-04  67649400
2016-01-05  55791000
2016-01-06  68457400
2016-01-07  81094400
2016-01-08  70798000
```

[3]:
```
n = 20
df['TP'] = (df['High'] + df['Low'] + df['Adj Close'])/3
df['SMA_TP'] = df['TP'].rolling(n).mean()
df['SMA_STD'] = df['TP'].rolling(n).std()
df['CCI'] = (df['TP'] - df['SMA_TP']) / (0.015*df['SMA_STD'])
df = df.drop(['TP', 'SMA_TP', 'SMA_STD'],axis=1)
```

[4]:
```
df.head(30)
```

[4]:

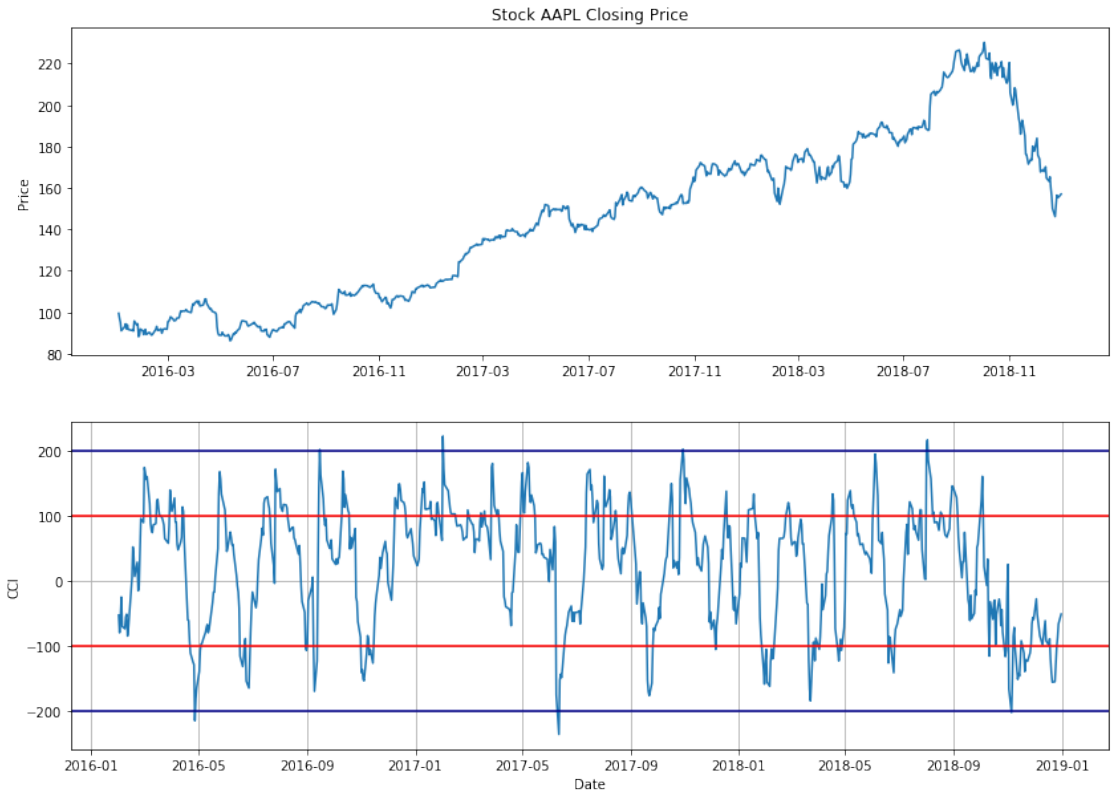
Date	Open	High	Low	Close	Adj Close	\
2016-01-04	102.610001	105.370003	102.000000	105.349998	99.499107	
2016-01-05	105.750000	105.849998	102.410004	102.709999	97.005730	
2016-01-06	100.559998	102.370003	99.870003	100.699997	95.107361	
2016-01-07	98.680000	100.129997	96.430000	96.449997	91.093399	
2016-01-08	98.550003	99.110001	96.760002	96.959999	91.575073	
2016-01-11	98.970001	99.059998	97.339996	98.529999	93.057869	
2016-01-12	100.550003	100.690002	98.839996	99.959999	94.408447	
2016-01-13	100.320000	101.190002	97.300003	97.389999	91.981194	
2016-01-14	97.959999	100.480003	95.739998	99.519997	93.992889	
2016-01-15	96.199997	97.709999	95.360001	97.129997	91.735634	
2016-01-19	98.410004	98.650002	95.500000	96.660004	91.291718	
2016-01-20	95.099998	98.190002	93.419998	96.790001	91.414520	
2016-01-21	97.059998	97.879997	94.940002	96.300003	90.951736	
2016-01-22	98.629997	101.459999	98.370003	101.419998	95.787369	
2016-01-25	101.519997	101.529999	99.209999	99.440002	93.917336	
2016-01-26	99.930000	100.879997	98.070000	99.989998	94.436790	
2016-01-27	96.040001	96.629997	93.339996	93.419998	88.231659	
2016-01-28	93.790001	94.519997	92.389999	94.089996	88.864449	
2016-01-29	94.790001	97.339996	94.349998	97.339996	91.933960	
2016-02-01	96.470001	96.709999	95.400002	96.430000	91.074501	
2016-02-02	95.419998	96.040001	94.279999	94.480003	89.232796	
2016-02-03	95.000000	96.839996	94.080002	96.349998	90.998932	
2016-02-04	95.860001	97.330002	95.190002	96.599998	91.730110	
2016-02-05	96.519997	96.919998	93.690002	94.019997	89.280190	
2016-02-08	93.129997	95.699997	93.040001	95.010002	90.220276	
2016-02-09	94.290001	95.940002	93.930000	94.989998	90.201294	
2016-02-10	95.919998	96.349998	94.099998	94.269997	89.517586	
2016-02-11	93.790001	94.720001	92.589996	93.699997	88.976318	
2016-02-12	94.190002	94.500000	93.010002	93.989998	89.251686	
2016-02-16	95.019997	96.849998	94.610001	96.639999	91.768089	

```
                Volume        CCI
Date
2016-01-04   67649400        NaN
2016-01-05   55791000        NaN
2016-01-06   68457400        NaN
2016-01-07   81094400        NaN
2016-01-08   70798000        NaN
2016-01-11   49739400        NaN
2016-01-12   49154200        NaN
2016-01-13   62439600        NaN
2016-01-14   63170100        NaN
2016-01-15   79010000        NaN
2016-01-19   53087700        NaN
2016-01-20   72334400        NaN
2016-01-21   52161500        NaN
2016-01-22   65800500        NaN
2016-01-25   51794500        NaN
2016-01-26   75077000        NaN
2016-01-27  133369700        NaN
2016-01-28   55678800        NaN
2016-01-29   64416500        NaN
2016-02-01   40943500 -52.531367
2016-02-02   37357200 -79.573568
2016-02-03   45964300 -55.444984
2016-02-04   46471700 -24.688585
2016-02-05   46418100 -69.950759
2016-02-08   54021400 -73.359752
2016-02-09   44331200 -55.261025
2016-02-10   42343600 -51.068884
2016-02-11   50074700 -84.620257
2016-02-12   40351400 -71.686873
2016-02-16   49057900   4.055258
```

[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['CCI'], label='Commodity Channel Index')
ax2.axhline(y=100, color='red')
ax2.axhline(y=-100, color='red')
ax2.axhline(y=200, color='darkblue')
ax2.axhline(y=-200, color='darkblue')
ax2.grid()
```

```
ax2.set_ylabel('CCI')
ax2.set_xlabel('Date')
```

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



1.1 Commodity Channel Index

[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'] = mdates.date2num(dfc['Date'].astype(dt.date))
dfc.head()
```

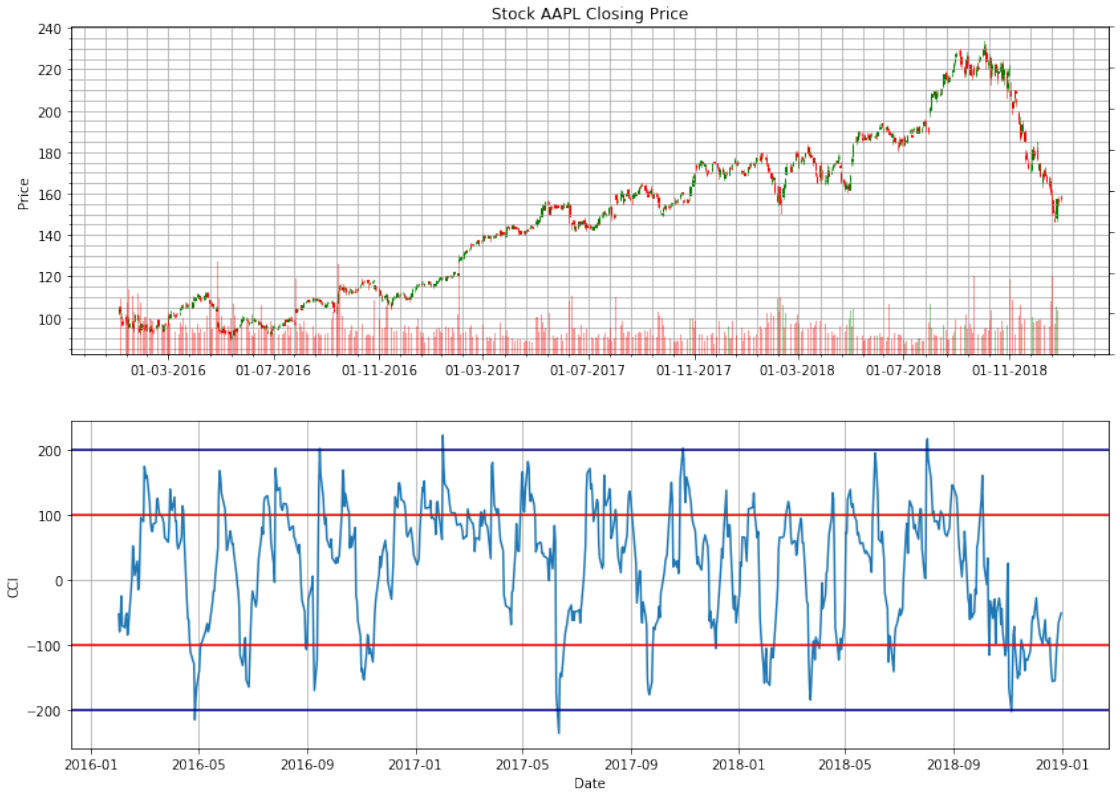
[6]:

	Date	Open	High	Low	Close	Adj Close	\
0	735967.0	102.610001	105.370003	102.000000	105.349998	99.499107	
1	735968.0	105.750000	105.849998	102.410004	102.709999	97.005730	
2	735969.0	100.559998	102.370003	99.870003	100.699997	95.107361	

```
3  735970.0   98.680000  100.129997   96.430000   96.449997  91.093399
4  735971.0   98.550003   99.110001   96.760002   96.959999  91.575073

     Volume  CCI  VolumePositive
0  67649400  NaN           False
1  55791000  NaN           False
2  68457400  NaN           False
3  81094400  NaN           False
4  70798000  NaN           False
```

[7]:
```
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.plot(df['CCI'], label='Commodity Channel Index')
ax2.axhline(y=100, color='red')
ax2.axhline(y=-100, color='red')
ax2.axhline(y=200, color='darkblue')
ax2.axhline(y=-200, color='darkblue')
ax2.grid()
ax2.set_ylabel('CCI')
ax2.set_xlabel('Date')
```

[7]:
```
Text(0.5,0,'Date')
```


Stock AAPL Closing Price
Price
240
220
200
180
160
140
120
100
01-03-2016
01-07-2016
01-11-2016
01-03-2017
01-07-2017
01-11-2017
01-03-2018
01-07-2018
01-11-2018
CCI
200
100
0
−100
−200
2016-01
2016-05
2016-09
2017-01
2017-05
2017-09
2018-01
2018-05
2018-09
2019-01
Date