Aroon_Oscillator

September 29, 2021

1 Aroon Oscillator

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

[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 = '2017-01-01'
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
2017-01-03	115.800003	116.330002	114.760002	116.150002	112.140007	
2017-01-04	115.849998	116.510002	115.750000	116.019997	112.014503	
2017-01-05	115.919998	116.860001	115.809998	116.610001	112.584129	
2017-01-06	116.779999	118.160004	116.470001	117.910004	113.839249	
2017-01-09	117.949997	119.430000	117.940002	118.989998	114.881950	

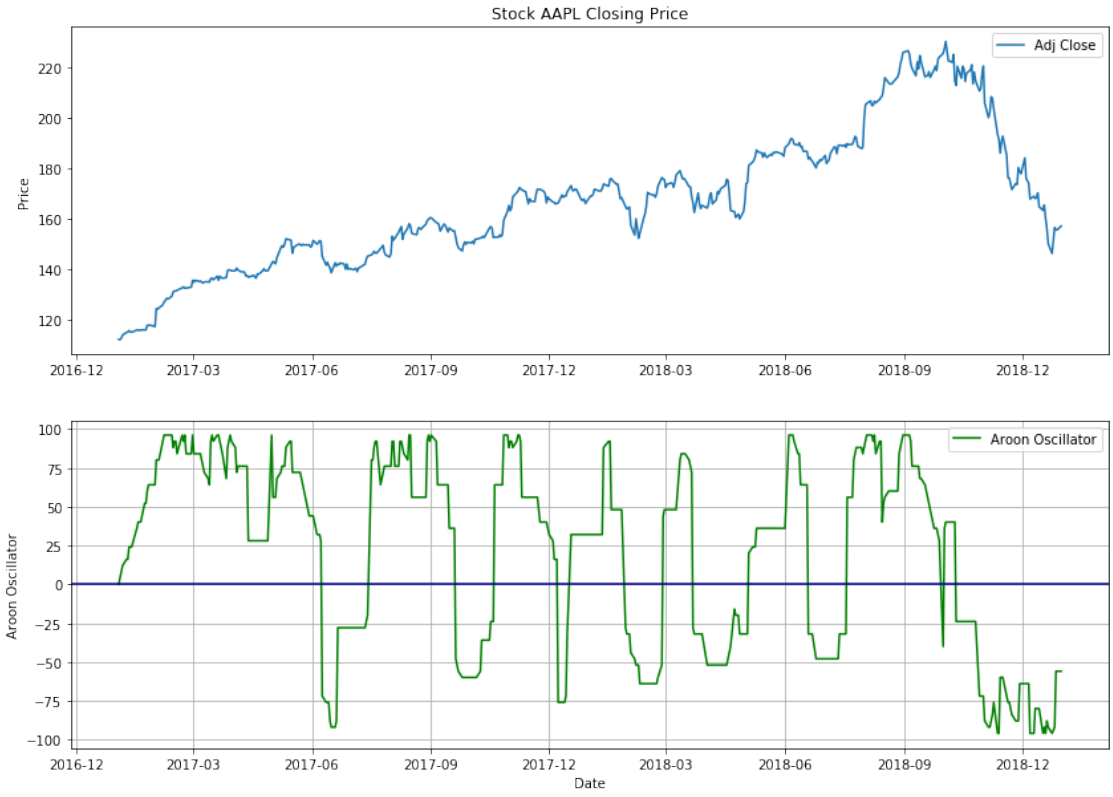
```
2017-01-03  28781900
2017-01-04  21118100
2017-01-05  22193600
2017-01-06  31751900
2017-01-09  33561900
```

[3]:
```
n = 25
high_max = lambda xs: np.argmax(xs[::-1])
low_min = lambda xs: np.argmin(xs[::-1])

df['Days since last High'] = df['High'].
↪rolling(center=False,min_periods=0,window=n).apply(func=high_max).astype(int)

df['Days since last Low'] = df['Low'].
↪rolling(center=False,min_periods=0,window=n).apply(func=low_min).astype(int)

df['Aroon_Up'] = ((25-df['Days since last High'])/25) * 100
df['Aroon_Down'] = ((25-df['Days since last Low'])/25) * 100

df['Aroon_Oscillator'] = df['Aroon_Up'] - df['Aroon_Down']
```

[4]:
```
df = df.drop(['Days since last High','Days since last Low', 'Aroon_Up',␣
↪'Aroon_Down'],axis=1)
```

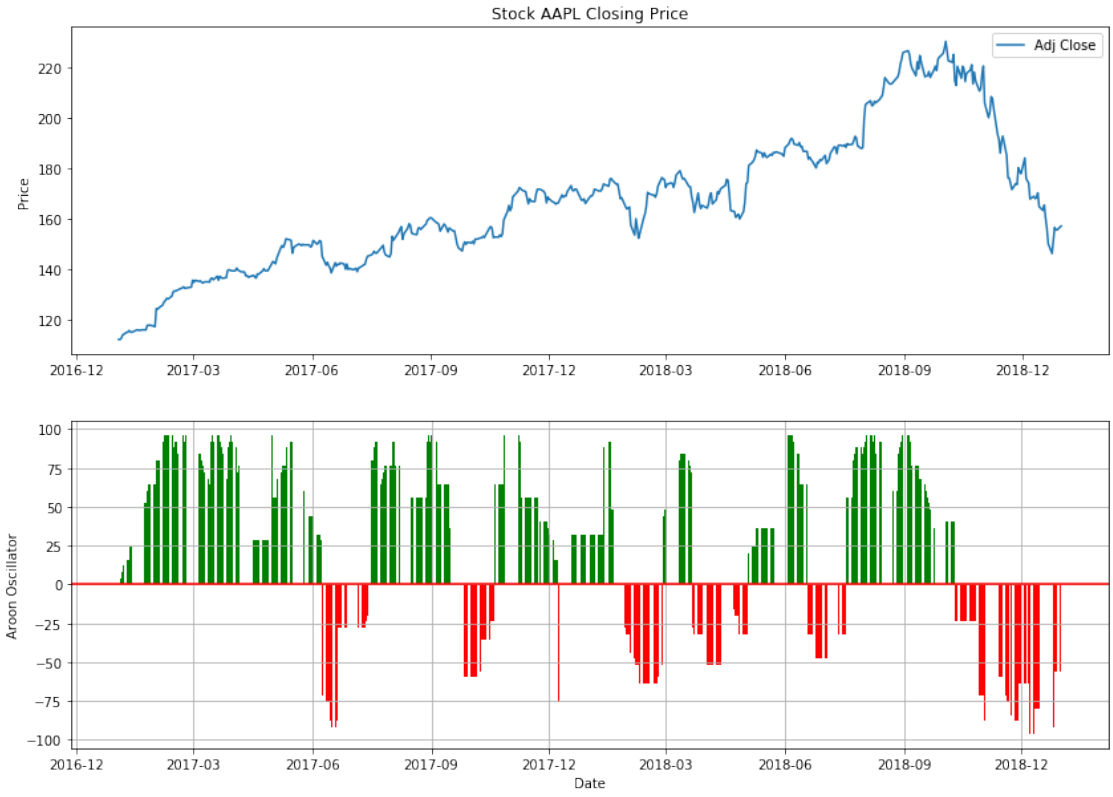
[6]:
```
fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df['Adj Close'])
ax1.set_title('Stock '+ symbol +' Closing Price')
ax1.set_ylabel('Price')
ax1.legend(loc='best')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['Aroon_Oscillator'], label='Aroon Oscillator', color='g')
ax2.axhline(y=0, color='darkblue')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('Aroon Oscillator')
ax2.set_xlabel('Date')
```

[6]:
```
Text(0.5,0,'Date')
```



[8]:
```
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')
ax1.legend(loc='best')

df['Positive'] = df['Aroon_Oscillator'] > 0
ax2 = plt.subplot(2, 1, 2)
ax2.bar(df.index, df['Aroon_Oscillator'], color=df.Positive.map({True: 'g',␣
 ↪False: 'r'}))
ax2.axhline(y=0, color='red')
ax2.grid()
ax2.set_ylabel('Aroon Oscillator')
ax2.set_xlabel('Date')
```

[8]:
```
Text(0.5,0,'Date')
```



1.1 Candlestick with Aroon Oscillator

[9]:
```
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()
```

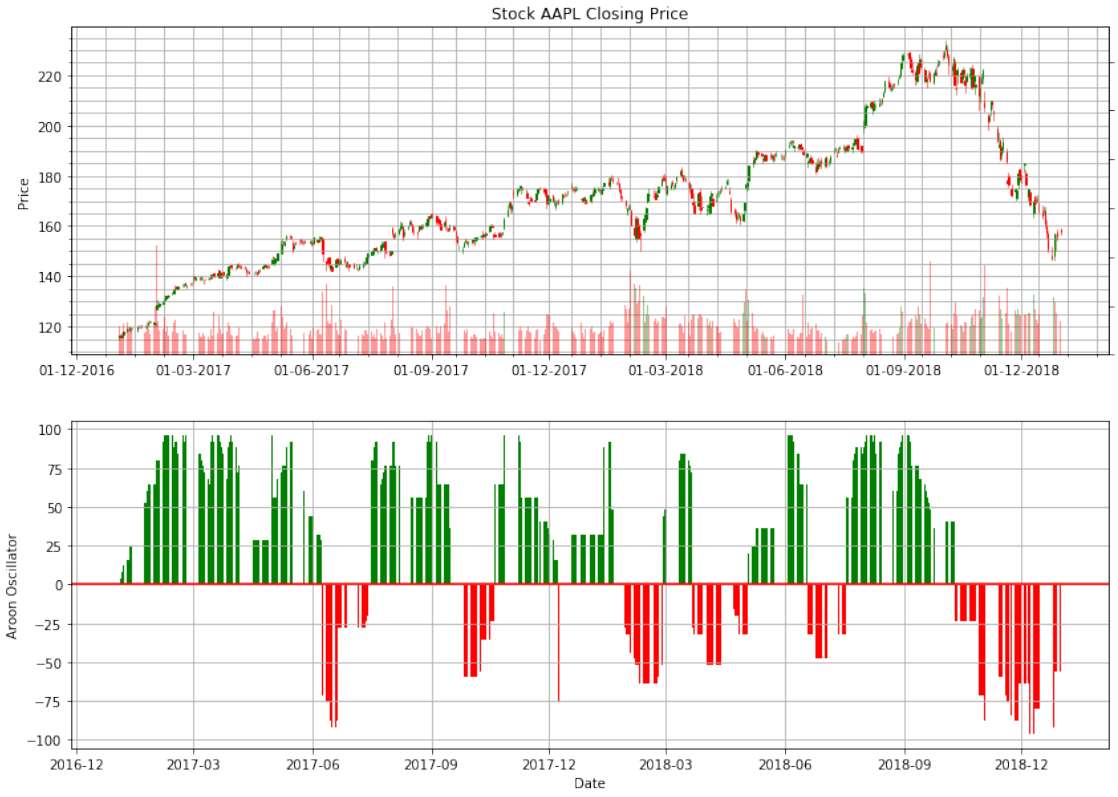
[9]:

	Date	Open	High	Low	Close	Adj Close	Volume	Aroon_Oscillator	Positive	VolumePositive
0	736332.0	115.800003	116.330002	114.760002	116.150002	112.140007	28781900	0.0	False	False
1	736333.0	115.849998	116.510002	115.750000	116.019997	112.014503	21118100	4.0	True	False
2	736334.0	115.919998	116.860001	115.809998	116.610001	112.584129				
3	736335.0	116.779999	118.160004	116.470001	117.910004	113.839249				
4	736338.0	117.949997	119.430000	117.940002	118.989998	114.881950				

```
2  22193600              8.0      True          False
3  31751900             12.0      True          False
4  33561900             16.0      True          False
```

[10]:
```
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')

df['Positive'] = df['Aroon_Oscillator'] > 0
ax2 = plt.subplot(2, 1, 2)
ax2.bar(df.index, df['Aroon_Oscillator'], color=df.Positive.map({True: 'g',␣
↪False: 'r'}))
ax2.axhline(y=0, color='red')
ax2.grid()
ax2.set_ylabel('Aroon Oscillator')
ax2.set_xlabel('Date')
```

[10]:
```
Text(0.5,0,'Date')
```


Stock AAPL Closing Price
Price
220
200
180
160
140
120
01-12-2016
01-03-2017
01-06-2017
01-09-2017
01-12-2017
01-03-2018
01-06-2018
01-09-2018
01-12-2018

Aroon Oscillator
100
75
50
25
0
−25
−50
−75
−100
2016-12
2017-03
2017-06
2017-09
2017-12
2018-03
2018-06
2018-09
2018-12
Date