Aroon

September 29, 2021

0.1 Aroon

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

[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	28781900
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	

```
2017-01-04  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
```

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

[5]:
```
df.head(30)
```

[5]:

Date	Open	High	Low	Close	Adj Close
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
2017-01-10	118.769997	119.379997	118.300003	119.110001	114.997818
2017-01-11	118.739998	119.930000	118.599998	119.750000	115.615723
2017-01-12	118.900002	119.300003	118.209999	119.250000	115.132988
2017-01-13	119.110001	119.620003	118.809998	119.040001	114.930237
2017-01-17	118.339996	120.239998	118.220001	120.000000	115.857086
2017-01-18	120.000000	120.500000	119.709999	119.989998	115.847435
2017-01-19	119.400002	120.089996	119.370003	119.779999	115.644691
2017-01-20	120.449997	120.449997	119.730003	120.000000	115.857086
2017-01-23	120.000000	120.809998	119.769997	120.080002	115.934326
2017-01-24	119.550003	120.099998	119.500000	119.970001	115.828125
2017-01-25	120.419998	122.099998	120.279999	121.879997	117.672188
2017-01-26	121.669998	122.440002	121.599998	121.940002	117.730118
2017-01-27	122.139999	122.349998	121.599998	121.949997	117.739769
2017-01-30	120.930000	121.629997	120.660004	121.629997	117.430817
2017-01-31	121.150002	121.389999	120.620003	121.349998	117.160492
2017-02-01	127.029999	130.490005	127.010002	128.750000	124.305000
2017-02-02	127.980003	129.389999	127.779999	128.529999	124.092606
2017-02-03	128.309998	129.190002	128.160004	129.080002	124.623619

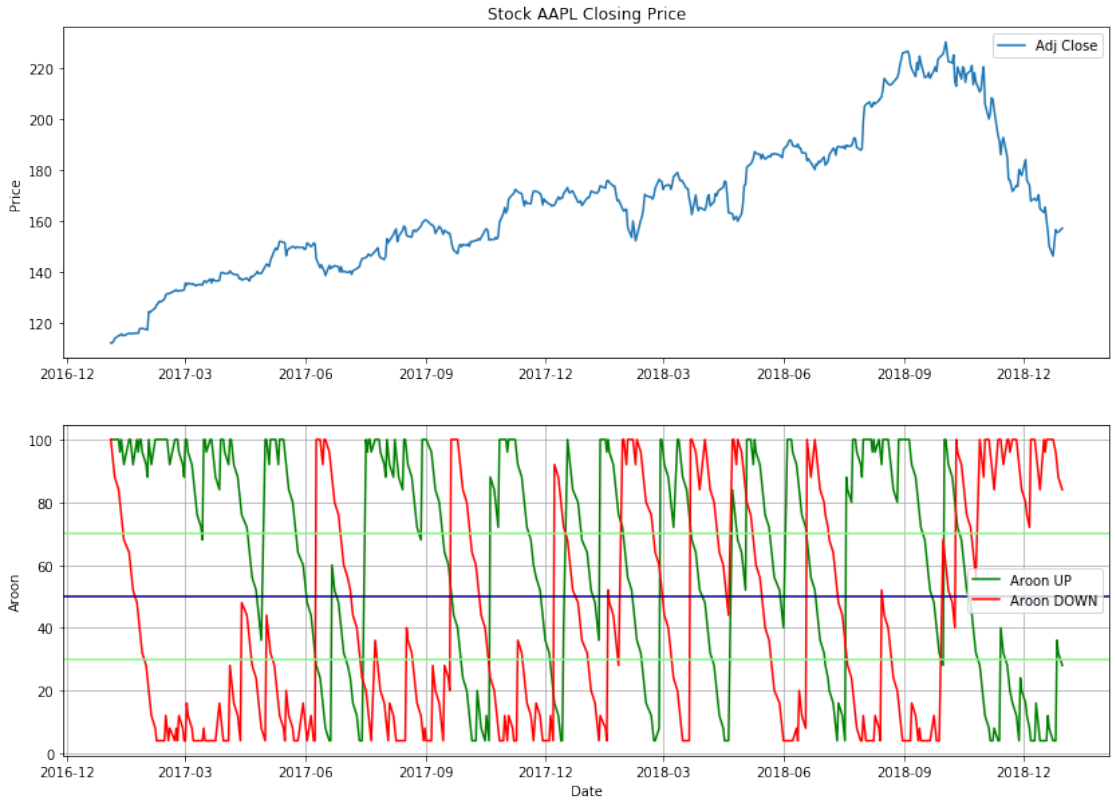
```
2017-02-06  129.130005  130.500000  128.899994  130.289993  125.791840
2017-02-07  130.539993  132.089996  130.449997  131.529999  126.989029
2017-02-08  131.350006  132.220001  131.220001  132.039993  127.481415
2017-02-09  131.649994  132.449997  131.119995  132.419998  128.402603
2017-02-10  132.460007  132.940002  132.050003  132.119995  128.111710
2017-02-13  133.080002  133.820007  132.750000  133.289993  129.246201
2017-02-14  133.470001  135.089996  133.250000  135.020004  130.923721
```

Date	Volume	Aroon_Up	Aroon_Down
2017-01-03	28781900	100.0	100.0
2017-01-04	21118100	100.0	96.0
2017-01-05	22193600	100.0	92.0
2017-01-06	31751900	100.0	88.0
2017-01-09	33561900	100.0	84.0
2017-01-10	24462100	96.0	80.0
2017-01-11	27588600	100.0	76.0
2017-01-12	27086200	96.0	72.0
2017-01-13	26111900	92.0	68.0
2017-01-17	34439800	100.0	64.0
2017-01-18	23713000	100.0	60.0
2017-01-19	25597300	96.0	56.0
2017-01-20	32597900	92.0	52.0
2017-01-23	22050200	100.0	48.0
2017-01-24	23211000	96.0	44.0
2017-01-25	32377600	100.0	40.0
2017-01-26	26337600	100.0	36.0
2017-01-27	20562900	96.0	32.0
2017-01-30	30377500	92.0	28.0
2017-01-31	49201000	88.0	24.0
2017-02-01	111985000	100.0	20.0
2017-02-02	33710400	96.0	16.0
2017-02-03	24507300	92.0	12.0
2017-02-06	26845900	100.0	8.0
2017-02-07	38183800	100.0	4.0
2017-02-08	23004100	100.0	4.0
2017-02-09	28349900	100.0	4.0
2017-02-10	20065500	100.0	4.0
2017-02-13	23035400	100.0	4.0
2017-02-14	33226200	100.0	12.0

[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_Up'], label='Aroon UP', color='g')
ax2.plot(df['Aroon_Down'], label='Aroon DOWN', color='r')
ax2.axhline(y=70, color='lightgreen')
ax2.axhline(y=50, color='darkblue')
ax2.axhline(y=30, color='lightgreen')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('Aroon')
ax2.set_xlabel('Date')
```

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



0.2 Candlestick with Aroon

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

[7]:

	Date	Open	High	Low	Close	Adj Close	Volume	Aroon_Up	Aroon_Down	VolumePositive
0	736332.0	115.800003	116.330002	114.760002	116.150002	112.140007	28781900	100.0	100.0	False
1	736333.0	115.849998	116.510002	115.750000	116.019997	112.014503	21118100	100.0	96.0	False
2	736334.0	115.919998	116.860001	115.809998	116.610001	112.584129	22193600	100.0	92.0	False
3	736335.0	116.779999	118.160004	116.470001	117.910004	113.839249	31751900	100.0	88.0	False
4	736338.0	117.949997	119.430000	117.940002	118.989998	114.881950	33561900	100.0	84.0	False

[8]:
```
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['Aroon_Up'], label='Aroon UP', color='g')
ax2.plot(df['Aroon_Down'], label='Aroon DOWN', color='r')
ax2.axhline(y=70, color='lightgreen')
ax2.axhline(y=50, color='darkblue')
ax2.axhline(y=30, color='lightgreen')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('Aroon')
ax2.set_xlabel('Date')
```

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