CLV

September 29, 2021

1 Close Location Value (CLV)

https://www.investopedia.com/terms/c/close_location_value.asp

https://www.marketvolume.com/technicalanalysis/closelocationvalue.asp

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

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 = '2018-12-01'
end = '2019-04-01'

# 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
2018-12-03	184.460007	184.940002	181.210007	184.820007	182.630859
2018-12-04	180.949997	182.389999	176.270004	176.690002	174.597153
2018-12-06	171.759995	174.779999	170.419998	174.720001	172.650482
2018-12-07	173.490005	174.490005	168.300003	168.490005	166.494278
2018-12-10	165.000000	170.089996	163.330002	169.600006	167.591125

```
              Volume
Date
2018-12-03  40802500
2018-12-04  41344300
2018-12-06  43098400
2018-12-07  42281600
2018-12-10  62026000
```

[3]:
```
n = 10
# df['CLV'] = (df['Adj Close'] - df['Low']) - (df['High'] - df['Adj Close']) /␣
 ↪(df['High'] - df['Low'])
df['CLV'] = ((df['Adj Close'] - df['Low']) - (df['High'] - df['Adj Close']) /␣
 ↪(df['High'] - df['Low'])).shift(n)
```

[4]:
```
df.head(20)
```

[4]:

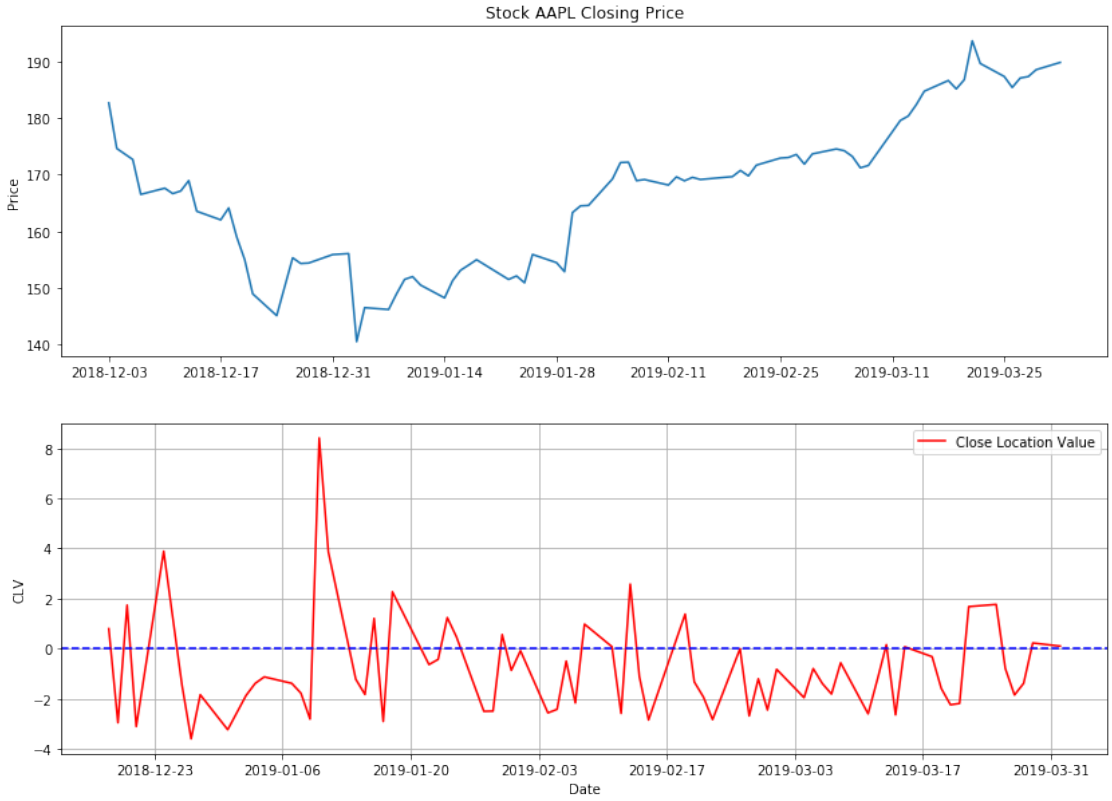
Date	Open	High	Low	Close	Adj Close	Volume	CLV
2018-12-03	184.460007	184.940002	181.210007	184.820007	182.630859	40802500	NaN
2018-12-04	180.949997	182.389999	176.270004	176.690002	174.597153	41344300	NaN
2018-12-06	171.759995	174.779999	170.419998	174.720001	172.650482	43098400	NaN
2018-12-07	173.490005	174.490005	168.300003	168.490005	166.494278	42281600	NaN
2018-12-10	165.000000	170.089996	163.330002	169.600006	167.591125	62026000	NaN
2018-12-11	171.660004	171.789993	167.000000	168.630005	166.632614	47281700	NaN
2018-12-12	170.399994	171.919998	169.020004	169.100006	167.097046		
2018-12-13	170.490005	172.570007	169.550003	170.949997	168.925125		
2018-12-14	169.000000	169.080002	165.279999	165.479996	163.519913		
2018-12-17	165.449997	168.350006	162.729996	163.940002	161.998169		
2018-12-18	165.380005	167.529999	164.389999	166.070007	164.102936		
2018-12-19	166.000000	167.449997	159.089996	160.889999	158.984299		
2018-12-20	160.399994	162.110001	155.300003	156.830002	154.972397		
2018-12-21	156.860001	158.160004	149.630005	150.729996	148.944626		
2018-12-24	148.149994	151.550003	146.589996	146.830002	145.090836		
2018-12-26	148.300003	157.229996	146.720001	157.169998	155.308350		
2018-12-27	155.839996	156.770004	150.070007	156.149994	154.300446		
2018-12-28	157.500000	158.520004	154.550003	156.229996	154.379486		
2018-12-31	158.529999	159.360001	156.479996	157.740005	155.871613		
2019-01-02	154.889999	158.850006	154.229996	157.919998	156.049484		

```
2018-12-12  35627700       NaN
2018-12-13  31898600       NaN
2018-12-14  40703700       NaN
2018-12-17  44287900       NaN
2018-12-18  33841500  0.801778
2018-12-19  49047300 -2.946193
2018-12-20  64773000  1.742063
2018-12-21  95744600 -3.097441
2018-12-24  37169200  3.891467
2018-12-26  58582500 -1.444085
2018-12-27  53117100 -3.586048
2018-12-28  42291400 -1.831791
2018-12-31  35003500 -3.223266
2019-01-02  37039700 -1.862045
```

[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['CLV'], label='Close Location Value', color='red')
ax2.axhline(y=0, color='blue', linestyle='--')
#ax2.axhline(y=0.5, color='darkblue')
#ax2.axhline(y=-0.5, color='darkblue')
ax2.grid()
ax2.set_ylabel('CLV')
ax2.set_xlabel('Date')
ax2.legend(loc='best')
```

[5]:
```
<matplotlib.legend.Legend at 0x1cc8f88acf8>
```



1.1 Candlestick with Close Location Value (CLV)

[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	CLV	VolumePositive
0	737031.0	184.460007	184.940002	181.210007	184.820007	182.630859			
1	737032.0	180.949997	182.389999	176.270004	176.690002	174.597153			
2	737034.0	171.759995	174.779999	170.419998	174.720001	172.650482			
3	737035.0	173.490005	174.490005	168.300003	168.490005	166.494278			
4	737038.0	165.000000	170.089996	163.330002	169.600006	167.591125			

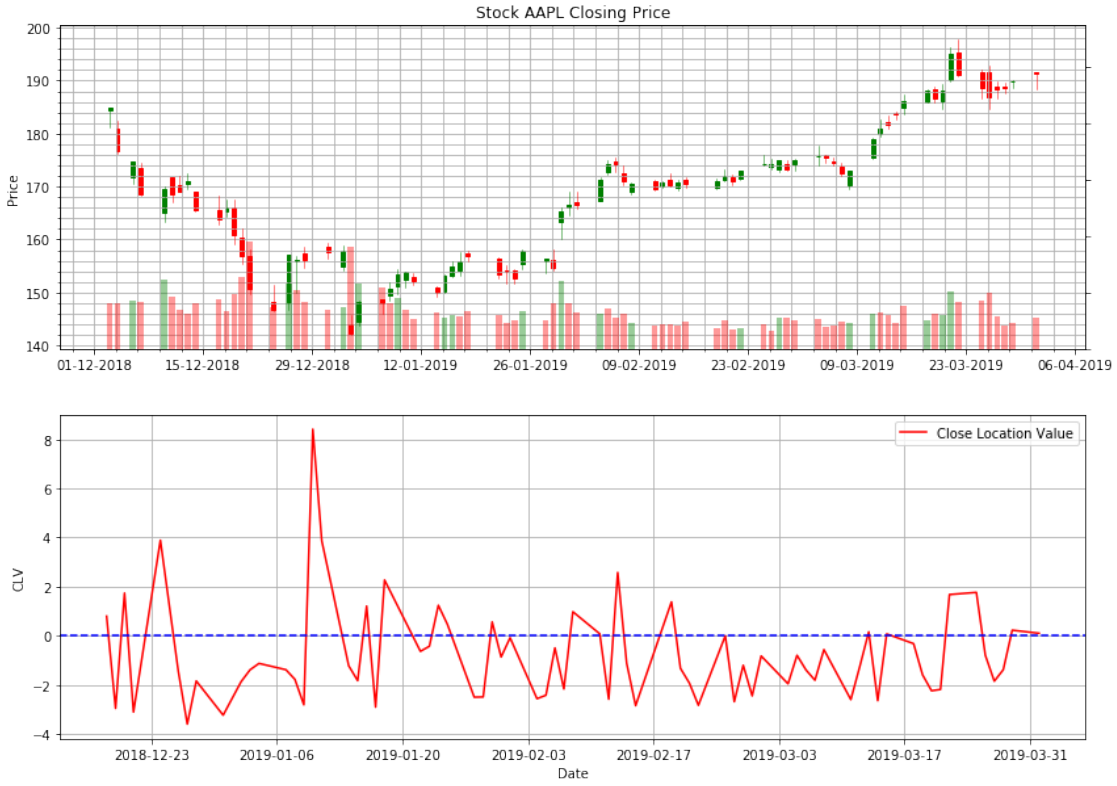
```
0  40802500  NaN          False
1  41344300  NaN          False
2  43098400  NaN           True
3  42281600  NaN          False
4  62026000  NaN           True
```

[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['CLV'], label='Close Location Value', color='red')
ax2.axhline(y=0, color='blue', linestyle='--')
#ax2.axhline(y=0.5, color='darkblue')
#ax2.axhline(y=-0.5, color='darkblue')
ax2.grid()
ax2.set_ylabel('CLV')
ax2.set_xlabel('Date')
ax2.legend(loc='best')
```

[7]:
```
<matplotlib.legend.Legend at 0x1cc8fa639e8>
```


Stock AAPL Closing Price
Price
200
190
180
170
160
150
140
01-12-2018
15-12-2018
29-12-2018
12-01-2019
26-01-2019
09-02-2019
23-02-2019
09-03-2019
23-03-2019
06-04-2019
Close Location Value
CLV
8
6
4
2
0
−2
−4
2018-12-23
2019-01-06
2019-01-20
2019-02-03
2019-02-17
2019-03-03
2019-03-17
2019-03-31
Date