

Moving_Minimum

September 29, 2021

1 Moving Minimum Price

```
[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 = '2018-08-01'
end = '2019-01-01'

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

# View Columns
df.head()
```

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

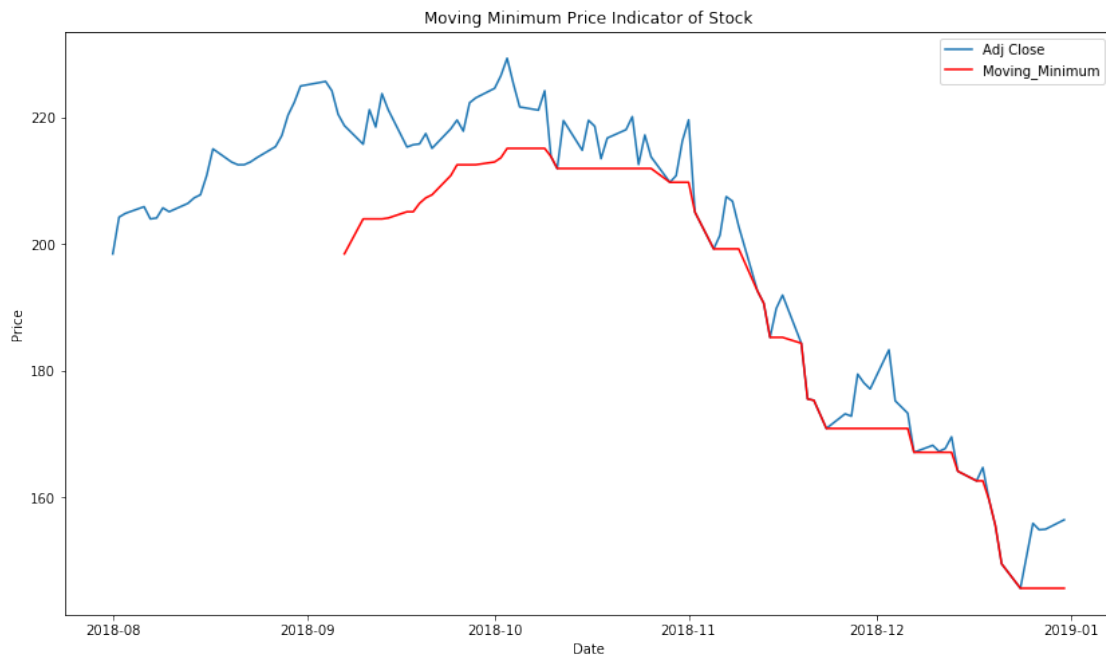
```
[2]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2018-08-01	199.130005	201.759995	197.309998	201.500000	198.478760	
2018-08-02	200.580002	208.380005	200.350006	207.389999	204.280457	
2018-08-03	207.029999	208.740005	205.479996	207.990005	204.871445	
2018-08-06	208.000000	209.250000	207.070007	209.070007	205.935257	
2018-08-07	209.320007	209.500000	206.759995	207.110001	204.004639	
Volume						
Date						
2018-08-01	67935700					

```
2018-08-02  62404000
2018-08-03  33447400
2018-08-06  25425400
2018-08-07  25587400
```

```
[3]: n = 14
df['Minimum_Price'] = df['Adj Close'].rolling(14).min()
df['Moving_Minimum'] = df['Minimum_Price'].rolling(n).min()
```

```
[4]: plt.figure(figsize=(14,8))
plt.plot(df['Adj Close'])
plt.plot(df['Moving_Minimum'], color='red')
plt.title('Moving Minimum Price Indicator of Stock')
plt.legend()
plt.xlabel('Date')
plt.ylabel('Price')
plt.show()
```



1.1 Candlestick with Minimum Price

```
[5]: 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()
```

```
[5]:
```

	Date	Open	High	Low	Close	Adj Close	\
0	736907.0	199.130005	201.759995	197.309998	201.500000	198.478760	
1	736908.0	200.580002	208.380005	200.350006	207.389999	204.280457	
2	736909.0	207.029999	208.740005	205.479996	207.990005	204.871445	
3	736912.0	208.000000	209.250000	207.070007	209.070007	205.935257	
4	736913.0	209.320007	209.500000	206.759995	207.110001	204.004639	

	Volume	Minimum_Price	Moving_Minimum	VolumePositive
0	67935700	NaN	NaN	False
1	62404000	NaN	NaN	True
2	33447400	NaN	NaN	False
3	25425400	NaN	NaN	False
4	25587400	NaN	NaN	False

```
[6]: 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.plot(df['Moving_Minimum'], color='orange')
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')
ax1.legend()

ax2 = plt.subplot(2, 1, 2)
df['VolumePositive'] = df['Open'] < df['Adj Close']
ax2.bar(df.index, df['Volume'], color=df.VolumePositive.map({True: 'g', False:
    ↪'r'}), label='macdhist')
ax2.grid()
ax2.set_ylabel('Volume')
ax2.set_xlabel('Date')
```

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

