

Minimum_Price

September 29, 2021

1 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]:
```

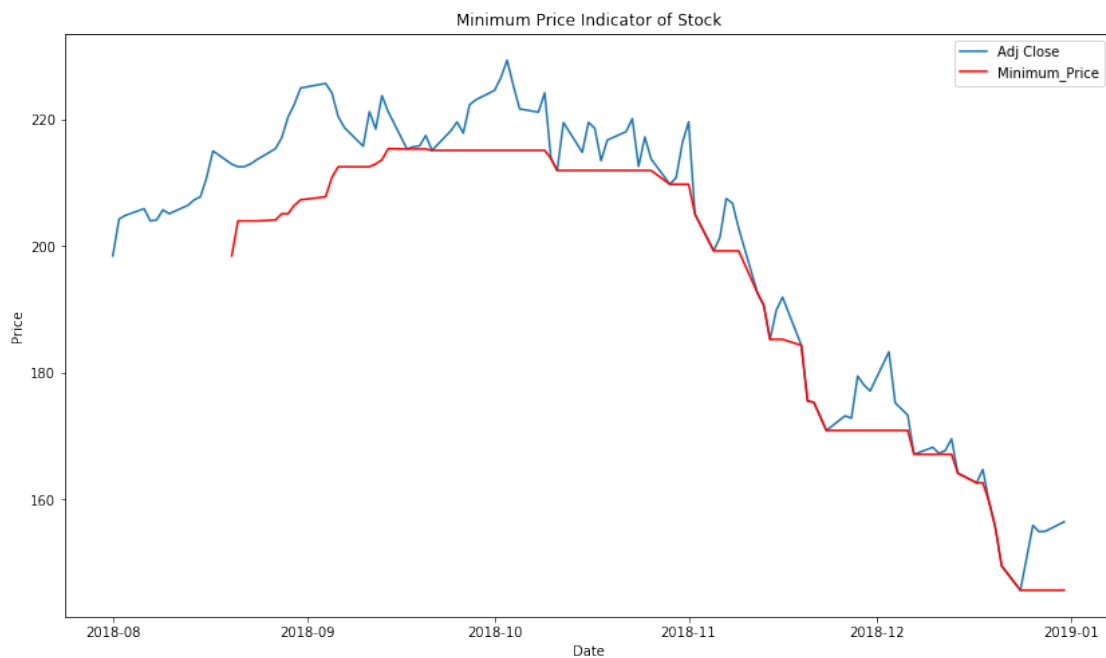
| | Open | High | Low | Close | Adj Close | \ |
|------------|------------|------------|------------|------------|------------|---|
| Date | | | | | | |
| 2018-08-01 | 199.130005 | 201.759995 | 197.309998 | 201.500000 | 198.478760 | |
| 2018-08-02 | 200.580002 | 208.380005 | 200.350006 | 207.389999 | 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()
```

```
[4]: plt.figure(figsize=(14,8))
plt.plot(df['Adj Close'])
plt.plot(df['Minimum_Price'], color='red')
plt.title('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 | VolumePositive |
|---|----------|---------------|----------------|
| 0 | 67935700 | NaN | False |
| 1 | 62404000 | NaN | True |
| 2 | 33447400 | NaN | False |
| 3 | 25425400 | NaN | False |
| 4 | 25587400 | 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['Minimum_Price'], 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')
```

