

MFI

September 29, 2021

1 Money Flow Index (MFI)

Money Flow Index (MFI) is a technical oscillator that uses price and volume for identifying overbought or oversold conditions in an asset. It can also be used to spot divergences which warn of a trend change in price. The oscillator moves between 0 and 100.

<https://www.investopedia.com/terms/m/mfi.asp>

```
[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	199.243088	
2018-08-02	200.580002	208.380005	200.350006	207.389999	205.067123	
2018-08-03	207.029999	208.740005	205.479996	207.990005	205.660416	
2018-08-06	208.000000	209.250000	207.070007	209.070007	206.728317	

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2018-08-07 209.320007 209.500000 206.759995 207.110001 204.790268
```

```

                Volume
Date
2018-08-01 67935700
2018-08-02 62404000
2018-08-03 33447400
2018-08-06 25425400
2018-08-07 25587400

```

```
[3]: import talib as ta
```

```
[4]: df['MFI'] = ta.MFI(df['High'], df['Low'], df['Adj Close'], df['Volume'],
    ↪timeperiod=14)
```

```
[5]: df.tail()
```

```
[5]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2018-12-24	148.149994	151.550003	146.589996	146.830002	146.202972	
2018-12-26	148.300003	157.229996	146.720001	157.169998	156.498810	
2018-12-27	155.839996	156.770004	150.070007	156.149994	155.483154	
2018-12-28	157.500000	158.520004	154.550003	156.229996	155.562820	
2018-12-31	158.529999	159.360001	156.479996	157.740005	157.066376	

```

                Volume      MFI
Date
2018-12-24 37169200 22.837777
2018-12-26 58582500 30.569679
2018-12-27 53117100 37.665928
2018-12-28 42291400 43.782846
2018-12-31 35003500 50.947126

```

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[6]: df['Positive'] = df['MFI'] > 0
```

```
[7]: df['MFI'] = ta.MFI(df['High'], df['Low'], df['Adj Close'], df['Volume'],
    ↪timeperiod=14) # Line Chart
fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df.index, df['Adj Close'])
ax1.axhline(y=df['Adj Close'].mean(), color='r')
ax1.axhline(y=df['Adj Close'].max(), color='b')
ax1.axhline(y=df['Adj Close'].min(), color='b')
ax1.text(s='Max Price', x=df['Adj Close'].index[0], y=df['Adj Close'].max(),
    ↪fontSize=14)
ax1.text(s='Min Price', x=df['Adj Close'].index[0], y=df['Adj Close'].min(),
    ↪fontSize=14)
```

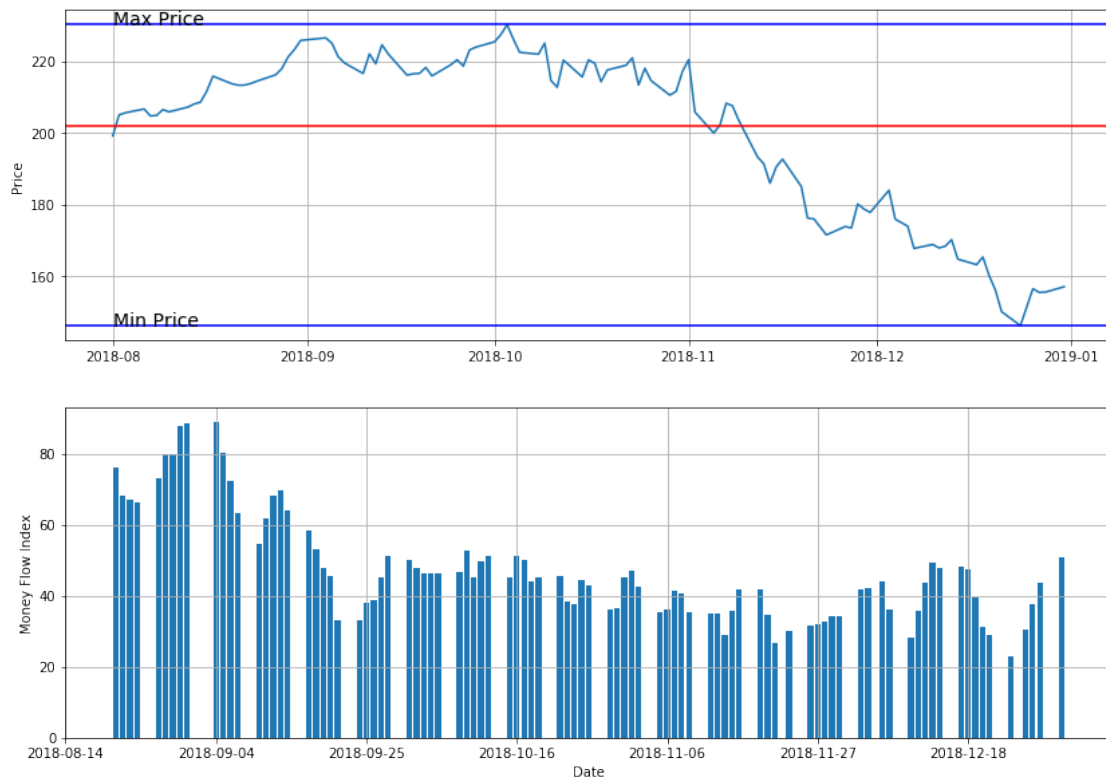
```

ax1.set_ylabel('Price')
ax1.grid()

ax2 = plt.subplot(2, 1, 2)
# ax2.bar(df.index, df['MFI'], color=df.Positive.map({True: 'g', False: 'r'}))
ax2.bar(df.index, df['MFI'])
ax2.grid()
ax2.set_ylabel('Money Flow Index')
ax2.set_xlabel('Date')

```

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



1.1 Candlestick with MFI

```

[8]: from matplotlib import dates as mdates
import datetime as dt

dfc = df.copy()
dfc['MFI'] = ta.MFI(dfc['High'], dfc['Low'],dfc['Adj Close'], dfc['Volume'],␣
    ↳timeperiod=14)
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()
```

```
[8]:
```

	Date	Open	High	Low	Close	Adj Close	\
0	736927.0	216.800003	217.190002	214.029999	215.039993	213.377167	
1	736928.0	214.100006	216.360001	213.839996	215.050003	213.387085	
2	736929.0	214.649994	217.050003	214.600006	215.490005	213.823685	
3	736930.0	216.600006	216.899994	215.110001	216.160004	214.488495	
4	736933.0	217.149994	218.740005	216.330002	217.940002	216.254745	

	Volume	MFI	Positive	VolumePositive
0	26159800	76.119850	True	False
1	19018100	68.208761	True	False
2	18883200	67.000609	True	False
3	18476400	66.418692	True	False
4	20525100	73.306063	True	False

```
[9]: 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*dfc.Volume.max())
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(2, 1, 2)
ax2.bar(df.index, df['MFI'])
ax2.grid()
ax2.set_ylabel('Money Flow Index')
ax2.set_xlabel('Date')
```

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

