

Speed_Resistance_Lines

September 29, 2021

1 SPEED RESISTANCE LINES (SRL)

https://stockcharts.com/school/doku.php?id=chart_school:chart_analysis:speed_resistance_lin

```
[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 = '2018-12-01'
end = '2019-02-01'

# 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 | | | | | | |
| 2018-12-03 | 184.460007 | 184.940002 | 181.210007 | 184.820007 | 184.030731 | |
| 2018-12-04 | 180.949997 | 182.389999 | 176.270004 | 176.690002 | 175.935455 | |
| 2018-12-06 | 171.759995 | 174.779999 | 170.419998 | 174.720001 | 173.973862 | |
| 2018-12-07 | 173.490005 | 174.490005 | 168.300003 | 168.490005 | 167.770477 | |
| 2018-12-10 | 165.000000 | 170.089996 | 163.330002 | 169.600006 | 168.875732 | |
| | | | | | | |
| | Volume | | | | | |
| Date | | | | | | |

```

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

```

```

[3]: df['Middle_Line'] = df['Low'] + (df['High'] - df['Low']) * .667
     df['Lower_Line'] = df['Low'] + (df['High'] - df['Low']) * .333

```

```

[4]: df.head()

```

```

[4]:
           Open      High      Low      Close  Adj Close  \
Date
2018-12-03  184.460007  184.940002  181.210007  184.820007  184.030731
2018-12-04  180.949997  182.389999  176.270004  176.690002  175.935455
2018-12-06  171.759995  174.779999  170.419998  174.720001  173.973862
2018-12-07  173.490005  174.490005  168.300003  168.490005  167.770477
2018-12-10  165.000000  170.089996  163.330002  169.600006  168.875732

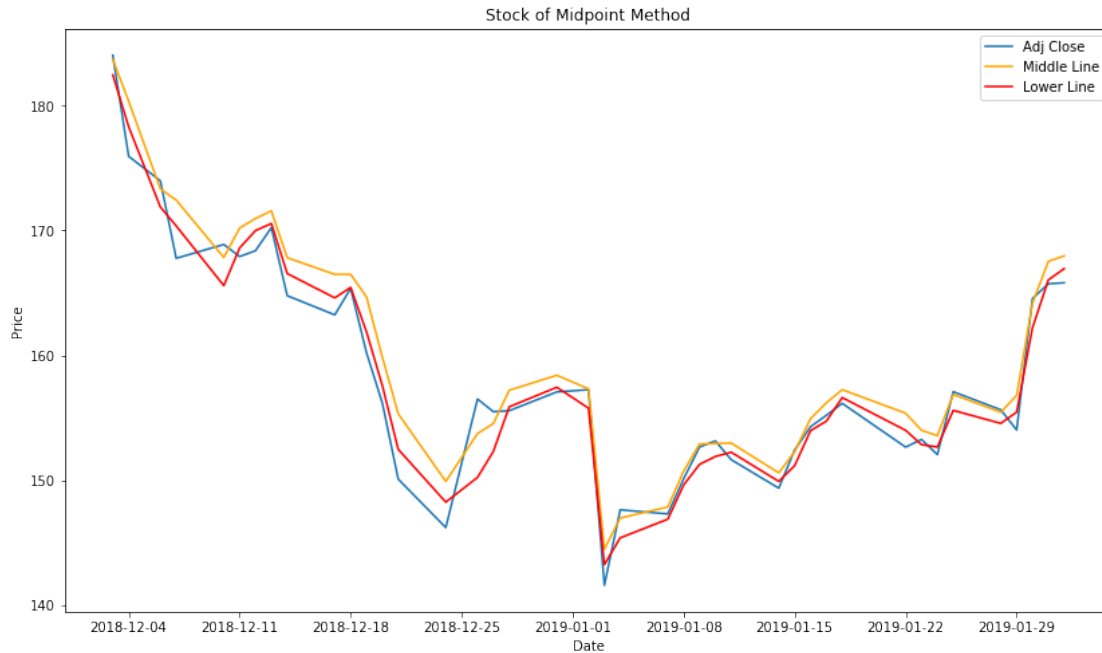
           Volume  Middle_Line  Lower_Line
Date
2018-12-03  40802500    183.697914    182.452095
2018-12-04  41344300    180.352041    178.307962
2018-12-06  43098400    173.328119    171.871878
2018-12-07  42281600    172.428734    170.361274
2018-12-10  62026000    167.838918    165.581080

```

```

[5]: plt.figure(figsize=(14,8))
     plt.plot(df['Adj Close'])
     plt.plot(df['Middle_Line'], color='orange', label='Middle Line')
     plt.plot(df['Lower_Line'], color='red', label='Lower Line')
     plt.legend(loc='best')
     plt.title('Stock of Midpoint Method')
     plt.xlabel('Date')
     plt.ylabel('Price')
     plt.show()

```

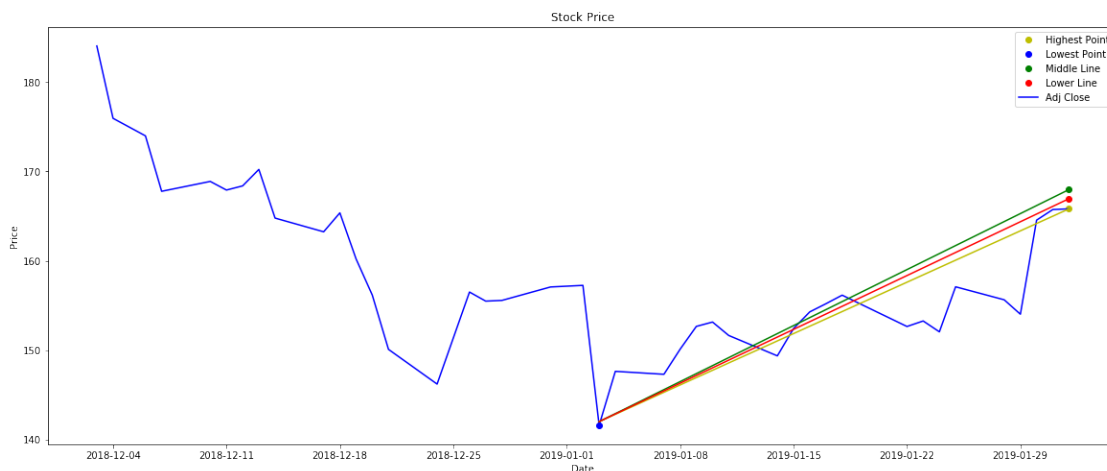


```
[6]: def connectpoints():
    x1, x2 = df['Low'].loc['2019-01-01:'].idxmin(), df['Adj Close'].
    ↳loc['2019-01-01:'].idxmax()
    y1, y2 = df['Low'].loc['2019-01-01:'].min(), df['Adj Close'].
    ↳loc['2019-01-01:'].max()
    plt.plot([x1,x2],[y1,y2],'y-')
    return
```

```
[7]: def connectpoints2():
    x1, x2 = df['Low'].loc['2019-01-01:'].idxmin(), df['Adj Close'].
    ↳loc['2019-01-01:'].idxmax()
    y1, y2 = df['Low'].loc['2019-01-01:'].min(), df['Middle_Line'].
    ↳loc['2019-01-01:'].max()
    plt.plot([x1,x2],[y1,y2],'g-')
    return
```

```
[8]: def connectpoints3():
    x1, x2 = df['Low'].loc['2019-01-01:'].idxmin(), df['Adj Close'].
    ↳loc['2019-01-01:'].idxmax()
    y1, y2 = df['Low'].loc['2019-01-01:'].min(), df['Lower_Line'].
    ↳loc['2019-01-01:'].max()
    plt.plot([x1,x2],[y1,y2],'r-')
    return
```

```
[9]: # Connect the points
plt.figure(figsize=(20,8))
plt.plot(df['Low'].loc['2019-01-01':].idxmax(), df['Adj Close'].
        ↪loc['2019-01-01':].max(), 'yo', label='Highest Point')
plt.plot(df['Low'].loc['2019-01-01':].idxmin(), df['Adj Close'].
        ↪loc['2019-01-01':].min(), 'bo', label='Lowest Point')
plt.plot(df['Low'].loc['2019-01-01':].idxmax(), df['Middle_Line'].
        ↪loc['2019-01-01':].max(), 'go', label='Middle Line')
plt.plot(df['Low'].loc['2019-01-01':].idxmax(), df['Lower_Line'].
        ↪loc['2019-01-01':].max(), 'ro', label='Lower Line')
plt.plot(df['Adj Close'], color='blue')
connectpoints()
connectpoints2()
connectpoints3()
plt.title('Stock Price')
plt.xlabel('Date')
plt.ylabel('Price')
plt.legend(loc='best')
plt.show()
```



1.1 Candlestick with Speed Resistance Lines

```
[10]: 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()
```

```
[10]:
```

| | Date | Open | High | Low | Close | Adj Close | \ |
|---|----------|------------|------------|------------|------------|------------|---|
| 0 | 737031.0 | 184.460007 | 184.940002 | 181.210007 | 184.820007 | 184.030731 | |
| 1 | 737032.0 | 180.949997 | 182.389999 | 176.270004 | 176.690002 | 175.935455 | |
| 2 | 737034.0 | 171.759995 | 174.779999 | 170.419998 | 174.720001 | 173.973862 | |
| 3 | 737035.0 | 173.490005 | 174.490005 | 168.300003 | 168.490005 | 167.770477 | |
| 4 | 737038.0 | 165.000000 | 170.089996 | 163.330002 | 169.600006 | 168.875732 | |

| | Volume | Middle_Line | Lower_Line | VolumePositive |
|---|----------|-------------|------------|----------------|
| 0 | 40802500 | 183.697914 | 182.452095 | False |
| 1 | 41344300 | 180.352041 | 178.307962 | False |
| 2 | 43098400 | 173.328119 | 171.871878 | True |
| 3 | 42281600 | 172.428734 | 170.361274 | False |
| 4 | 62026000 | 167.838918 | 165.581080 | True |

```
[11]: 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['Low'].loc['2019-01-01':].idxmax(), df['Adj Close'].
    ↪loc['2019-01-01':].max(), 'yo', label='Highest Point')
ax1.plot(df['Low'].loc['2019-01-01':].idxmin(), df['Adj Close'].
    ↪loc['2019-01-01':].min(), 'bo', label='Lowest Point')
ax1.plot(df['Low'].loc['2019-01-01':].idxmax(), df['Middle_Line'].
    ↪loc['2019-01-01':].max(), 'go', label='Middle Line')
ax1.plot(df['Low'].loc['2019-01-01':].idxmax(), df['Lower_Line'].
    ↪loc['2019-01-01':].max(), 'ro', label='Lower Line')
connectpoints()
connectpoints2()
connectpoints3()
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')
ax1.set_xlabel('Date')
ax1.legend(loc='best')
```

[11]: <matplotlib.legend.Legend at 0x1f58ef56b38>

