

Martin_Pring_Special_K

September 29, 2021

1 Martin Pring's Special K

https://stockcharts.com/school/doku.php?id=chart_school:technical_indicators:pring_s_special_k

```
[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 = '2012-01-01'
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	Volume
Date						
2012-01-03	58.485714	58.928570	58.428570	58.747143	39.172771	75555200
2012-01-04	58.571430	59.240002	58.468571	59.062859	39.383293	65005500
2012-01-05	59.278572	59.792858	58.952858	59.718571	39.820515	67817400
2012-01-06	59.967144	60.392857	59.888573	60.342857	40.236809	79573200
2012-01-09	60.785713	61.107143	60.192856	60.247143	40.172970	98506100

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

```
[4]: df['200MA'] = df['Adj Close'].rolling(200).mean()
```

```
[5]: df['SMA10'] = ta.SMA(df['Adj Close'], timeperiod=10)
df['SMA15'] = ta.SMA(df['Adj Close'], timeperiod=15)
df['SMA50'] = ta.SMA(df['Adj Close'], timeperiod=50)
df['SMA65'] = ta.SMA(df['Adj Close'], timeperiod=65)
df['SMA75'] = ta.SMA(df['Adj Close'], timeperiod=75)
df['SMA100'] = ta.SMA(df['Adj Close'], timeperiod=100)
df['SMA130'] = ta.SMA(df['Adj Close'], timeperiod=130)
df['SMA195'] = ta.SMA(df['Adj Close'], timeperiod=195)
```

```
df['ROC10'] = ta.ROC(df['SMA10'], timeperiod=10)
df['ROC15'] = ta.ROC(df['SMA10'], timeperiod=15)
df['ROC20'] = ta.ROC(df['SMA10'], timeperiod=20)
df['ROC30'] = ta.ROC(df['SMA15'], timeperiod=30)
df['ROC40'] = ta.ROC(df['SMA50'], timeperiod=40)
df['ROC65'] = ta.ROC(df['SMA65'], timeperiod=65)
df['ROC75'] = ta.ROC(df['SMA75'], timeperiod=75)
df['ROC100'] = ta.ROC(df['SMA100'], timeperiod=100)
df['ROC195'] = ta.ROC(df['SMA130'], timeperiod=100)
df['ROC265'] = ta.ROC(df['SMA130'], timeperiod=265)
df['ROC390'] = ta.ROC(df['SMA130'], timeperiod=390)
df['ROC530'] = ta.ROC(df['SMA195'], timeperiod=530)
```

```
[6]: df['Special_K'] = (df['ROC10'] * 1) + (df['ROC15'] * 2) + (df['ROC20'] * 3) +
↳ (df['ROC30'] * 4) + (df['ROC40'] * 1) + (df['ROC65'] * 2) + (df['ROC75'] *
↳ 3) + (df['ROC100'] * 4) + (df['ROC195'] * 1) + (df['ROC265'] * 2) +
↳ (df['ROC390'] * 3) + (df['ROC530'] * 4)
```

```
[7]: df['200MAk'] = df['Special_K'].rolling(5).mean()
```

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

```
[8]:
```

	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	200MA	SMA10	SMA15	SMA50 \
Date					
2018-12-24	37169200	191.863233	161.253418	165.541362	190.235452
2018-12-26	58582500	191.750755	160.112312	163.705901	188.957578
2018-12-27	53117100	191.641818	158.822841	162.342414	187.753657
2018-12-28	42291400	191.540814	157.357127	161.115011	186.456269

2018-12-31	35003500	191.446293	156.586433	160.401405	185.208005
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	...	ROC40	ROC65	ROC75	ROC100	ROC195	\
Date	...						
2018-12-24	...	-13.324551	-2.304339	2.222526	13.149966	12.893005	
2018-12-26	...	-13.929970	-2.989888	1.555068	12.716938	12.591626	
2018-12-27	...	-14.437053	-3.733504	0.932041	12.261841	12.271443	
2018-12-28	...	-15.011695	-4.496865	0.236603	11.786793	11.945178	
2018-12-31	...	-15.609825	-5.238232	-0.405377	11.345544	11.649848	

		ROC265	ROC390	ROC530	Special_K	200MAk
Date						
2018-12-24	30.028210	53.104589	93.212859	489.719075	514.988971	
2018-12-26	29.776356	52.542781	92.998107	480.152995	503.639532	
2018-12-27	29.543304	52.027246	92.744358	470.768037	492.270350	
2018-12-28	29.302134	51.551916	92.506584	459.513122	480.878122	
2018-12-31	29.085364	51.086435	92.290868	452.133505	470.457347	

[5 rows x 29 columns]

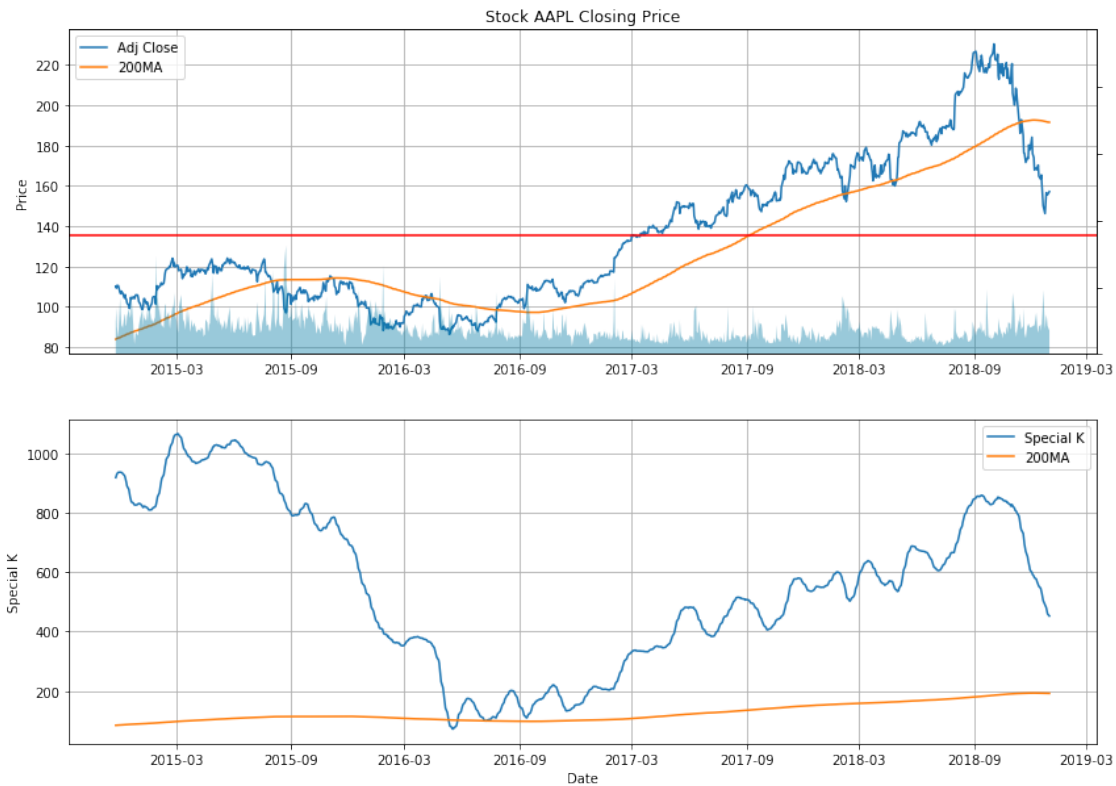
```
[9]: df = df.dropna()
```

```
[10]: # Line Chart
fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df.index, df['Adj Close'])
ax1.plot(df.index, df['200MA'])
ax1.axhline(y=df['Adj Close'].mean(),color='r')
ax1.grid()
#ax1.grid(True, which='both')
#ax1.grid(which='minor', linestyle='-', linewidth='0.5', color='black')
#ax1.grid(which='major', linestyle='-', linewidth='0.5', color='red')
#ax1.minorticks_on()
#ax1.legend(loc='best')
ax1v = ax1.twinx()
ax1v.fill_between(df.index[0:],0, df.Volume[0:], facecolor='#0079a3', 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(loc='best')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['Special_K'], label='Special K')
ax2.plot(df['200MA'])
ax2.grid()
ax2.set_ylabel('Special K')
```

```
ax2.set_xlabel('Date')
ax2.legend(loc='best')
```

[10]: <matplotlib.legend.Legend at 0x25123943c88>



1.1 Candlestick with Martin Pring Special K

```
[11]: 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()
```

```
[11]:      Date      Open      High      Low      Close  Adj Close  \
0  735561.0  116.849998  118.769997  116.620003  118.629997  110.164543
1  735562.0  119.070000  119.750000  117.449997  117.599998  109.208054
2  735563.0  117.940002  119.099998  117.830002  119.000000  110.508148
3  735565.0  119.269997  119.400002  118.050003  118.930000  110.443123
```

```
4 735568.0 118.809998 119.250000 111.269997 115.070000 106.858582
```

	Volume	200MA	SMA10	SMA15	...	ROC65 \
0	47450800	83.885018	106.189037	104.413235	...	10.854965
1	68840400	84.092530	106.922665	104.999447	...	10.850087
2	40768300	84.306568	107.642360	105.656305	...	10.908165
3	24814400	84.514905	108.209758	106.289638	...	10.951785
4	83814000	84.705598	108.292406	106.664810	...	10.923983

	ROC75	ROC100	ROC195	ROC265	ROC390	ROC530 \
0	14.557866	26.476303	27.096698	73.815509	83.215722	50.544718
1	14.572888	26.407198	27.132392	73.851305	83.905916	50.597225
2	14.618732	26.373178	27.170764	73.947263	84.543217	50.677496
3	14.674213	26.355542	27.202361	73.989789	85.213871	50.778852
4	14.660501	26.298912	27.189576	74.001695	85.876900	50.873773

	Special_K	200MAk	VolumePositive
0	918.554483	906.459956	False
1	924.898992	912.258654	False
2	931.439768	918.485212	False
3	936.166157	924.480533	False
4	936.711392	929.554158	False

```
[5 rows x 31 columns]
```

```
[12]: 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.index, df['200MA'])
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')
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(loc='best')
```

```

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['Special_K'], label='Special K')
ax2.plot(df['200MA'])
ax1.axhline(y=0,color='r')
ax2.grid()
ax2.set_ylabel('Volume')
ax2.set_xlabel('Date')
ax2.legend(loc='best')

```

[12]: <matplotlib.legend.Legend at 0x25126ed7898>

