KST

September 29, 2021

1 Know Sure Thing (KST)

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

[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 = '2017-01-01'
end = '2019-01-01'

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

# View Columns
df.head()
```

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

[2]:

Date	Open	High	Low	Close	Adj Close	Volume
2017-01-03	115.800003	116.330002	114.760002	116.150002	112.140007	
2017-01-04	115.849998	116.510002	115.750000	116.019997	112.014503	
2017-01-05	115.919998	116.860001	115.809998	116.610001	112.584129	
2017-01-06	116.779999	118.160004	116.470001	117.910004	113.839249	
2017-01-09	117.949997	119.430000	117.940002	118.989998	114.881950	

```
2017-01-03  28781900
2017-01-04  21118100
2017-01-05  22193600
2017-01-06  31751900
2017-01-09  33561900
```

[3]:
```
df['10_ROC'] = ((df['Adj Close'] - df['Adj Close'].shift(10))/df['Adj Close'].
 ↪shift(10)) * 100
df['15_ROC'] = ((df['Adj Close'] - df['Adj Close'].shift(15))/df['Adj Close'].
 ↪shift(15)) * 100
df['20_ROC'] = ((df['Adj Close'] - df['Adj Close'].shift(20))/df['Adj Close'].
 ↪shift(20)) * 100
df['30_ROC'] = ((df['Adj Close'] - df['Adj Close'].shift(30))/df['Adj Close'].
 ↪shift(30)) * 100
```

[4]:
```
df['RCMA1'] = df['10_ROC'].rolling(10).mean()
df['RCMA2'] = df['15_ROC'].rolling(10).mean()
df['RCMA3'] = df['20_ROC'].rolling(10).mean()
df['RCMA4'] = df['30_ROC'].rolling(10).mean()
df['KST'] = df['RCMA1']*1 + df['RCMA2']*2 + df['RCMA3']*3 + df['RCMA4']*4
df['Signal Line'] = df['KST'].rolling(9).mean()
```

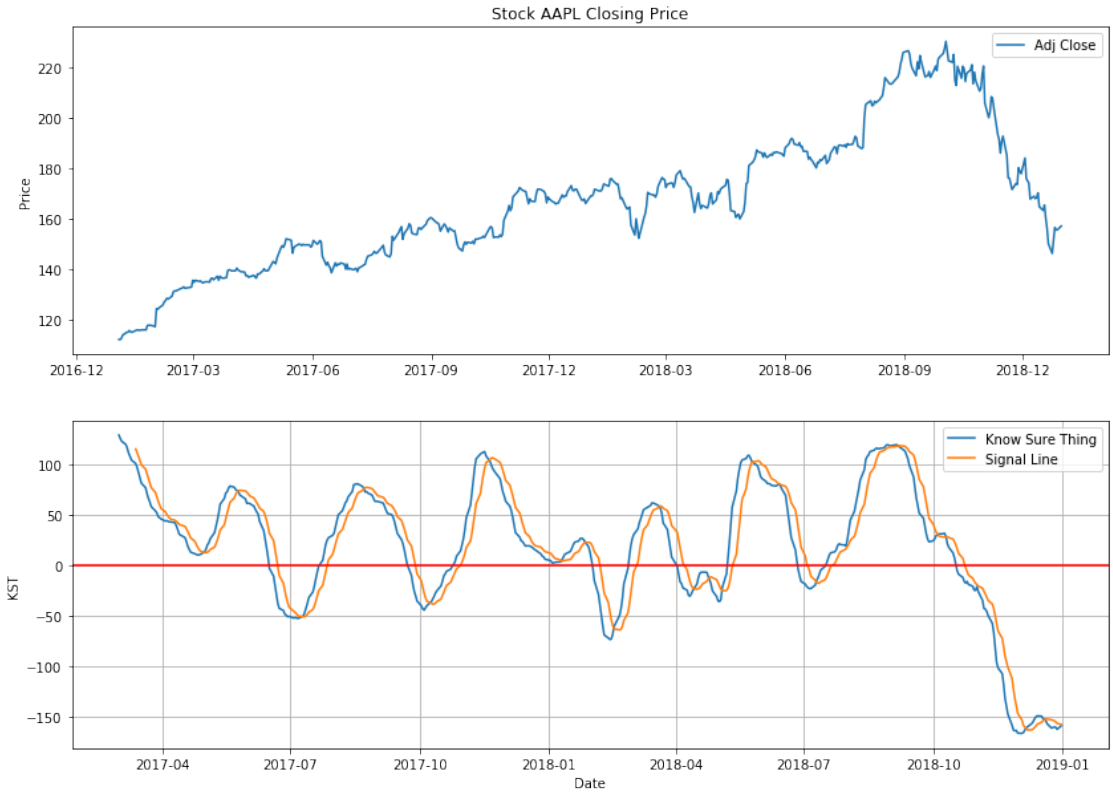
[5]:
```
df.head()
```

[5]:

Date	Open	High	Low	Close	Adj Close	Volume	10_ROC	15_ROC	20_ROC	30_ROC	RCMA1	RCMA2	RCMA3	RCMA4	KST	Signal Line
2017-01-03	115.800003	116.330002	114.760002	116.150002	112.140007	28781900	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
2017-01-04	115.849998	116.510002	115.750000	116.019997	112.014503	21118100	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
2017-01-05	115.919998	116.860001	115.809998	116.610001	112.584129	22193600	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
2017-01-06	116.779999	118.160004	116.470001	117.910004	113.839249	31751900	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
2017-01-09	117.949997	119.430000	117.940002	118.989998	114.881950	33561900	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

[6]:
```
fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df['Adj Close'])
ax1.set_title('Stock '+ symbol +' Closing Price')
ax1.set_ylabel('Price')
ax1.legend(loc='best')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['KST'], label='Know Sure Thing')
ax2.plot(df['Signal Line'], label='Signal Line')
ax2.axhline(y=0, color='red')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('KST')
ax2.set_xlabel('Date')
```

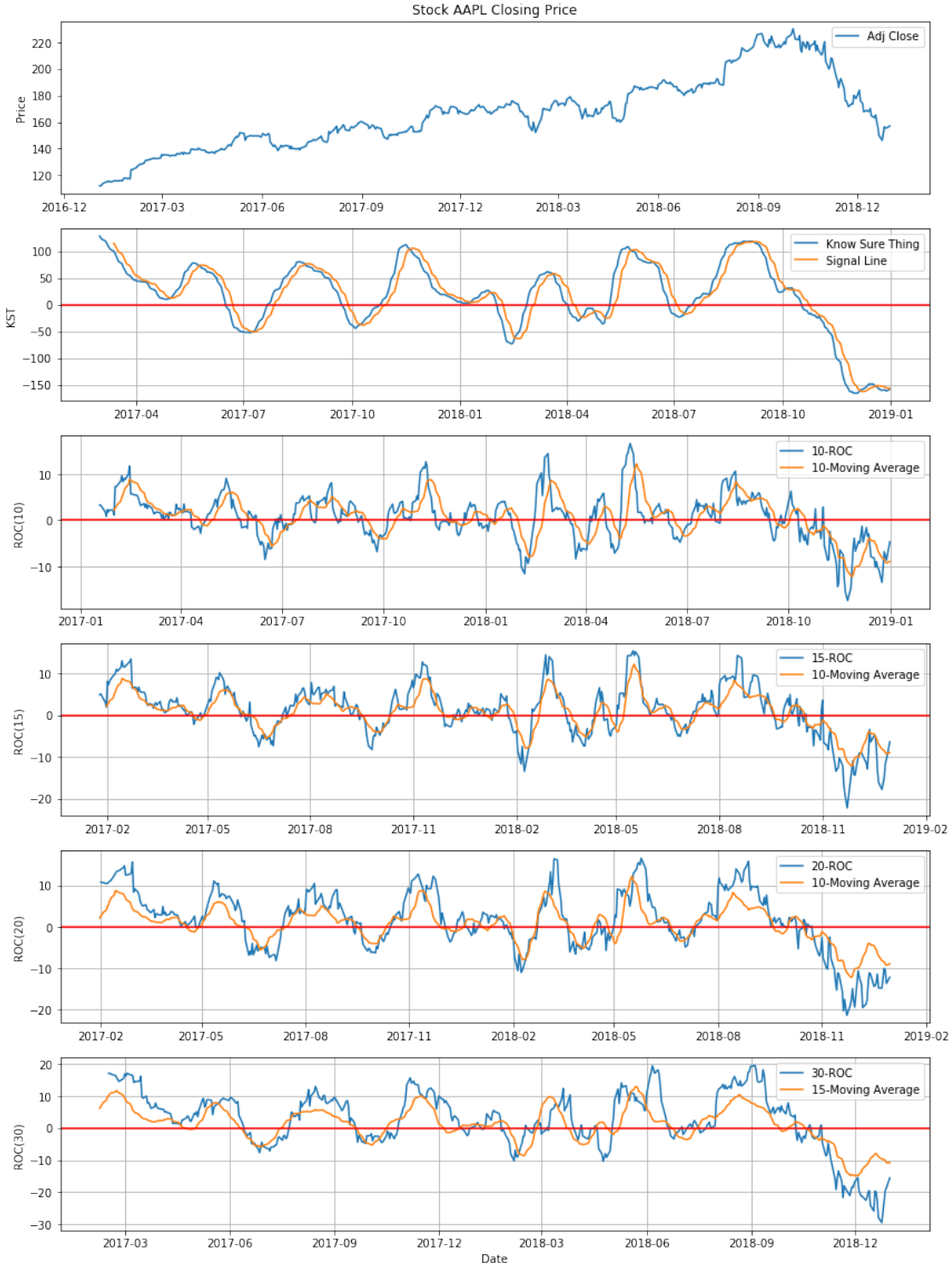
[6]: Text(0.5,0,'Date')



[7]:
```
fig = plt.figure(figsize=(14,20))
ax1 = plt.subplot(6, 1, 1)
ax1.plot(df['Adj Close'])
ax1.set_title('Stock '+ symbol +' Closing Price')
```

```
ax1.set_ylabel('Price')
ax1.legend(loc='best')

ax2 = plt.subplot(6, 1, 2)
ax2.plot(df['KST'], label='Know Sure Thing')
ax2.plot(df['Signal Line'], label='Signal Line')
ax2.axhline(y=0, color='red')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('KST')

ax3 = plt.subplot(6, 1, 3)
ax3.plot(df['10_ROC'], label='10-ROC')
ax3.plot(df['RCMA1'], label='10-Moving Average')
ax3.axhline(y=0, color='red')
ax3.grid()
ax3.legend(loc='best')
ax3.set_ylabel('ROC(10)')

ax4 = plt.subplot(6, 1, 4)
ax4.plot(df['15_ROC'], label='15-ROC')
ax4.plot(df['RCMA1'], label='10-Moving Average')
ax4.axhline(y=0, color='red')
ax4.grid()
ax4.legend(loc='best')
ax4.set_ylabel('ROC(15)')

ax5 = plt.subplot(6, 1, 5)
ax5.plot(df['20_ROC'], label='20-ROC')
ax5.plot(df['RCMA1'], label='10-Moving Average')
ax5.axhline(y=0, color='red')
ax5.grid()
ax5.legend(loc='best')
ax5.set_ylabel('ROC(20)')

ax6 = plt.subplot(6, 1, 6)
ax6.plot(df['30_ROC'], label='30-ROC')
ax6.plot(df['RCMA2'], label='15-Moving Average')
ax6.axhline(y=0, color='red')
ax6.grid()
ax6.legend(loc='best')
ax6.set_ylabel('ROC(30)')
ax6.set_xlabel('Date')
```

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


Stock AAPL Closing Price
Price
Adj Close
KST
Know Sure Thing
Signal Line
ROC(10)
10-ROC
10-Moving Average
ROC(15)
15-ROC
10-Moving Average
ROC(20)
20-ROC
10-Moving Average
ROC(30)
30-ROC
15-Moving Average
Date

1.1 Candlestick with KST

[8]:
```
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()
```

[8]:

	Date	Open	High	Low	Close	Adj Close	\
0	736332.0	115.800003	116.330002	114.760002	116.150002	112.140007	
1	736333.0	115.849998	116.510002	115.750000	116.019997	112.014503	
2	736334.0	115.919998	116.860001	115.809998	116.610001	112.584129	
3	736335.0	116.779999	118.160004	116.470001	117.910004	113.839249	
4	736338.0	117.949997	119.430000	117.940002	118.989998	114.881950	

	Volume	10_ROC	15_ROC	20_ROC	30_ROC	RCMA1	RCMA2	RCMA3	RCMA4	KST	\
0	28781900	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
1	21118100	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
2	22193600	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
3	31751900	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
4	33561900	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	

	Signal Line	VolumePositive
0	NaN	False
1	NaN	False
2	NaN	False
3	NaN	False
4	NaN	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*df.Volume.max())
ax1.set_title('Stock '+ symbol +' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['KST'], label='Know Sure Thing')
ax2.plot(df['Signal Line'], label='Signal Line')
ax2.axhline(y=0, color='red')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('KST')
ax2.set_xlabel('Date')
```

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