

# KST

September 29, 2021

## 1 Know Sure Thing (KST)

[https://stockcharts.com/school/doku.php?id=chart\\_school:technical\\_indicators: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]:
```

|            | Open       | High       | Low        | Close      | Adj Close  | \ |
|------------|------------|------------|------------|------------|------------|---|
| Date       |            |            |            |            |            |   |
| 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 |   |

|      | Volume |
|------|--------|
| Date |        |

```

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]:
      Open      High      Low      Close  Adj Close  \
Date
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

      Volume  10_ROC  15_ROC  20_ROC  30_ROC  RCMA1  RCMA2  RCMA3  \
Date
2017-01-03  28781900    NaN    NaN    NaN    NaN    NaN    NaN    NaN
2017-01-04  21118100    NaN    NaN    NaN    NaN    NaN    NaN    NaN
2017-01-05  22193600    NaN    NaN    NaN    NaN    NaN    NaN    NaN
2017-01-06  31751900    NaN    NaN    NaN    NaN    NaN    NaN    NaN
2017-01-09  33561900    NaN    NaN    NaN    NaN    NaN    NaN    NaN

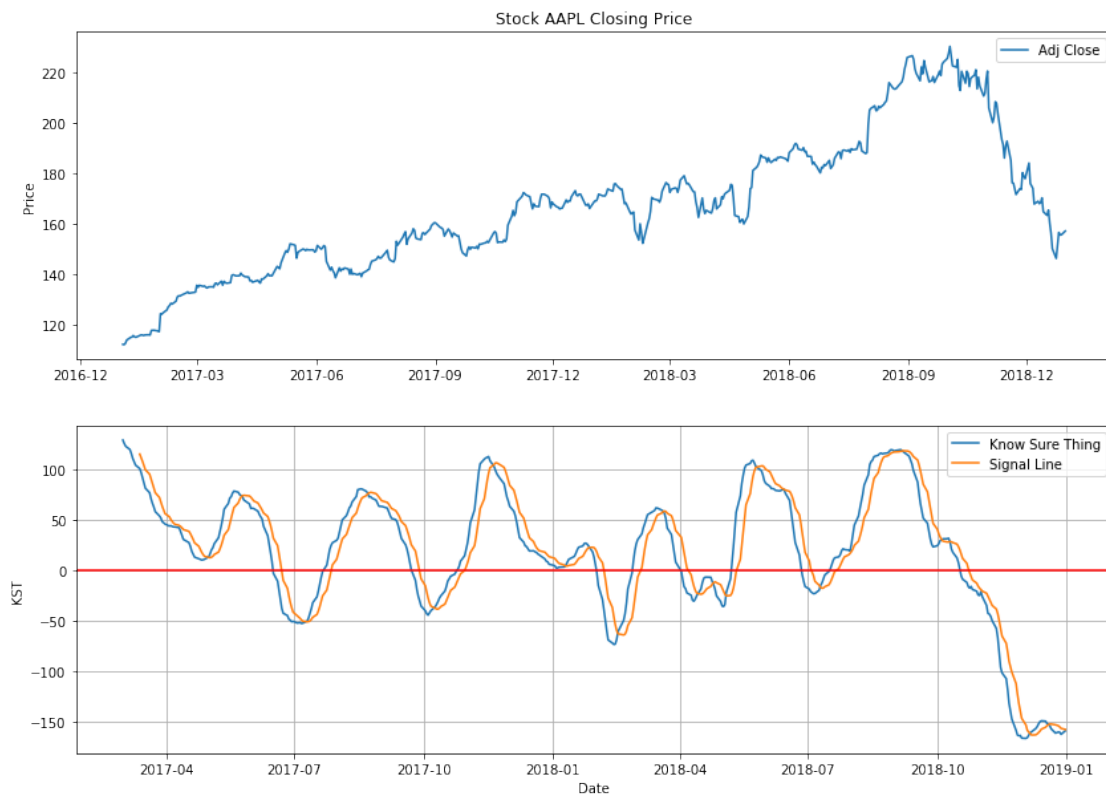
      RCMA4  KST  Signal Line
Date
2017-01-03    NaN  NaN         NaN
2017-01-04    NaN  NaN         NaN
2017-01-05    NaN  NaN         NaN
2017-01-06    NaN  NaN         NaN
2017-01-09    NaN  NaN         NaN

```

```
[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)')

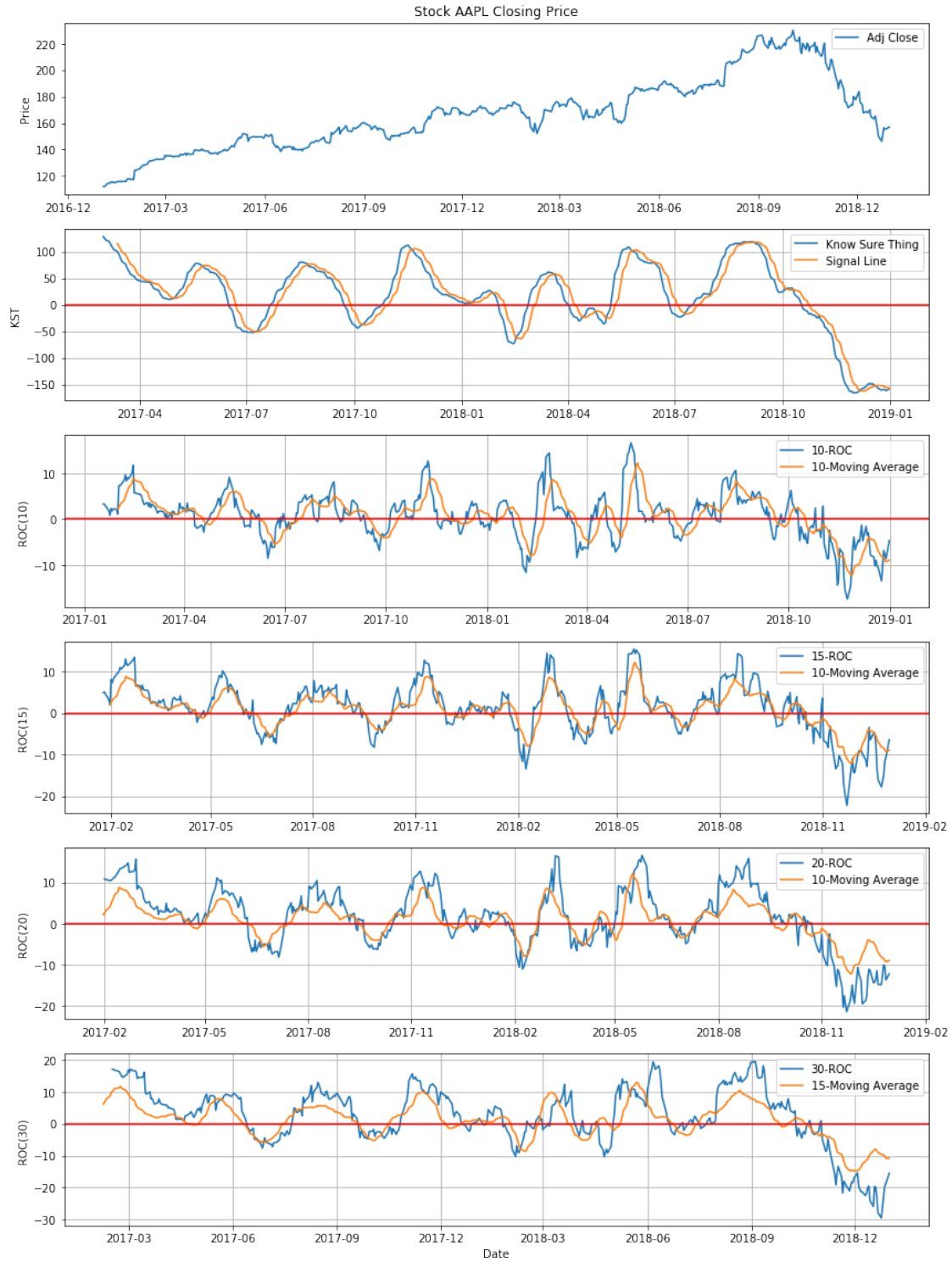
ax4 = plt.subplot(6, 1, 4)
ax4.plot(df['15_ROC'], label='15-ROC')
ax4.plot(df['RCMA1'], label='10-Moving Average')
ax4.axhline(y=0, color='red')
ax4.grid()
ax4.legend(loc='best')
ax4.set_ylabel('ROC(15)')

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')
```



## 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')

