Ichimoku

September 29, 2021

1 Ichimoku Kinko Hyo (AKA Ichimoku Cloud)

https://www.investopedia.com/terms/i/ichimokuchart.asp

[1]:
```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd

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 = '2016-01-01'
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
2016-01-04	102.610001	105.370003	102.000000	105.349998	99.499107	
2016-01-05	105.750000	105.849998	102.410004	102.709999	97.005730	
2016-01-06	100.559998	102.370003	99.870003	100.699997	95.107361	
2016-01-07	98.680000	100.129997	96.430000	96.449997	91.093399	
2016-01-08	98.550003	99.110001	96.760002	96.959999	91.575073	

```
2016-01-04  67649400
2016-01-05  55791000
2016-01-06  68457400
2016-01-07  81094400
2016-01-08  70798000
```

Tenkan-sen - The tenkan-sen, or conversion line, is calculated by adding the highest high and the highest low over the past nine periods and then dividing the result by two. The resulting line represents a key support and resistance level, as well as a signal line for reversals.

[3]:
```
# First Create Tenkan_Sen
high_9 = df['High'].rolling(9).max()
low_9 = df['Low'].rolling(9).min()
df['Tenkan_Sen'] = (high_9 + low_9) /2
```

Kijun-sen - The kijun-sen, or base line, is calculated by adding the highest high and the lowest low over the past 26 periods and dividing the result by two. The resulting line represents a key support and resistance level, a confirmation of a trend change, and can be used as a trailing stop-loss point.

[4]:
```
# Second Create Kijun Sen
high_26 = df['High'].rolling(26).max()
low_26 = df['Low'].rolling(26).min()
df['Kijun_Sen'] = (high_26 + low_26) /2
```

Senkou Span A - The senkou span A, or leading span A, is calculated by adding the tenkan-sen and the kijun-sen, dividing the result by two, and then plotting the result 26 periods ahead. The resulting line forms one edge of the kumo - or cloud - that's used to identify future areas of support and resistance.

[5]:
```
# Third Create Senkou Span A
df['Senkou_Span_A'] = ((df['Tenkan_Sen'] + df['Kijun_Sen']) / 2).shift(26)
```

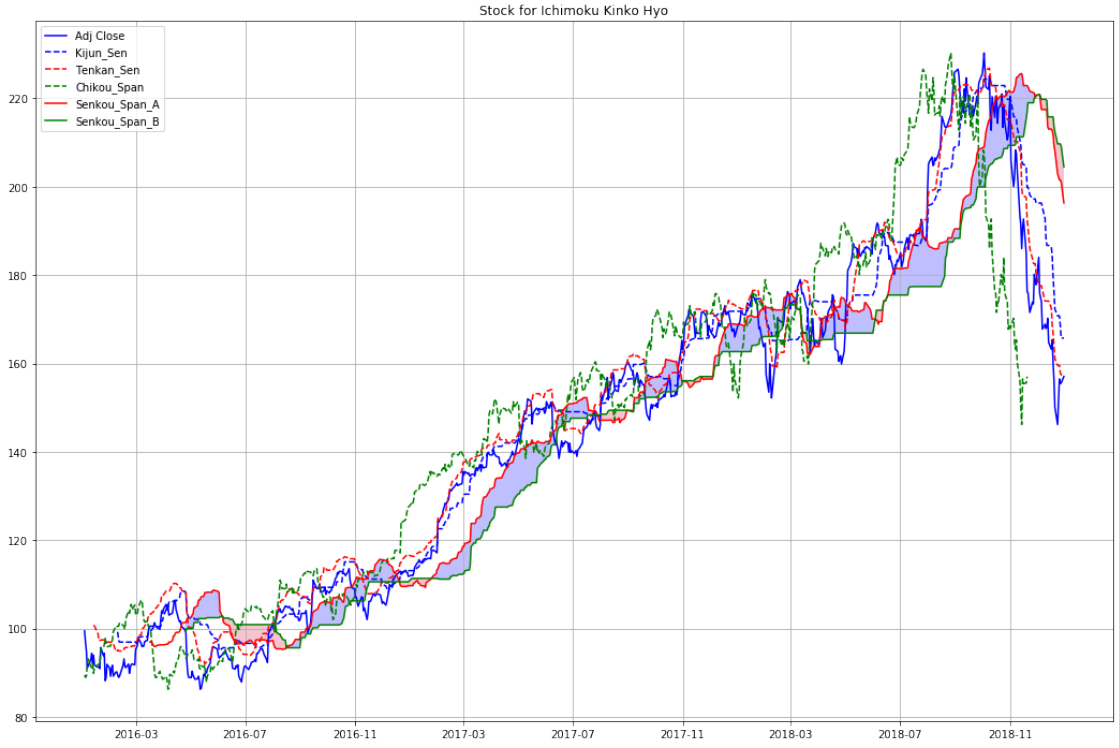
Senkou Span B - The senkou span B, or leading span B, is calculated by adding the highest high and the lowest low over the past 52 periods, dividing it by two, and then plotting the result 26 periods ahead. The resulting line forms the other edge of the kumo that's used to identify future areas of support and resistance.

[6]:
```
# Fourth Create Senkou Span B
high_52 = df['High'].rolling(52).max()
low_52 = df['Low'].rolling(52).min()
df['Senkou_Span_B'] = ((high_52 + low_52) /2).shift(26)
```

Chikou Span - The chikou span, or lagging span, is the current period's closing price plotted 26 days back on the chart. This line is used to show possible areas of support and resistance.

[7]:
```
df['Chikou_Span'] = df['Adj Close'].shift(-26)
```

[8]:
```
plt.figure(figsize=(18,12))
plt.plot(df['Adj Close'], '-b')
plt.plot(df['Kijun_Sen'],  'b--')
plt.plot(df['Tenkan_Sen'],  'r--')
plt.plot(df['Chikou_Span'], 'g--')
plt.plot(df['Senkou_Span_A'], 'r')
plt.plot(df['Senkou_Span_B'], 'g')
plt.fill_between(df.index, df['Senkou_Span_A'], df['Senkou_Span_B'],␣
 ↪where=df['Senkou_Span_A']> df['Senkou_Span_B'], facecolor='blue',␣
 ↪interpolate=True, alpha=0.25)
plt.fill_between(df.index, df['Senkou_Span_A'], df['Senkou_Span_B'],␣
 ↪where=df['Senkou_Span_B']> df['Senkou_Span_A'], facecolor='crimson',␣
 ↪interpolate=True, alpha=0.25)
plt.grid()
plt.legend(loc='best')
plt.title('Stock for Ichimoku Kinko Hyo')
plt.show()
```



[9]:
```
df2 = df.reset_index()
df2 = df2.apply(pd.to_numeric, errors='ignore')
df2.head()
```

[9]:

	Date	Open	High	Low	Close	\
0	1451865600000000000	102.610001	105.370003	102.000000	105.349998	
1	1451952000000000000	105.750000	105.849998	102.410004	102.709999	
2	1452038400000000000	100.559998	102.370003	99.870003	100.699997	
3	1452124800000000000	98.680000	100.129997	96.430000	96.449997	
4	1452211200000000000	98.550003	99.110001	96.760002	96.959999	

	Adj Close	Volume	Tenkan_Sen	Kijun_Sen	Senkou_Span_A	Senkou_Span_B	\
0	99.499107	67649400	NaN	NaN	NaN	NaN	
1	97.005730	55791000	NaN	NaN	NaN	NaN	
2	95.107361	68457400	NaN	NaN	NaN	NaN	
3	91.093399	81094400	NaN	NaN	NaN	NaN	
4	91.575073	70798000	NaN	NaN	NaN	NaN	

	Chikou_Span
0	89.517586
1	88.976318
2	89.251686
3	91.768089
4	93.173508

[10]:
```
# This one does not show dates
plt.figure(figsize=(18,12))
plt.plot(df2['Date'], df2['Adj Close'], '-b')
plt.plot(df2['Date'], df2['Kijun_Sen'],  'b--')
plt.plot(df2['Date'], df2['Tenkan_Sen'],  'r--')
plt.plot(df2['Date'], df2['Chikou_Span'], 'g--')
plt.plot(df2['Date'], df2['Senkou_Span_A'], 'r')
plt.plot(df2['Date'], df2['Senkou_Span_B'], 'g')
plt.fill_between(df2['Date'], df2['Senkou_Span_A'], df2['Senkou_Span_B'],␣
 ↪where=df2['Senkou_Span_A']> df2['Senkou_Span_B'], facecolor='blue',␣
 ↪interpolate=True, alpha=0.25)
plt.fill_between(df2['Date'], df2['Senkou_Span_A'], df2['Senkou_Span_B'],␣
 ↪where=df2['Senkou_Span_B']> df2['Senkou_Span_A'], facecolor='crimson',␣
 ↪interpolate=True, alpha=0.25)
plt.legend(loc='best')
plt.title('Stock for Ichimoku Kinko Hyo')
plt.show()
```


Stock for Ichimoku Kinko Hyo
Adj Close
Kijun_Sen
Tenkan_Sen
Chikou_Span
Senkou_Span_A
Senkou_Span_B
220
200
180
160
140
120
100
80
1.46
1.48
1.50
1.52
1.54
1e18