Donchain_Channel

September 29, 2021

1 Donchain Channel Indicator

https://admiralmarkets.com/education/articles/forex-indicators/what-everyone-should-know-about-the-donchian-channel-indicator

http://www.chart-formations.com/indicators/donchian-channel.aspx?cat=trend

[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 = '2018-08-01'
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
2018-08-01	199.130005	201.759995	197.309998	201.500000	199.243088
2018-08-02	200.580002	208.380005	200.350006	207.389999	205.067123
2018-08-03	207.029999	208.740005	205.479996	207.990005	205.660416
2018-08-06	208.000000	209.250000	207.070007	209.070007	206.728317
2018-08-07	209.320007	209.500000	206.759995	207.110001	204.790268

```
              Volume
Date
2018-08-01  67935700
2018-08-02  62404000
2018-08-03  33447400
2018-08-06  25425400
2018-08-07  25587400
```

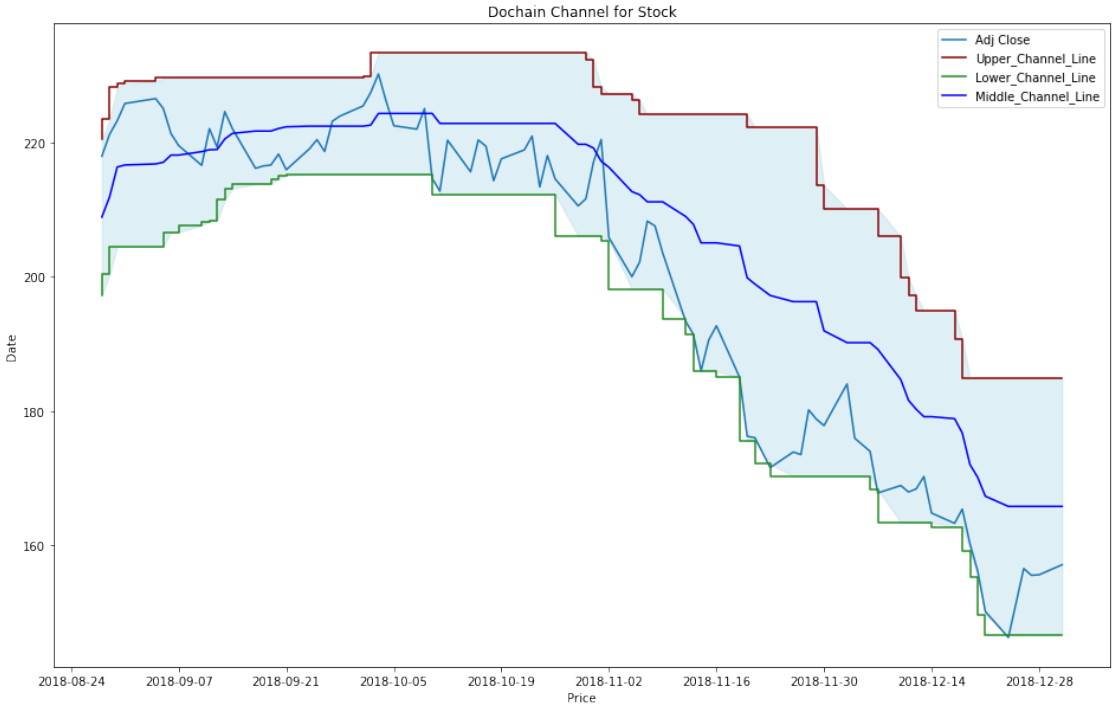
[3]:
```
df['Upper_Channel_Line'] = pd.Series.rolling(df['High'], window=20).max()
df['Lower_Channel_Line'] = pd.Series.rolling(df['Low'], window=20).min()
df['Middle_Channel_Line'] = (df['Upper_Channel_Line'] +␣
 ↪df['Lower_Channel_Line'])/2
df = df.dropna()
```

[4]:
```
df.tail()
```

[4]:
```
                 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  Upper_Channel_Line  Lower_Channel_Line  \
Date
2018-12-24  37169200          184.940002          146.589996
2018-12-26  58582500          184.940002          146.589996
2018-12-27  53117100          184.940002          146.589996
2018-12-28  42291400          184.940002          146.589996
2018-12-31  35003500          184.940002          146.589996

            Middle_Channel_Line
Date
2018-12-24           165.764999
2018-12-26           165.764999
2018-12-27           165.764999
2018-12-28           165.764999
2018-12-31           165.764999
```

[5]:
```
plt.figure(figsize=(16,10))
plt.plot(df['Adj Close'])
plt.fill_between(df.index, df['Lower_Channel_Line'], df['Upper_Channel_Line'], ␣
 ↪color='lightblue', alpha=0.4)
plt.plot(df['Upper_Channel_Line'], c='darkred', linestyle='-',␣
 ↪drawstyle="steps")
```

```
plt.plot(df['Lower_Channel_Line'], c='forestgreen', linestyle='-',␣
 ↪drawstyle="steps")
plt.plot(df['Middle_Channel_Line'], c='blue', linestyle='-')
plt.title('Dochain Channel for Stock')
plt.legend(loc='best')
plt.xlabel('Price')
plt.ylabel('Date')
plt.show()
```



1.1 Candlestick with Donchain Channel

[6]:
```
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()
```

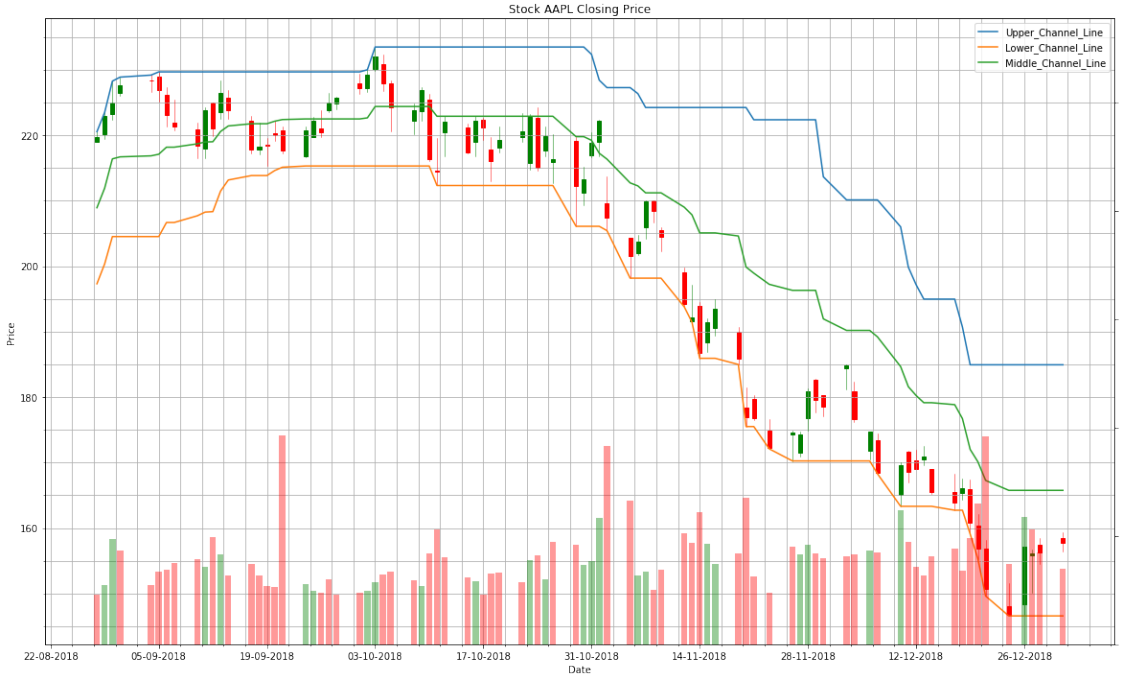
[6]:

	Date	Open	High	Low	Close	Adj Close	\
0	736934.0	219.009995	220.539993	218.919998	219.699997	218.001129	
1	736935.0	220.149994	223.490005	219.410004	222.979996	221.255753	

```
2  736936.0  223.250000  228.259995  222.399994  225.029999  223.289917
3  736937.0  226.509995  228.869995  226.000000  227.630005  225.869812
4  736941.0  228.410004  229.179993  226.630005  228.360001  226.594162

     Volume  Upper_Channel_Line  Lower_Channel_Line  Middle_Channel_Line  \
0  22776800          220.539993          197.309998           208.924996
1  27254800          223.490005          200.350006           211.920006
2  48793800          228.259995          204.520004           216.390000
3  43340100          228.869995          204.520004           216.694999
4  27390100          229.179993          204.520004           216.849999

   VolumePositive
0           False
1            True
2            True
3           False
4           False
```

[7]:
```
from mpl_finance import candlestick_ohlc

fig, ax1 = plt.subplots(figsize=(20,12))
candlestick_ohlc(ax1,dfc.values, width=0.5, colorup='g', colordown='r', alpha=1.
↪0)
#colors = ['red', 'green', 'blue']
#labels = ['Upper Channel Line', 'Lower Channel Line', 'Middle Channel Line']
for i in dfc[['Upper_Channel_Line', 'Lower_Channel_Line',␣
↪'Middle_Channel_Line']]:
    ax1.plot(dfc['Date'], dfc[i])
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.set_xlabel('Date')
ax1.legend(loc='best')
```

[7]:
```
<matplotlib.legend.Legend at 0x1fad0e737f0>
```


Stock AAPL Closing Price
Upper_Channel_Line
Lower_Channel_Line
Middle_Channel_Line
Price
220
200
180
160
22-08-2018
05-09-2018
19-09-2018
03-10-2018
17-10-2018
31-10-2018
14-11-2018
28-11-2018
12-12-2018
26-12-2018
Date