

# 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]:
```

|            | Open       | High       | Low        | Close      | Adj Close  | \ |
|------------|------------|------------|------------|------------|------------|---|
| Date       |            |            |            |            |            |   |
| 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]:
```

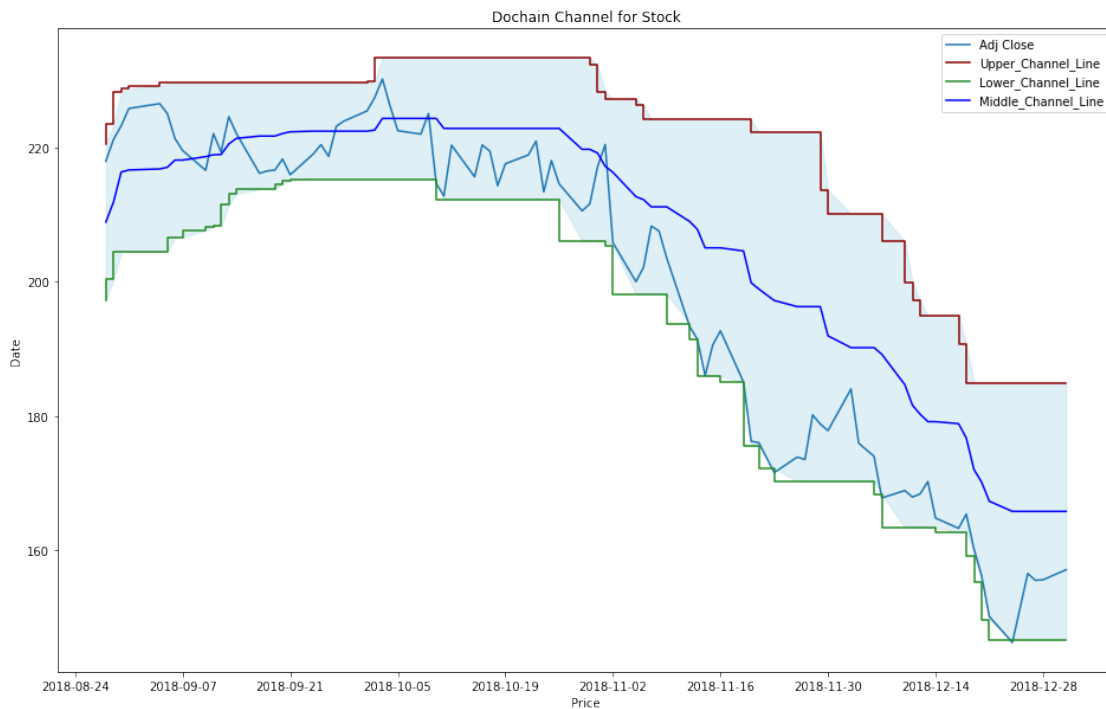
|            | Open       | High       | Low        | Close      | Adj Close \ |
|------------|------------|------------|------------|------------|-------------|
| Date       |            |            |            |            |             |
| 2018-12-24 | 148.149994 | 151.550003 | 146.589996 | 146.830002 | 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>
```

