

Alligators_Gator_Oscillator

September 29, 2021

1 Gator Oscillator

https://www.metatrader5.com/en/terminal/help/indicators/bw_indicators/go

```
[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]: def SMMA(price, n, m=3):
      SMMA = np.array([np.nan] * len(price))
      SMMA[n - 2] = price[:n - 1].mean()
      for i in range(n - 1, len(price)):
          SMMA[i] = (SMMA[i - 1] * (n - 2) + 2 * price[i]) / n
      return SMMA

```

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[4]: medianprice = (df['High']/2) + (df['Low']/2)
      df['Jaw'] = SMMA(medianprice,13,8)
      df['Teeth'] = SMMA(medianprice,8 ,5)
      df['Lips'] = SMMA(medianprice,5 ,3)

```

```

[5]: df

```

```

[5]:
      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
2018-08-08  206.050003  207.809998  204.520004  207.250000  204.928696
2018-08-09  207.279999  209.779999  207.199997  208.880005  206.540436
2018-08-10  207.360001  209.100006  206.669998  207.529999  205.925232
2018-08-13  207.699997  210.949997  207.699997  208.869995  207.254883
2018-08-14  210.160004  210.559998  208.259995  209.750000  208.128067
2018-08-15  209.220001  210.740005  208.330002  210.240005  208.614273
2018-08-16  211.750000  213.809998  211.470001  213.320007  211.670471
2018-08-17  213.440002  217.949997  213.160004  217.580002  215.897522
2018-08-20  218.100006  219.179993  215.110001  215.460007  213.793930
2018-08-21  216.800003  217.190002  214.029999  215.039993  213.377167
2018-08-22  214.100006  216.360001  213.839996  215.050003  213.387085
2018-08-23  214.649994  217.050003  214.600006  215.490005  213.823685
2018-08-24  216.600006  216.899994  215.110001  216.160004  214.488495
2018-08-27  217.149994  218.740005  216.330002  217.940002  216.254745
2018-08-28  219.009995  220.539993  218.919998  219.699997  218.001129
2018-08-29  220.149994  223.490005  219.410004  222.979996  221.255753
2018-08-30  223.250000  228.259995  222.399994  225.029999  223.289917
2018-08-31  226.509995  228.869995  226.000000  227.630005  225.869812
2018-09-04  228.410004  229.179993  226.630005  228.360001  226.594162
2018-09-05  228.990005  229.669998  225.100006  226.869995  225.115677

```

2018-09-06	226.229996	227.350006	221.300003	223.100006	221.374847
2018-09-07	221.850006	225.369995	220.710007	221.300003	219.588760
2018-09-10	220.949997	221.850006	216.470001	218.330002	216.641724
2018-09-11	218.009995	224.300003	216.559998	223.850006	222.119049
2018-09-12	224.940002	225.000000	219.839996	221.070007	219.360550
...
2018-11-15	188.389999	191.970001	186.899994	191.410004	190.592590
2018-11-16	190.500000	194.970001	189.460007	193.529999	192.703537
2018-11-19	190.000000	190.699997	184.990005	185.860001	185.066284
2018-11-20	178.369995	181.470001	175.509995	176.979996	176.224197
2018-11-21	179.729996	180.270004	176.550003	176.779999	176.025055
2018-11-23	174.940002	176.600006	172.100006	172.289993	171.554230
2018-11-26	174.240005	174.949997	170.259995	174.619995	173.874283
2018-11-27	171.509995	174.770004	170.880005	174.240005	173.495911
2018-11-28	176.729996	181.289993	174.929993	180.940002	180.167297
2018-11-29	182.660004	182.800003	177.699997	179.550003	178.783234
2018-11-30	180.289993	180.330002	177.029999	178.580002	177.817383
2018-12-03	184.460007	184.940002	181.210007	184.820007	184.030731
2018-12-04	180.949997	182.389999	176.270004	176.690002	175.935455
2018-12-06	171.759995	174.779999	170.419998	174.720001	173.973862
2018-12-07	173.490005	174.490005	168.300003	168.490005	167.770477
2018-12-10	165.000000	170.089996	163.330002	169.600006	168.875732
2018-12-11	171.660004	171.789993	167.000000	168.630005	167.909866
2018-12-12	170.399994	171.919998	169.020004	169.100006	168.377869
2018-12-13	170.490005	172.570007	169.550003	170.949997	170.219955
2018-12-14	169.000000	169.080002	165.279999	165.479996	164.773315
2018-12-17	165.449997	168.350006	162.729996	163.940002	163.239899
2018-12-18	165.380005	167.529999	164.389999	166.070007	165.360809
2018-12-19	166.000000	167.449997	159.089996	160.889999	160.202927
2018-12-20	160.399994	162.110001	155.300003	156.830002	156.160263
2018-12-21	156.860001	158.160004	149.630005	150.729996	150.086304
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

Date	Volume	Jaw	Teeth	Lips
2018-08-01	67935700	NaN	NaN	NaN
2018-08-02	62404000	NaN	NaN	NaN
2018-08-03	33447400	NaN	NaN	NaN
2018-08-06	25425400	NaN	NaN	204.792501
2018-08-07	25587400	NaN	NaN	206.127500
2018-08-08	22525500	NaN	NaN	206.142500
2018-08-09	23469200	NaN	205.993572	207.081499
2018-08-10	24611200	NaN	206.466429	207.402900

2018-08-13	25869100	NaN	207.181071	208.171739
2018-08-14	20748000	NaN	207.738303	208.667042
2018-08-15	28807600	NaN	208.187478	209.014227
2018-08-16	28500400	207.562500	209.300608	210.464536
2018-08-17	35427000	208.792116	210.864206	212.500722
2018-08-20	30287700	210.077174	212.434404	214.358432
2018-08-21	26159800	210.928378	213.228303	214.859059
2018-08-22	19018100	211.570166	213.696227	214.955435
2018-08-23	18883200	212.224757	214.228421	215.303263
2018-08-24	18476400	212.806332	214.672565	215.583957
2018-08-27	20525100	213.533820	215.388175	216.364375
2018-08-28	22776800	214.487078	216.473630	217.710623
2018-08-29	27254800	215.558297	217.717724	219.206376
2018-08-30	48793800	217.061635	219.620791	221.655823
2018-08-31	43340100	218.657537	221.574343	223.967493
2018-09-04	27390100	220.080224	223.157007	225.542495
2018-09-05	33333000	221.204036	224.214006	226.279498
2018-09-06	34290000	221.684185	224.241755	225.497701
2018-09-07	37619800	221.892772	223.941317	224.514621
2018-09-10	39516500	221.472346	222.745988	222.372774
2018-09-11	35749000	221.311985	222.166991	221.595665
2018-09-12	49278700	221.482449	222.230243	221.925398
...
2018-11-15	46478800	201.380431	196.826954	193.127490
2018-11-16	36928300	199.970365	195.673966	192.762496
2018-11-19	41925300	198.104925	193.716725	190.795498
2018-11-20	67825200	195.087244	189.910043	185.873298
2018-11-21	31124200	192.521514	187.035033	182.887980
2018-11-23	23624000	189.725898	183.863776	179.472790
2018-11-26	44998500	187.091913	181.049081	176.725673
2018-11-27	41387400	184.897004	178.993062	175.165405
2018-11-28	46062500	183.852848	178.772295	176.343240
2018-11-29	41770000	183.298564	179.141721	177.905944
2018-11-30	39531500	182.588016	179.026291	178.215567
2018-12-03	40802500	182.662937	180.038469	180.159342
2018-12-04	41344300	182.150178	179.861352	179.827606
2018-12-06	43098400	180.680919	178.046014	176.936563
2018-12-07	42281600	179.252317	176.383261	174.719939
2018-12-10	62026000	177.322730	173.964946	171.515963
2018-12-11	47281700	176.103078	172.822458	170.667577
2018-12-12	35627700	175.236451	172.234344	170.588546
2018-12-13	31898600	174.593921	171.940759	170.777130
2018-12-14	40703700	173.453318	170.750570	169.338278
2018-12-17	44287900	172.235884	169.447927	167.818967
2018-12-18	33841500	171.270364	168.575945	167.075380
2018-12-19	49047300	170.039538	167.249458	165.553227
2018-12-20	64773000	168.295763	165.113344	162.813937

2018-12-21	95744600	166.080262	162.308759	159.246364
2018-12-24	37169200	163.463298	158.999069	155.175818
2018-12-26	58582500	161.695868	157.243052	153.895490
2018-12-27	53117100	160.422658	156.287290	153.705296
2018-12-28	42291400	159.824557	156.349218	154.837179
2018-12-31	35003500	159.531548	156.741913	156.070307

[105 rows x 9 columns]

<https://mahifx.com/mfxtrade/indicators/gator-oscillator>

Top bars of histogram (Above zero) = Absolute value (Jaw – Teeth)

Bottom bars of histogram (Below zero) = - {Absolute value of (Teeth – Lips)}

```
[6]: df['Top_Bars'] = abs(df['Jaw'] - df['Teeth'])
      df['Bottom_Bars'] = -(abs(df['Teeth'] - df['Lips']))
```

```
[7]: df
```

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[7]:
```

	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
2018-08-08	206.050003	207.809998	204.520004	207.250000	204.928696
2018-08-09	207.279999	209.779999	207.199997	208.880005	206.540436
2018-08-10	207.360001	209.100006	206.669998	207.529999	205.925232
2018-08-13	207.699997	210.949997	207.699997	208.869995	207.254883
2018-08-14	210.160004	210.559998	208.259995	209.750000	208.128067
2018-08-15	209.220001	210.740005	208.330002	210.240005	208.614273
2018-08-16	211.750000	213.809998	211.470001	213.320007	211.670471
2018-08-17	213.440002	217.949997	213.160004	217.580002	215.897522
2018-08-20	218.100006	219.179993	215.110001	215.460007	213.793930
2018-08-21	216.800003	217.190002	214.029999	215.039993	213.377167
2018-08-22	214.100006	216.360001	213.839996	215.050003	213.387085
2018-08-23	214.649994	217.050003	214.600006	215.490005	213.823685
2018-08-24	216.600006	216.899994	215.110001	216.160004	214.488495
2018-08-27	217.149994	218.740005	216.330002	217.940002	216.254745
2018-08-28	219.009995	220.539993	218.919998	219.699997	218.001129
2018-08-29	220.149994	223.490005	219.410004	222.979996	221.255753
2018-08-30	223.250000	228.259995	222.399994	225.029999	223.289917
2018-08-31	226.509995	228.869995	226.000000	227.630005	225.869812
2018-09-04	228.410004	229.179993	226.630005	228.360001	226.594162
2018-09-05	228.990005	229.669998	225.100006	226.869995	225.115677
2018-09-06	226.229996	227.350006	221.300003	223.100006	221.374847

2018-09-07	221.850006	225.369995	220.710007	221.300003	219.588760
2018-09-10	220.949997	221.850006	216.470001	218.330002	216.641724
2018-09-11	218.009995	224.300003	216.559998	223.850006	222.119049
2018-09-12	224.940002	225.000000	219.839996	221.070007	219.360550
...
2018-11-15	188.389999	191.970001	186.899994	191.410004	190.592590
2018-11-16	190.500000	194.970001	189.460007	193.529999	192.703537
2018-11-19	190.000000	190.699997	184.990005	185.860001	185.066284
2018-11-20	178.369995	181.470001	175.509995	176.979996	176.224197
2018-11-21	179.729996	180.270004	176.550003	176.779999	176.025055
2018-11-23	174.940002	176.600006	172.100006	172.289993	171.554230
2018-11-26	174.240005	174.949997	170.259995	174.619995	173.874283
2018-11-27	171.509995	174.770004	170.880005	174.240005	173.495911
2018-11-28	176.729996	181.289993	174.929993	180.940002	180.167297
2018-11-29	182.660004	182.800003	177.699997	179.550003	178.783234
2018-11-30	180.289993	180.330002	177.029999	178.580002	177.817383
2018-12-03	184.460007	184.940002	181.210007	184.820007	184.030731
2018-12-04	180.949997	182.389999	176.270004	176.690002	175.935455
2018-12-06	171.759995	174.779999	170.419998	174.720001	173.973862
2018-12-07	173.490005	174.490005	168.300003	168.490005	167.770477
2018-12-10	165.000000	170.089996	163.330002	169.600006	168.875732
2018-12-11	171.660004	171.789993	167.000000	168.630005	167.909866
2018-12-12	170.399994	171.919998	169.020004	169.100006	168.377869
2018-12-13	170.490005	172.570007	169.550003	170.949997	170.219955
2018-12-14	169.000000	169.080002	165.279999	165.479996	164.773315
2018-12-17	165.449997	168.350006	162.729996	163.940002	163.239899
2018-12-18	165.380005	167.529999	164.389999	166.070007	165.360809
2018-12-19	166.000000	167.449997	159.089996	160.889999	160.202927
2018-12-20	160.399994	162.110001	155.300003	156.830002	156.160263
2018-12-21	156.860001	158.160004	149.630005	150.729996	150.086304
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	Jaw	Teeth	Lips	Top_Bars \
Date					
2018-08-01	67935700	NaN	NaN	NaN	NaN
2018-08-02	62404000	NaN	NaN	NaN	NaN
2018-08-03	33447400	NaN	NaN	NaN	NaN
2018-08-06	25425400	NaN	NaN	204.792501	NaN
2018-08-07	25587400	NaN	NaN	206.127500	NaN
2018-08-08	22525500	NaN	NaN	206.142500	NaN
2018-08-09	23469200	NaN	205.993572	207.081499	NaN
2018-08-10	24611200	NaN	206.466429	207.402900	NaN
2018-08-13	25869100	NaN	207.181071	208.171739	NaN

2018-08-14	20748000	NaN	207.738303	208.667042	NaN
2018-08-15	28807600	NaN	208.187478	209.014227	NaN
2018-08-16	28500400	207.562500	209.300608	210.464536	1.738108
2018-08-17	35427000	208.792116	210.864206	212.500722	2.072091
2018-08-20	30287700	210.077174	212.434404	214.358432	2.357230
2018-08-21	26159800	210.928378	213.228303	214.859059	2.299925
2018-08-22	19018100	211.570166	213.696227	214.955435	2.126061
2018-08-23	18883200	212.224757	214.228421	215.303263	2.003665
2018-08-24	18476400	212.806332	214.672565	215.583957	1.866233
2018-08-27	20525100	213.533820	215.388175	216.364375	1.854355
2018-08-28	22776800	214.487078	216.473630	217.710623	1.986552
2018-08-29	27254800	215.558297	217.717724	219.206376	2.159426
2018-08-30	48793800	217.061635	219.620791	221.655823	2.559156
2018-08-31	43340100	218.657537	221.574343	223.967493	2.916806
2018-09-04	27390100	220.080224	223.157007	225.542495	3.076783
2018-09-05	33333000	221.204036	224.214006	226.279498	3.009970
2018-09-06	34290000	221.684185	224.241755	225.497701	2.557571
2018-09-07	37619800	221.892772	223.941317	224.514621	2.048545
2018-09-10	39516500	221.472346	222.745988	222.372774	1.273643
2018-09-11	35749000	221.311985	222.166991	221.595665	0.855006
2018-09-12	49278700	221.482449	222.230243	221.925398	0.747794
...
2018-11-15	46478800	201.380431	196.826954	193.127490	4.553477
2018-11-16	36928300	199.970365	195.673966	192.762496	4.296399
2018-11-19	41925300	198.104925	193.716725	190.795498	4.388200
2018-11-20	67825200	195.087244	189.910043	185.873298	5.177200
2018-11-21	31124200	192.521514	187.035033	182.887980	5.486481
2018-11-23	23624000	189.725898	183.863776	179.472790	5.862121
2018-11-26	44998500	187.091913	181.049081	176.725673	6.042831
2018-11-27	41387400	184.897004	178.993062	175.165405	5.903942
2018-11-28	46062500	183.852848	178.772295	176.343240	5.080553
2018-11-29	41770000	183.298564	179.141721	177.905944	4.156843
2018-11-30	39531500	182.588016	179.026291	178.215567	3.561725
2018-12-03	40802500	182.662937	180.038469	180.159342	2.624468
2018-12-04	41344300	182.150178	179.861352	179.827606	2.288825
2018-12-06	43098400	180.680919	178.046014	176.936563	2.634905
2018-12-07	42281600	179.252317	176.383261	174.719939	2.869056
2018-12-10	62026000	177.322730	173.964946	171.515963	3.357784
2018-12-11	47281700	176.103078	172.822458	170.667577	3.280620
2018-12-12	35627700	175.236451	172.234344	170.588546	3.002107
2018-12-13	31898600	174.593921	171.940759	170.777130	2.653162
2018-12-14	40703700	173.453318	170.750570	169.338278	2.702748
2018-12-17	44287900	172.235884	169.447927	167.818967	2.787957
2018-12-18	33841500	171.270364	168.575945	167.075380	2.694418
2018-12-19	49047300	170.039538	167.249458	165.553227	2.790080
2018-12-20	64773000	168.295763	165.113344	162.813937	3.182419
2018-12-21	95744600	166.080262	162.308759	159.246364	3.771503

2018-12-24	37169200	163.463298	158.999069	155.175818	4.464229
2018-12-26	58582500	161.695868	157.243052	153.895490	4.452816
2018-12-27	53117100	160.422658	156.287290	153.705296	4.135368
2018-12-28	42291400	159.824557	156.349218	154.837179	3.475339
2018-12-31	35003500	159.531548	156.741913	156.070307	2.789635

Bottom_Bars

Date

2018-08-01	NaN
2018-08-02	NaN
2018-08-03	NaN
2018-08-06	NaN
2018-08-07	NaN
2018-08-08	NaN
2018-08-09	-1.087928
2018-08-10	-0.936471
2018-08-13	-0.990668
2018-08-14	-0.928739
2018-08-15	-0.826749
2018-08-16	-1.163928
2018-08-17	-1.636515
2018-08-20	-1.924028
2018-08-21	-1.630756
2018-08-22	-1.259208
2018-08-23	-1.074841
2018-08-24	-0.911391
2018-08-27	-0.976200
2018-08-28	-1.236993
2018-08-29	-1.488652
2018-08-30	-2.035032
2018-08-31	-2.393150
2018-09-04	-2.385488
2018-09-05	-2.065492
2018-09-06	-1.255945
2018-09-07	-0.573304
2018-09-10	-0.373215
2018-09-11	-0.571327
2018-09-12	-0.304845
...	...
2018-11-15	-3.699464
2018-11-16	-2.911471
2018-11-19	-2.921227
2018-11-20	-4.036745
2018-11-21	-4.147053
2018-11-23	-4.390986
2018-11-26	-4.323409
2018-11-27	-3.827657

2018-11-28	-2.429054
2018-11-29	-1.235777
2018-11-30	-0.810724
2018-12-03	-0.120872
2018-12-04	-0.033747
2018-12-06	-1.109451
2018-12-07	-1.663322
2018-12-10	-2.448983
2018-12-11	-2.154882
2018-12-12	-1.645798
2018-12-13	-1.163630
2018-12-14	-1.412292
2018-12-17	-1.628960
2018-12-18	-1.500565
2018-12-19	-1.696232
2018-12-20	-2.299407
2018-12-21	-3.062395
2018-12-24	-3.823251
2018-12-26	-3.347561
2018-12-27	-2.581994
2018-12-28	-1.512039
2018-12-31	-0.671607

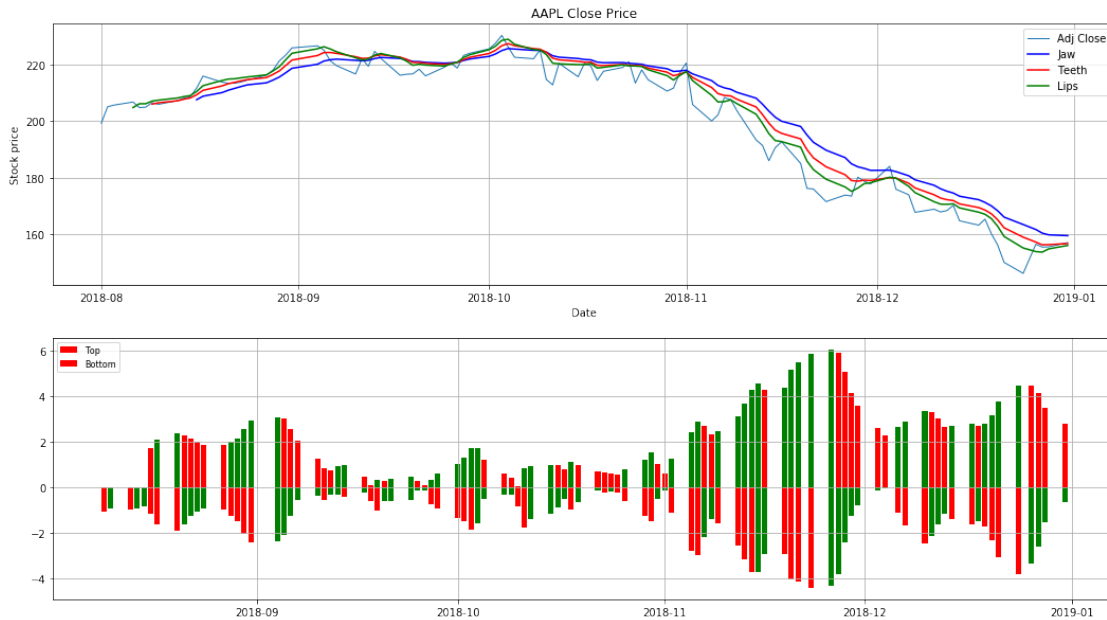
[105 rows x 11 columns]

```
[8]: fig = plt.figure(figsize=(18,10))

ax1 = fig.add_subplot(2, 1, 1)
ax1.plot(df['Adj Close'],lw=1)
ax1.plot(df['Jaw'],color='blue')
ax1.plot(df['Teeth'],color='red')
ax1.plot(df['Lips'],color='green')
ax1.set_title(symbol + ' Close Price')
ax1.set_ylabel('Stock price')
ax1.set_xlabel('Date')
ax1.grid(True)
ax1.legend(loc='best')

ax2 = fig.add_subplot(2, 1, 2)
df['Positive_T'] = df.Top_Bars > df.Top_Bars.shift(1)
df['Positive_B'] = df.Bottom_Bars > df.Bottom_Bars.shift(1)
ax2.bar(df.index, df['Top_Bars'], color=df.Positive_T.map({True: 'g', False: 'r'}), label='Top')
ax2.bar(df.index, df['Bottom_Bars'], color=df.Positive_B.map({True: 'g', False: 'r'}), label='Bottom')
#ax2.bar(df.index, df['Top_Bars'],label='Top')
#ax2.bar(df.index, df['Bottom_Bars'],label='Bottom')
```

```
ax2.legend(loc=2,prop={'size':8})
ax2.grid(True)
```



```
[9]: 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()
```

```
[9]:
```

	Date	Open	High	Low	Close	Adj Close	\
0	736907.0	199.130005	201.759995	197.309998	201.500000	199.243088	
1	736908.0	200.580002	208.380005	200.350006	207.389999	205.067123	
2	736909.0	207.029999	208.740005	205.479996	207.990005	205.660416	
3	736912.0	208.000000	209.250000	207.070007	209.070007	206.728317	
4	736913.0	209.320007	209.500000	206.759995	207.110001	204.790268	

	Volume	Jaw	Teeth	Lips	Top_Bars	Bottom_Bars	Positive_T	\
0	67935700	NaN	NaN	NaN	NaN	NaN	False	
1	62404000	NaN	NaN	NaN	NaN	NaN	False	
2	33447400	NaN	NaN	NaN	NaN	NaN	False	
3	25425400	NaN	NaN	204.792501	NaN	NaN	False	
4	25587400	NaN	NaN	206.127500	NaN	NaN	False	

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

```
[10]: 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.plot(df['Jaw'],color='blue')
ax1.plot(df['Teeth'],color='red')
ax1.plot(df['Lips'],color='green')
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.legend(loc='best')

ax2 = fig.add_subplot(2, 1, 2)
df['Positive_T'] = df.Top_Bars > df.Top_Bars.shift(1)
df['Positive_B'] = df.Bottom_Bars > df.Bottom_Bars.shift(1)
ax2.bar(df.index, df['Top_Bars'], color=df.Positive_T.map({True: 'g', False:
↪'r'}), label='Top')
ax2.bar(df.index, df['Bottom_Bars'], color=df.Positive_B.map({True: 'g', False:
↪'r'}), label='Bottom')
ax2.legend(loc=2,prop={'size':8})
ax2.grid(True)
```

