

## 202507012106

Maurizio Gardini

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```
#import os  
#os.system('echo password | su -c "apt install ta-lib"')  
#os.system('pip install ta-lib')  
#os.chdir('/home/mrz/tmp/')
```

```
import yfinance as yf  
import matplotlib  
import pandas as pd  
import talib
```

```
dat1 = yf.Ticker("BTC-USD")
```

```
df1 = dat1.history(period='1d', interval='1m')
```

```
df1
```

```
df1.dtypes
```

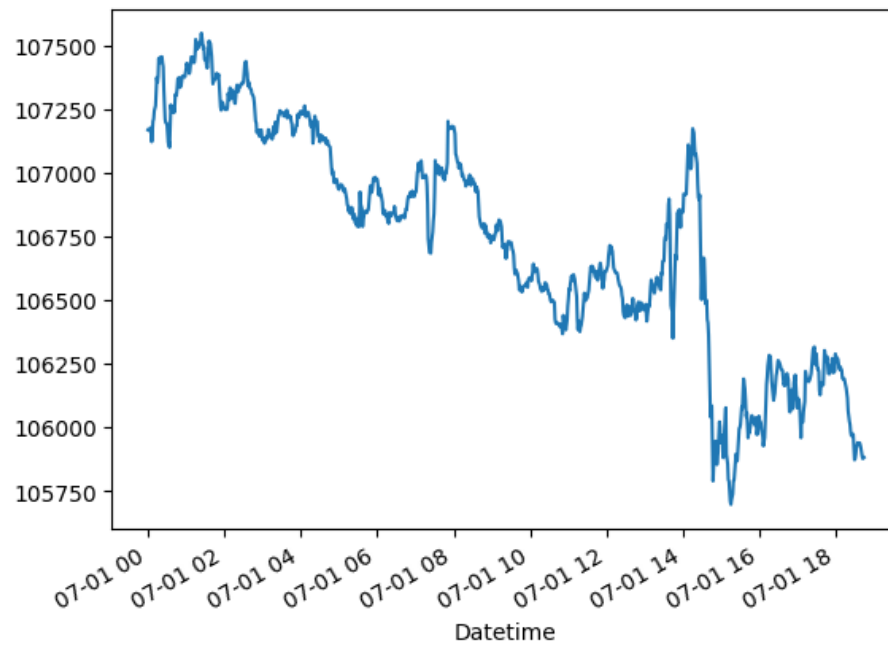
```
Open           float64  
High           float64  
Low            float64  
Close          float64  
Volume         int64  
Dividends      float64  
Stock Splits   float64  
dtype: object
```

$$\frac{1}{k} \sum_{i=n-k+1}^n x_i$$

```
df1['ma'] = talib.MA(df1['Close'], timeperiod=20)
```

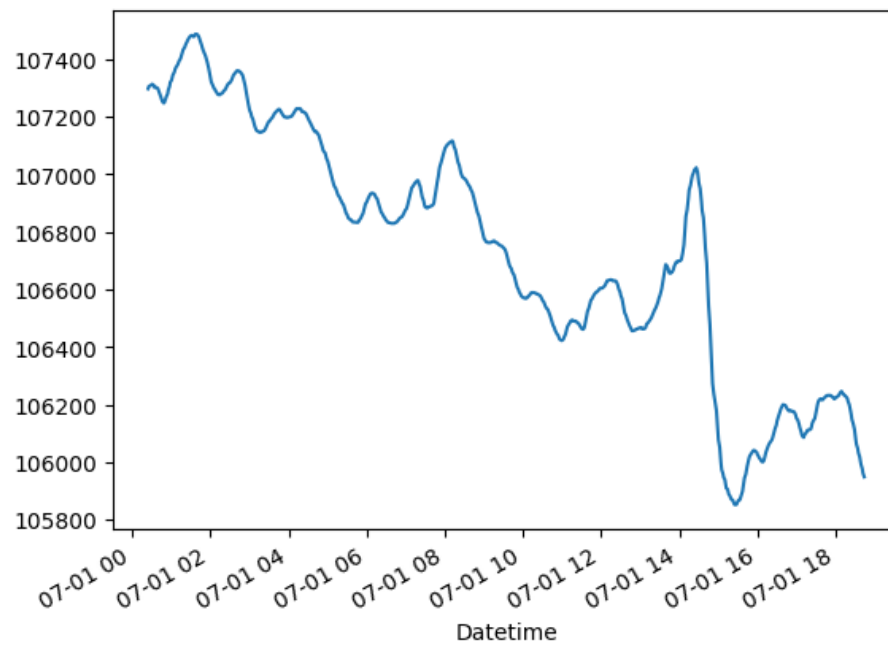
```
df1['Close'].plot()
```

```
<Axes: xlabel='Datetime'>
```



```
df1['ma'].plot()
```

```
<Axes: xlabel='Datetime'>
```



```
df1['buy'] = 0
df1['sell'] = 0
```

If  $x > \frac{1}{k} \sum_{i=n-k+1}^n x_i$  and  $x_{i-1} \leq \frac{1}{k} \sum_{i=n-k+1}^n x_i$  buy

```
for x in range(0,891):
    if df1['Close'].iloc[x] > df1['ma'].iloc[x]:
        if df1['Close'].iloc[x-1] <= df1['ma'].iloc[x-1]:
            df1.iloc[x, 8] = 'buy'
```

```
df1
```

```
df1.to_csv('df1.csv', index=False)
```

Email address: mauriziogrd1@gmail.com

Orcid address: <https://orcid.org/0009-0001-5845-55724>