Twitter Thread by Indian Quant ■■



Indian Quant ■■
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Nano Course On Python For Trading
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Module 3-B (Bonus)

In this Bonus Module, I will attempt to teach you how to write an algorithm to create a Stock Screener based on @markminervini 's Trend Template from his book Trade Like A Stock Market Wizard.

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Some of the readers asked about how to create a stock screener. So, I thought before jumping to the cloud and deploying an algorithm on the cloud, I should address this. Whatever algorithm we develop in this module, we will deploy it on the cloud in Module number 4.

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Pre-requisites:

• Read Module 2, so that you can download the historical data. A small assignment for you - write code to automate EOD data download and save it in the folder. We need to have the latest data for the screener. Hint: set end_date = https://t.co/u2N2I53cm4()

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The rules are:

• The LTP of the stock > 150 SMA & 200 SMA
• The 150 SMA > 200 SMA
• The 200 SMA must be greater than 200 SMA 30 days ago.
• The 50 SMA > 150 SMA & 50 SMA > 200 SMA
• The LTP > 50 SMA
• The LTP must be greater than 30% of 52-Week Low

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• The LTP is close to 25% of the 52-Week High
• The Relative Strength(RS) should be greater than 70

SMA = Simple Moving Average
LTP = Last Traded Price

Let's get started with its coding.

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We are going to use pandas and pandas_ta library.

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```
import datetime as dt
import pandas as pd
import pandas_ta as ta


```

Then we define the universe on which we are working. This universe is the same as that defined in Module 2.

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```
# LIST OF NIFTY 50 Stocks
nifty50list = ['ADANIPORTS','ASIANPAINT', 'AXISBANK', 'BAJAJ-AUTO', 'BAJFINANCE', 'BAJAJFINSV', 'BPCL', 'BHARTIARTL',
 'BRITANNIA', 'CIPLA', 'COALINDIA', 'DIVISLAB', 'DRREDDY', 'EICHERMOT', 'GRASIM', 'HCLTECH', 'HDFCBANK', 'HDFCLIFE',
 'HEROMOTOCO', 'HINDALCO', 'HINDUNILVR', 'HDFC', 'ICICIBANK', 'ITC', 'IOC', 'INDUSINDBK', 'INFY', 'JSWSTEEL', 'KOTAKBANK',
 'LT', 'M&M', 'MARUTI', 'NTPC', 'NESTLEIND', 'ONGC', 'POWERGRID', 'RELIANCE', 'SBILIFE', 'SHREECEM', 'SBIN', 'SUNPHARMA',
 'TCS', 'TATACONSUM', 'TATAMOTORS', 'TATASTEEL', 'TECHM', 'TITAN', 'UPL', 'ULTRACEMCO', 'WIPRO']


```

DATA_BASE_FOLDER is the folder where your data is saved. This varies and will be different for you. Then, you define a data frame cols with all the parameters: Stock Name, LTP, RSI, 50,150, 200 moving average, 200 moving average 20 days ago, 52 weeks Low and 52 weeks High

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We also define the main Dataframe MarketWatch that holds all the data on which we will do our calculation. Let us call it MarketWatch.

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```
DATA_BASE_FOLDER = r"C:\Users\pvarshney\Downloads\BlackField Research\Content\Data Small"

cols = ['Stock','LTP', "RSI", "50MA", "150MA", "200MA","200MAMonthBefore", "52WeekLow", "52WeekHigh"]

MarketWatch = pd.DataFrame(columns=cols)
```

Then you iterate through these stocks. In order to calculate RSI, Simple moving average we use pandas ta library. It is very simple to use these functions, just call these functions ta.rsi, ta.sma .

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```
for stocks in nifty50list:
    df = pd.read_csv(DATA_BASE_FOLDER + "\\" +stocks+".csv", parse_dates=['Date'], index_col=['Date'])

    rsi = ta.rsi(df['Close'], timeperiod=14).values[-1]
    sma50 = ta.sma(df["Close"], length=50).values[-1]
    sma150 = ta.sma(df["Close"], length=150).values[-1]
    sma200   = ta.sma(df["Close"], length=200).values[-1]
    sma200monthBefore = ta.sma(df["Close"], length=200).values[-20]
```

Note that, when you use the above functions it returns a series. You have to fetch the latest value so access the latest value by using -1.
To calculate 52 weeks high/low, I assume that there are on average 253 trading days in a year. If you take 365 days, results will vary.

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```
    yrlow = min(df["Low"][-253:])
    yrhigh = max(df["High"][-253:])
```

Finally, we create a temporary data frame df2 and append it to the Marketwatch. Finally, the market watch looks like this. 70% of our job is done. Next, we just need to write some conditions over this MarketWatch and identify all the stocks that satisfy the screener conditions.
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```
    df2 = pd.DataFrame(columns=cols)
    df2 = {'Stock': stocks,'LTP':df["Close"].values[-1],'RSI': rsi ,
            '50MA': sma150,'150MA': sma150,'200MA': sma200,'200MAMonthBefore':sma200monthBefore,
            '52WeekLow':yrlow,
            '52WeekHigh':yrhigh }

    MarketWatch = MarketWatch.append(df2,ignore_index=True)
```

Let's iterate through all the stocks in the Marketwatch. We have a variable isStockFiltered which is set to False if it fails any of the 7 conditions for the screener.

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```
for i in MarketWatch.index:
        stock = MarketWatch['Stock'][i]
        ltp = MarketWatch['LTP'][i]
        rsi = MarketWatch['RSI'][i]
        sma50 = MarketWatch['50MA'][i]
        sma150 = MarketWatch['150MA'][i]
        sma200 = MarketWatch['200MA'][i]
        sma200monthBefore = MarketWatch['200MAMonthBefore'][i]
        yrlow = MarketWatch['52WeekLow'][i]
        yrhigh = MarketWatch['52WeekHigh'][i]

        isStockFiltered = True
```

We check for all the 7 rules we stated above from Mark Minervini's template. If a stock fails to match any of the conditions, we reject that stock entirely. If it matches the condition, we say that the stock has met the requirement.

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```
    # Last Traded Price > 150 SMA and > 200 SMA
    if not (ltp > sma150 > sma200) :
        isStockFiltered = False
        continue

    # 150 SMA and > 200 SMA
    if not (sma150 > sma200) :
        isStockFiltered = False
        continue

    # 200 SMA trending up for at least 1 month
    if not (sma200 > sma200monthBefore) :
        isStockFiltered = False
        continue

    # 50 SMA> 150 SMA and 50 SMA> 200 SMA
    if not (sma50 > sma150 > sma200) :
        isStockFiltered = False
        continue

    # Last Traded Price > 50 SMA
    if not (ltp > sma50) :
        isStockFiltered = False
        continue

    # Last Traded Price is at least 30% above 52 week low
    if not (ltp >=  (1.3*yrlow)) :
        isStockFiltered = False
        continue

    # Last Traded Price is within 25% of 52 week high
    if not (ltp >=  (0.75*yrhigh)) :
        isStockFiltered = False
        continue

    # If all of the above are true, add stock to filtered list
    if(isStockFiltered):
        print (stock + " stock met requirement ")
```

Unfortunately, in the current market scenario and worldwide market corrections, there is no stock coming under the screener for buy. If you comment out some of the conditions you may see some stocks coming, say I remove condition sma50 > sma150 > sma200 and then I see

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```
ASIANPAINT stock met requirement
BHARTIARTL stock met requirement
COALINDIA stock met requirement
GRASIM stock met requirement
HINDALCO stock met requirement
ICICIBANK stock met requirement
IOC stock met requirement
LT stock met requirement
MARUTI stock met requirement
NTPC stock met requirement
ONGC stock met requirement
SBIN stock met requirement
SUNPHARMA stock met requirement
TCS stock met requirement
TATAMOTORS stock met requirement
TITAN stock met requirement
```

some stocks are being thrown by our screener.

Note: This module will help you understand that there are details to anything to use in your trading voyage. For e.g. you may use 365 days instead of 253 to calculate 52 weeks high/low. You should also understand the underlying

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formula on how you calculate RSI, SMA, etc. But, more than anything, you should educate yourselves so that no one can fool you into selling you random magic indicators.

Link to colab notebook (no output attached this time): https://t.co/559olcN9jj
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