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A programmatic way to generate point and figure charts for stock market price Data.

Pallav Nandi Chaudhuri

Techno Engineering College Banipur, College Road Habra West Bengal 743233

Abstract: In this paper I propose a programmatic way to generate point and figure charts. Point and figure charts provide a way of plotting stock market data without considering the time scale. Hence for the price action trades it provides a mechanism which can depict the trend, trend reversal in a definitive way. There are several established formulas available which are used to set the price target for a taken trade. There are also ways which traders use to place stop loss as well. Hence in a nutshell, among the traders and investors point and figure charting technique is popular. Many trading decisions are made by observing the chart generated in point and figure way. The goal of this tool is to provide a way by which traders can do the necessary calculations automatically. Most of the time and for most of the people trading is a discretionary process. For the dedicated and experienced traders it is a business. They use their proprietary formulas which are not available in the market. Nowadays many mechanical traders prefer and want automatic execution of orders at the exchange with the use of application programming interfaces. The tool is customizable and made in such a way that they can integrate their proprietary formulas with the help of a programmer and use it to make different trading decisions. The project is an open source project. Either with little programming knowledge of python or with the help of a programmer it can be customized as per the trading needs of an individual.

Keywords: Point and figure chart, trading, stock market.

1. INTRODUCTION

In this paper I want to describe a convenient and customizable tool to generate point and figure charts with stock market price data. The project was carried out at Techno Engineering College Banipur with the support from KNC Solutions Private Limited and Global Datafeeds. It has the built in support for and has been successfully tested with the Zerodha Kite Api, Quandl data feed and Globaldatafeeds historical api. With working knowledge of python or by hiring a developer the users can integrate their proprietary formulas which they use for trading purposes into the software.

2. ABOUT POINT AND FIGURE CHART

Point and figure charts are a simple yet widely used way to make trade decisions, determine entry exit price and determine trends[12]. Most charting tools include the plotting technique for point and figure charts. However the problem is that those are not customizable most of the time. On the contrary the present tool which I have developed can be customized with little or no knowledge of python.

2.1 Construction of a point and figure chart

In point and figure charts rising prices are represented in terms of ‘X’s and falling prices are represented in terms of ‘O’s[13]. Each ‘X’ or ‘O’ occupies a box. When price goes on rising by a certain value or percentage during an existing uptrend, a new ‘X’ is added over the previous ‘X’, thus forming a column of ‘X’s. When price goes on falling by a certain value or percentage during an existing downtrend, a new ‘O’ is added below the previous ‘O’, thus indicating the continuation of the downtrend. If price goes in the opposite direction by a certain value or percentage, then if reversal occurs. The value or percentage defines the ‘box-size’[1].

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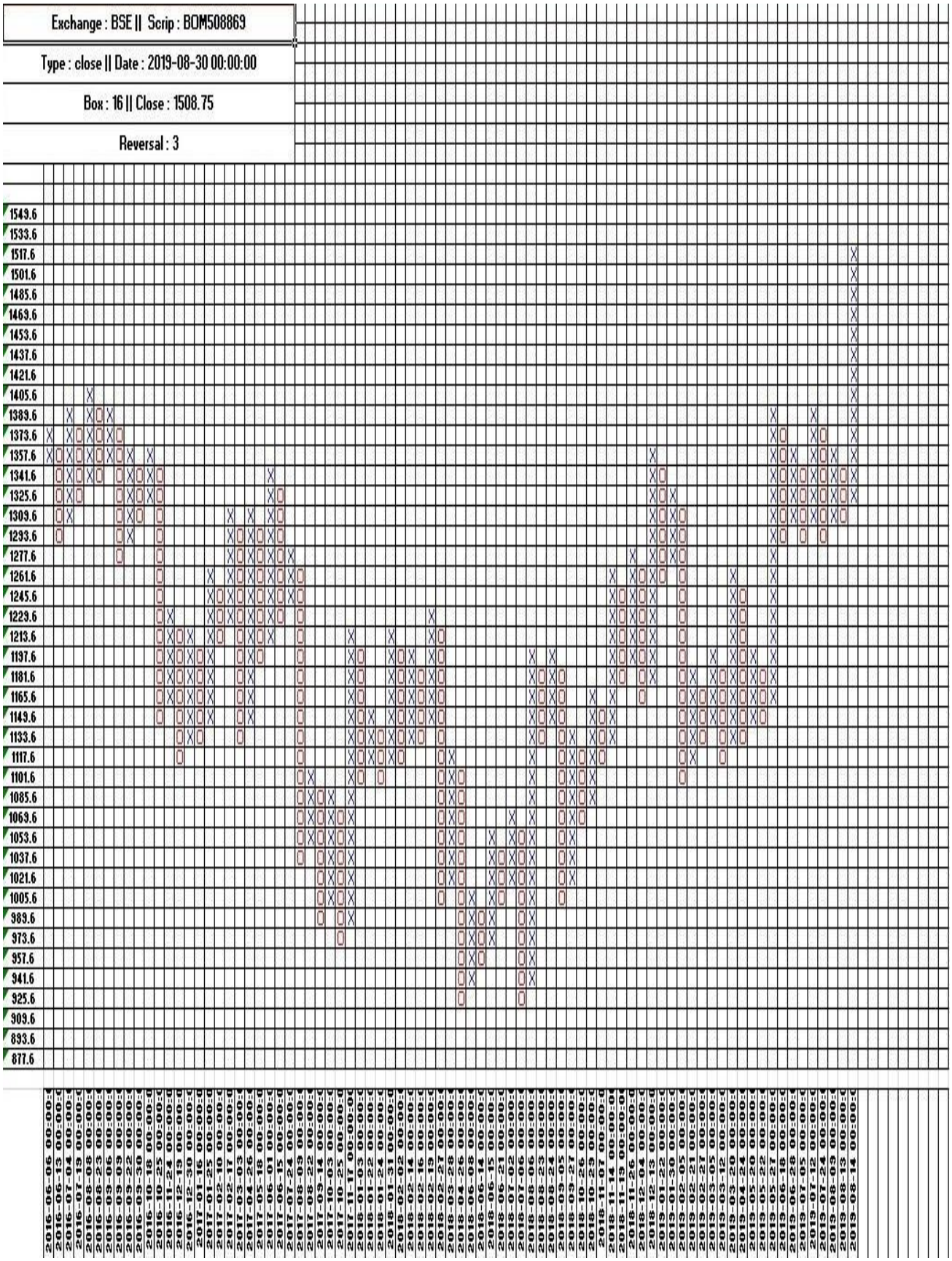

Fig. 1. A sample point and figure chart generated with dhelm-pnf-chart-generator

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In Fig. 1. each column of rising 'X's represents an uptrend, whereas each column of falling 'O's represents a downtrend. There are specific as well as discretionary guidelines to determine price targets[2].

It can be observed that each box contains either a 'X' or an 'O'. The size of the box is predefined in terms of price points.

It can also be observed that there are alternative columns of 'X's and 'O's. When price reverses by certain points or percentage the representation of columns changes. In simple terms it can be said that the trend has changed. The most common practice is that if the price moves in the opposite direction for three times of the box size then it is assumed that the price has reversed direction[10]. However there is no strict rule for this and varies from trader to trader[11].

2.2 How to use dhelm-pnf-chart-generator

To use the package, Install python, preferably 3.7. You have to clone the git repository on your local computer[14]. See Table. 1.

Table.1. Download the repository

```
git clone https://github.com/kncsolutions/dhelm-pnf-chart-generator.git
```

.You have to navigate to the directory and open the 'dhelm_pnf_chart_gen_settings.xlsx' file inside the setting folder and provide the necessary parameters. Follow Table. 2 for a detailed list of parameters and their domains.

Table. 2. Detailed list of parameters

Parameter Name	**Domain**	**Description**
method_percentage	{true, false}	If true a percentage value of the previous box will be used to calculate box size and reversal mount.
calculation_method	{close, highlow}	It is used to compute the price point.
from_dt	date time object in yyyy-mm–dd hh:mm:ss format.	The historical price point from where plotting will begin.
BOX_SIZE	-1 indicates default value. Any integer>1 will do.	It indicates the box size to be used.
REVERSAL	Any integer>0	Multiplication factor which when multiplied with the BOX_SIZ to get a reversal amount .
BOX_PERCENTAGE	any integer>1	Box Size if percentage method is selected.

To execute the package you have to open a command window and navigate to the directory where '**dhelm_chart_generator.py'** is located and run the file.All your necessary packages will be downloaded and installed[3].

To generate a chart with kite api data[4], gfeed client[5] or quandle client[6] you have to input and store your credentials in the settings directory.

Next you have to execute the following command in Table. 3 to get the chart

Table. 3. Command to generate charts[15].

```
python dhelm-pnf-chart-generator.py
```

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The generated charts will be stored in the 'char_kite' folder if you are using the kite api[7], in 'chart_gfeed' folder if you are using the global data feed api[8] and 'chart_quandl' folder if you are using quandl api.

The repository can be found here[9].

CONCLUSIONS

The programmatic way of trading is gaining popularity day by day. The proposed tool can be modified to automate the trading task as well. As a future scope the project can be modified to take the benefit of automatic order placing by integrating the real time apis.

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