[[1]](#footnote-1)

Design and development of a notification tool to identify Hammers & Inverted Hammers in the NIFTY-50 Index on a daily timeframe

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*Abstract* — In the year 2020, the number of active investors in the stock market increased by more than 1 crore, according to data by National Stock Exchange of India[1]. As more and more people enter the market, the need for tools that simplify the chart analysis of stocks held by a person increases day by day. Candlestick patterns are important tools in technical trading. Understanding them allows traders to interpret possible market trends and form decisions from those inferences. This paper aims to document the process of design and development of a GUI-based application that will notify the user when there are stocks in the NIFTY-50 Index that show Hammer & Inverted Hammer candlestick patterns on the daily timeframe.

***Keywords*** *— Data analytics, Equity investment, Market trend analysis, Price action analysis, Python*

1. INTRODUCTION

A candlestick is a single bar that represents the price movement of a particular asset for a specific time period.[2] Candlestick patterns are important tools in technical trading. Understanding them allows traders to interpret possible market trends and form decisions from those inferences. There are various types of candlestick patterns that can signal bullish or bearish movements.

The Hammer candle is viewed as a bullish reversal usually occurring at the bottom of a downward trend. This candle formation includes a small body whereby the open, high, and close are roughly the same. There is a long lower wick beneath the body which should be more than twice the length of the candle body. The body may be bullish or bearish, however bullish is considered more favorable.

# Methodology

## Components

Python: The language that we are using for creating the backend of the service, for data analysis.

NSEpy: NSEpy is a library to extract historical and real-time data from NSE’s website.

Pandas: Python library for data cleansing & analysis.

Eel: Python library which acts as an interface between Python & JavaScript, used for passing values between them and creating GUI based apps

JavaScript: The language that we’re using to create a smooth GUI.

HTML & CSS: The languages used for creating skeleton & design of the GUI

Git: Version control system

## Design

Considering that the app was meant for a regular user, ease of use was one of the major factors in mind. The user simply clicks on an icon, and then a small window shows up. This window starts with animation to get the user’s attention. Then, the user is greeted with a screen that tells the name of the project. The user is then prompted to continue with a button. On continuing, the user then sees the list of stocks that have seen the Hammer & inverted hammer candlestick formations. On clicking on the name of the stock, the user is shown the chart of that particular stock.

The app uses the Eel library in order to create a visually appealing frontend leveraging mature technologies like HTML, CSS & JavaScript, while using Python for data analysis, in order to get the best results. The application first checks if the current day is a trading day, and then uses the NSEPy library in order to get the financial data of the day (Like Opening price, closing price, volume-weighted average price, among others) of all the stocks in the NIFTY-50 index, in the form of a pandas dataframe.

Then all the data that is not required is removed. Then the stocks are checked for Hammer-like / Inverted Hammer like formations, using parameters like the size of the candlestick body, the size of the lower & upper wick, the colour of the candlestick, etc.

If a stock is classified as a Hammer / Inverted Hammer, then the stock’s name gets added to a list. On checking all 50 stocks, the list is sent to JavaScript, which is responsible for showing this list to the user.

# Results and Discussions

Graphical user interface, text, application, website

Description automatically generated

Main Screen

Graphical user interface, application

Description automatically generated

A screenshot of a computer

Description automatically generated with medium confidence

The graph of COALINDIA stock. Notice the inverted Hammer formed at the end.

A screenshot of a computer

Description automatically generated with medium confidence

The graph of SHREECEM stock. Notice the inverted Hammer formed at the end.

A screenshot of a computer

Description automatically generated with low confidence

The graph of BRITANNIA stock. Notice the inverted Hammer formed at the end.

A screenshot of a computer

Description automatically generated with low confidence

The graph of IOC stock. Notice the inverted Hammer formed at the end.

# Limitations

The application only supports daily timeframe analysis, which is useful for swing trading, but not very useful for day trading, as well as long-term investments. Secondly, the definition of a Hammer, or an Inverted Hammer is a point of contention among traders, depending on the risk appetite of the trader. Some traders might like a more aggressive definition of a Hammer, whereas some might like a more conservative one, currently, no support is provided to change this definition of a hammer.

# Future Scope

The application shows a lot of promise, as there could be an inclusion of features such as addition of more stocks, letting a user select a custom list of stocks to check for Hammer / Inverted Hammer patterns, support for more candlestick patterns such as Morning star, evening star, Doji, etc.

# Conclusion

The application could find use in a wide variety of places but is best suited for use by retail investors who partake in the stock market part-time and can’t invest a large amount of time in research of stocks. As more support is added for multiple candlestick patterns, this application could act as a one-stop solution for preliminary analysis of stocks.

References

1. “Market concentration and retail investment in India”, Indian economy and markets, A monthly review, Volume 3, Issue 10, National Stock exchange of India.
2. “Candlestick Definition”, Hayes, A, Guide to Technical Analysis, Investopedia, Dotdash.

1. [↑](#footnote-ref-1)