TRADING INDICATORS WHITE PAPER

INTELLI-HARMONIC INDICATORS

1 ABSTRACT

The Intelli-Harmonic Indicators, as the name suggests, is a user friendly and intelligent system which aids users while trading, with the assistance of our A.I. indicators, which when produced onto the screen appear as harmonic patterns, enabling the user to predict the price and behavior of the market effectively and make their decisions.

Our system has been developed using a conglomerate of neural networks, trained utilizing sizable sets of varied market data which enable them to interpret the nature of financial markets. Indicating the essential price points to wisely manage your finances, and features that are adjustable to the convenience of the user, makes our system a perfect tool for all, from the adept to those who lack the experience and exposure to existing charting systems, patterns and indicators.

2 INTRODUCTION

Trading has always been a challenging occupation. There are several risks involved in it, but its rewards can be enticing. The number of people trading on a daily basis has increased, as they are drawn to it by the rewards it offers. Trading should be viewed as a business due to the fact that it emulates the same characteristics as a business. One may undergo losses but must learn from them and take a calculative decision to generate revenue. In order to be highly profitable in trading, there are several challenges a trader must overcome such as (**Trading et al., 2021**):-

1. Preparation:- A novice may be inspired by successful traders, but is unaware of the preparation and planning that goes behind it. A thorough understanding of candle stick patterns, market liquidity, charting platforms, imbibing from various news sources and the use of indicators are the fundamental skills and knowledge in trading to make a profit. Developing an effective trading plan and sticking to it consistently is the key.

2. Understanding Risk Management:- Planning a trade, analyzing the amount being risked to the profit that could be made, keeping an eye on the cash flow projection plays a major role. An amateur often overlooks these steps as they are not well acquainted with trading terms such as "stop loss" and "risk to reward ratios" due to which they invest blindly relying on luck. This often results in losses being incurred.

3. Relying on ineffective Strategies and Indicators:- Replicating the strategies of inexperienced brokers, and the usage of ineffective indicators which could provide false signals and entry points should be avoided completely. Developing your own strategy, along with the use of reliable indicators will produce effective results.

4. Impatience: An important virtue of an astute trader is patience. Timing your move is essential to maximize your profits. Keeping an eye on the market and updating your strategy will benefit a trader by avoiding any major loss.

Keeping all these factors in mind, we have developed a system which empowers traders of all sorts right from proprietary trading firms to day traders, with a state of the art A.I. based technology which gives them an edge over their competitors.

3 TECHNICAL OVERVIEW

3.1 NEURAL NETWORK MODEL

Our systems comprises of an ensemble of neural networks which have been trained with large sets of varied market data, and these networks analyze the price points on the charts, providing a dynamic representation of the market structure and levels. The network models differ in their harmonic and dynamic properties and have been designed to cater to trading strategies and the time-frames which they are best suited to.

The indicators will clearly depict what it expects the market level to be at a particular time frame. The sequence of prediction at each time frame for each of the networks will correspond to the final set of indicators. Key attribute of the system is that it is dynamic in nature and new indicators utilizing a similar A.I. base can be added in the future.

3.2 CHARTING SYSTEM

Our charting configuration comprises of various features such as drawing tools, zooming in and out, and viewing features enabling the adjust the views of the chart. The default configuration of the system displays all 7 of our A.I. based indicators when activated. The platform is designed to enable and disable the indicators such as the fractals and it allows the user to disable any of the indicators if he/she wishes to view the charts using only one or multiple indicators at once.
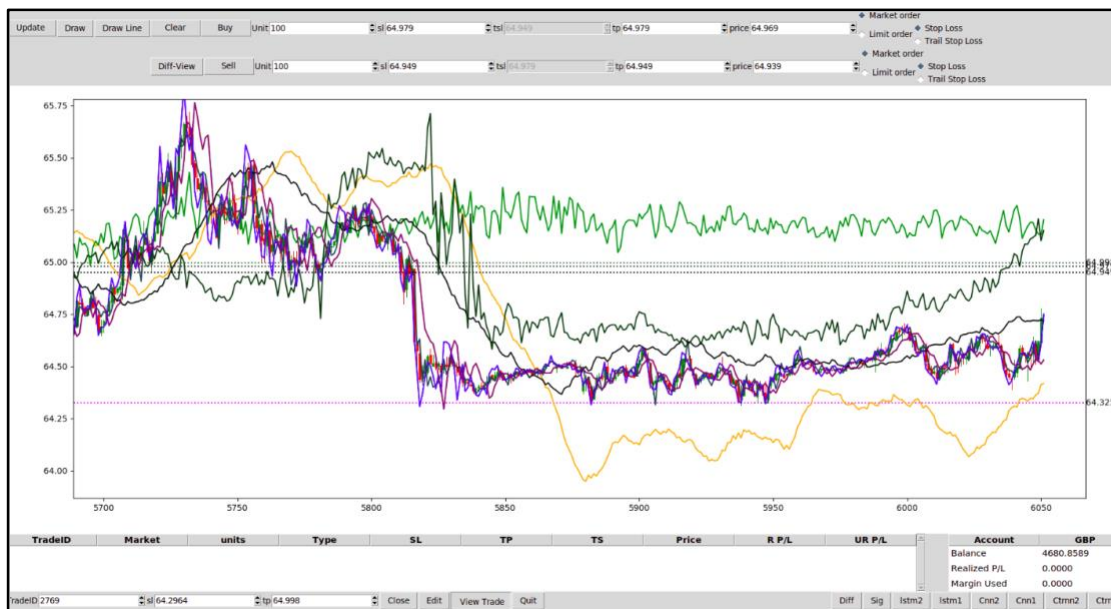

Figure 1: Intelli-Harmonics Trading Platform
with trading actions enabled

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As displayed in the picture above, the trading platform is laid out systematically and is completely user friendly. Just like any other platform, it enables the user to buy and sell stocks at the market price or at a limit price. Select the number of units to purchase, set a stop loss and take profit at the chosen prices. Features such as "Draw-Line", built to assist the user to make their own analysis, and a "Clear" feature to clear any lines drawn. The view can be changed using the "Diff-View" feature.

Figure 2: Charting Platform in the Backtester
Mode

The backtester mode has been used to perform several tests using data of various markets from the famous API named **OANDA**. The charting platform is configurable to be used either as a pure charting system or with the addition of functions in order to manage trades.

In the future, this platform will be automated to carryout trades with the use of A.I. leveraged trading bots, and we are currently in the initial testing phase of that feature. Details of the automated version will be made available post statistical confirmation.

The characteristics and functionality of each indicator has been explained below in detail along with examples of how they can be utilized to analyze and place your trades.

4 INDICATORS

1. **Purple** (CTRNN): This indicator is based on a novel active scanner network. It follows the price line the most closely as compared to other indicators. It can be used in the following ways:

   - To predict the direction and pattern the market is heading in. The indicator level is almost always at the level of the price line or is above the price, therefore it serves the purpose of a resistance quite accurately

   - Interacting with the line would therefore provide potential entry points to make a trade. Effective to time entries while shorting at smaller time intervals.

   - A great indicator to make trades at shorter time intervals.

   - Works best when used in conjunction with **Blue** (cnnpreds1) and **Black**(cnnpreds2) to form an effective support and resistance.

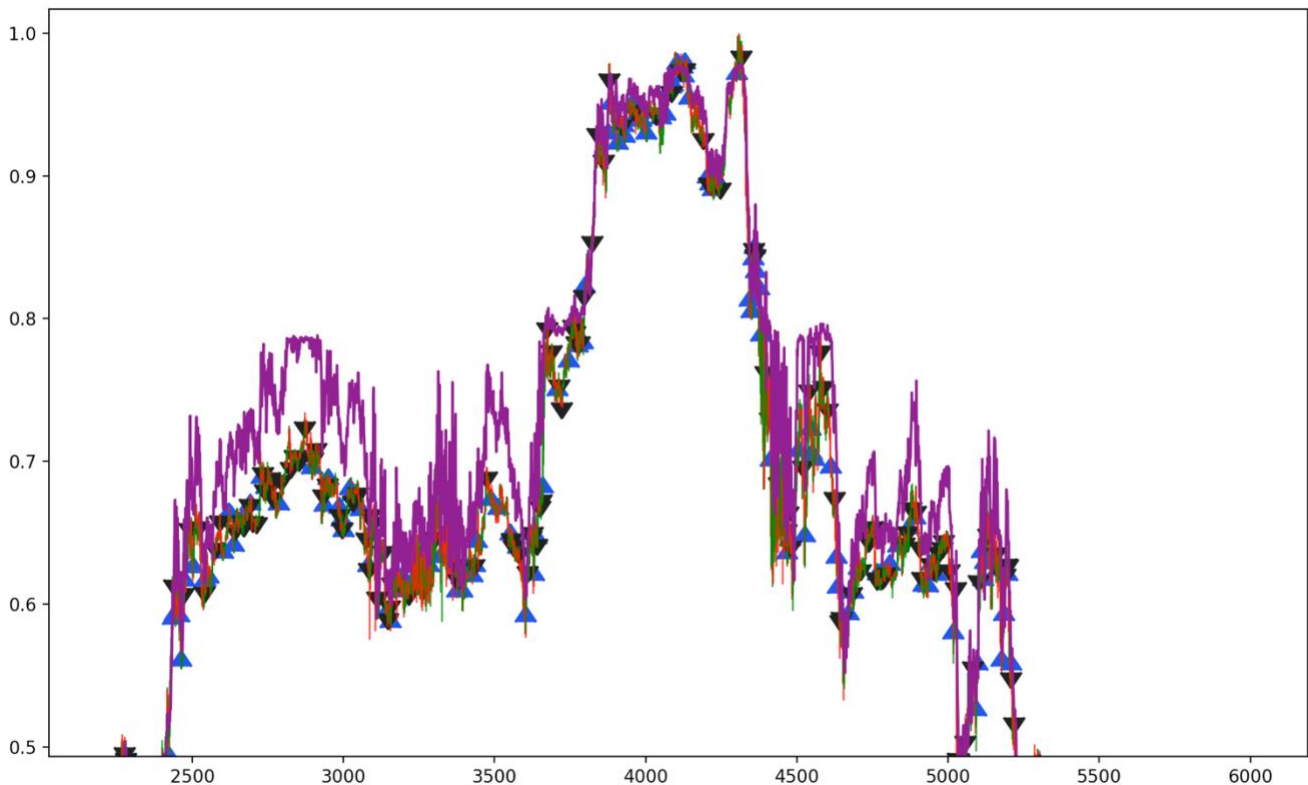This is how the indicator is depicted on our charting platform.

Figure 3: CTRNN **Purple**

2. **Blue**(CNNPREDS1): An indicator out of the 7 is third in precedence in terms of following the price line. It is used in the following ways:

- A static neural filter of varied time period configurations and architecture.

- The price of the market almost always touches this line and rises up, indicating that this indicator quite often serves as an effective support line.

- Effective to make trades at shorter time intervals.

- Effective to time your buying entry points at smaller time intervals to maximize profits.

- Works best when used in conjunction with **Purple** and **Black** to form an effective support and resistance band.

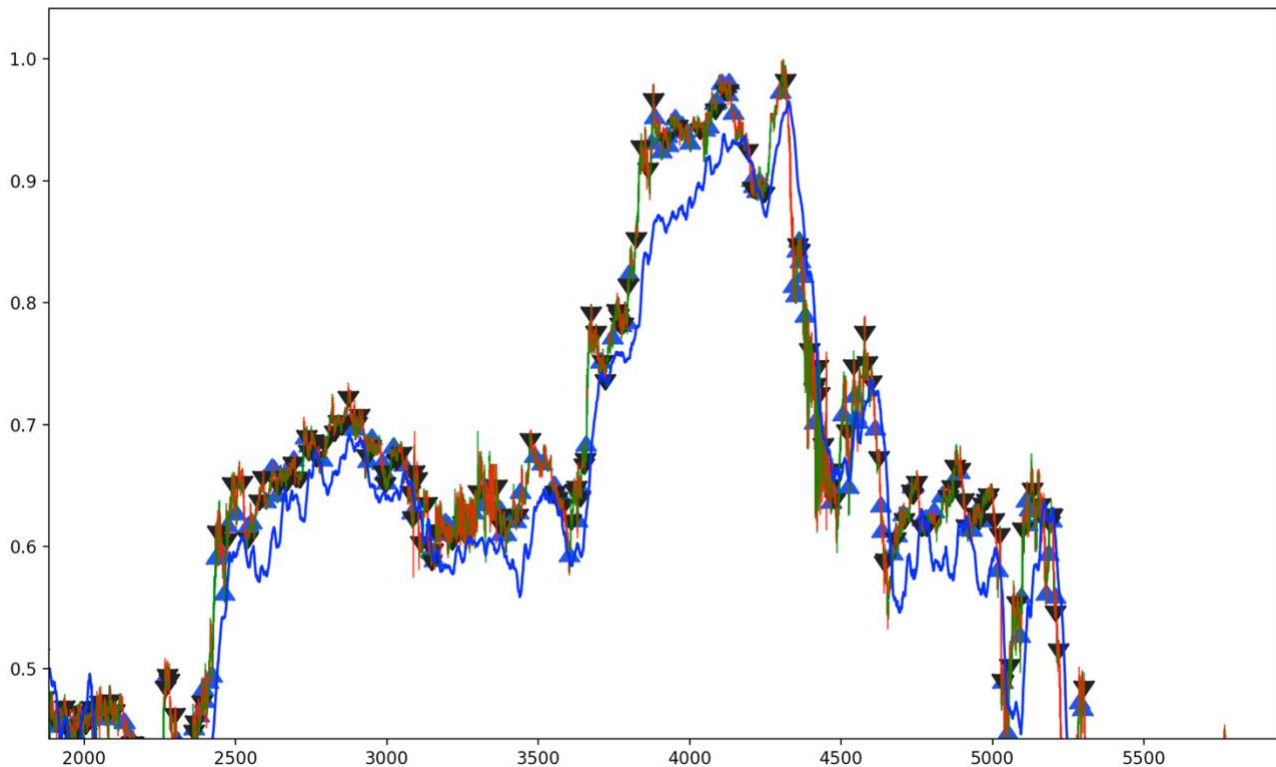A depiction of **Blue**(CNNPREDS1) is given below:

Figure 4: CNNPREDS1

3. **Black**(CNNPREDS2): The indicator second in precedence to the ctrnn **Purple**, which follows the price line closely. It is used in the following manner:

- Similar to the **Blue** (CNNPREDS1) this line is also a static neural filter of varied time period configurations and architecture.

- Forms a similar pattern to the price line and can be used to predict the trend and direction of the market.

- Its level almost always stays above the level of the price line, indicating that it is an effective resistance line.

- Forms a great support and resistance band with **Blue** when the price drops below the level of the **Purple**.

- Used to plan entry points to make short trades.
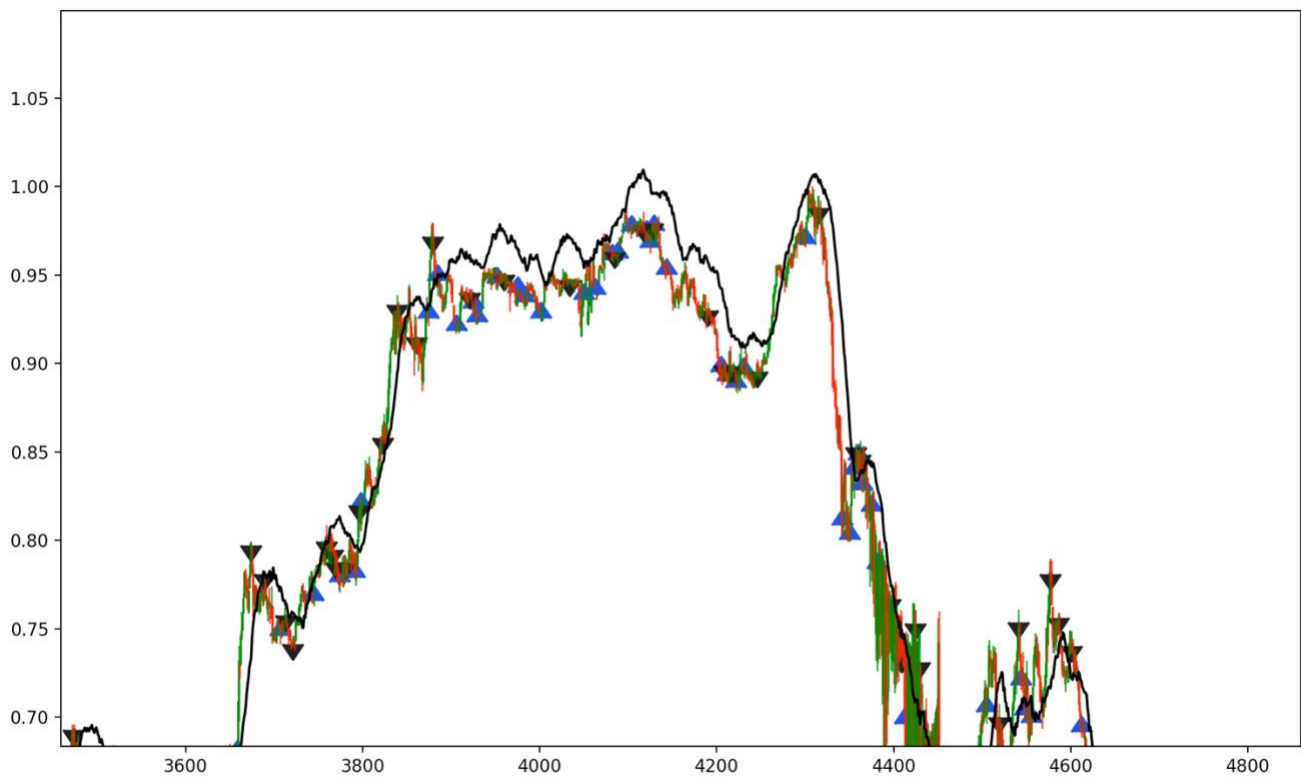
It is depicted in our charting system as shown:

Figure 5: CNNPREDS2

5 RESULTS AND DISCUSSION

The results provided by our system have been highly accurate. The examples given below provide a detailed explanation of how to utilize the indicators along with the strategies applied for each trade.

Now let us take a look at an example of scalping stocks at shorter time intervals using these indicators. The example given below is for long trade.

Figure 6: Long Trade

As seen in the example above, we use the three indicators to make a long trade. At first we need to notice the relationship of the price with each indicator, and in this case we notice, that the price is closely following the **Purple** line, with the **Black** as the support. Here is how we execute the trade in this case:

- We need a valid confirmation of the relationship of the price line with the indicators.

- We notice the price line touches the **Black** line at P1 approximately at x=2404 and y=0.45 and shoots up.

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- Then again at P2 we notice that it touches the **Black** line again at P2 at x=2422 and y=0.49 and shoots up, thereby giving us a confirmation that the price line will follow a similar trend for a certain time frame.

- Both these lines are rising therefore we predict an uptrend. We must capitalize by buying the stock at point P2, **after** it touches the **Black** line and rises.

- We set our stop loss below the **Black** line, with the point of purchase as our reference to ascertain that our analysis is correct.

- Take profit at the point where the **Purple** starts to spike at y=0.62, as the sudden fluctuation could signify a change in trend, therefore it is wise to sell the stock at this point to gain a small profit of y= 0.13 units out of this trade

Another example of shorting the stock utilizing the **Blue** and **Black** indicators which form a Neural Band is given below:

Figure 7: Short trade

In this example, between the range of 8400-8800(x-axis), within this range we can notice that the price line fluctuates between the **Black** and **Blue** indicators. In this example we wish to perform a short. Here is how we can short a stock:

- It is essential to get a confirmation of the trend, therefore we wait for it develop a relationship with the **Blue** and **Black** lines.

- It touches the **Blue** line at P1 (x=8400, y=0.612), and the **Black** line at P2 (x=8464, y=0.6320).

- The same trend repeats and it touches the **Blue** line again at P3(x=8537, y=0.623), and the **Black** line again at P4 (x=8621, y=0.6489).

- This confirms the uptrend of the price-line and it is predicted to follow the same trend as the **Blue** indicator has now established itself as a strong **support**, and the **Black** indicator as a strong **resistance**.

- At P5 (x=8715, y=0.6831) the line bounces off the **Black** line and drops down once again, and we can notice a downtrend, as the indicators are creating a harmonic pattern resembling the alphabet M.

- Since we predict the price to drop after hitting the resistance, we should place a sell order at P5, **after** it touches the resistance line. This can be done by placing a limit order, to validate our analysis.

- We set a stop loss at y=0.7030, above the **Black** indicator as seen in the chart, to avoid a major loss in case the price line breaks trend.

- We take profit just before the point where the **Blue** line begins to stabilize at y=0.613 to gain a small profit of y=0.0701 units

4. LSTMPREDS: There are a total of 4 of these indicators that are very effective for long term trade intervals. The LSTMS are linked to dynamic deep memory A.I. neural models. Unlike the 3 indicators discussed earlier, these 4 indicators need to be used in pairs as they predict important entry points. The four indicators are:

- LSTMPREDS **Black**
- LSTMPREDS2 **Green**
- LSTMPREDS3 **Blue**
- LSTMPREDS4 Yellow

They function in sync with the previously discussed ctrnn and cnnpreds signals very well. They serve as zones of dynamic support and resistance. The convergence and divergence of the LSTMPREDS with each other provide us with cues of the direction the market is headed in. Highly efficient in predicting the direction of the market in longer trading intervals.

These indicators also follow harmonic patterns, therefore easing the process of prediction. They form bands when they pair up, accurately predicting the important trading points on the charts.

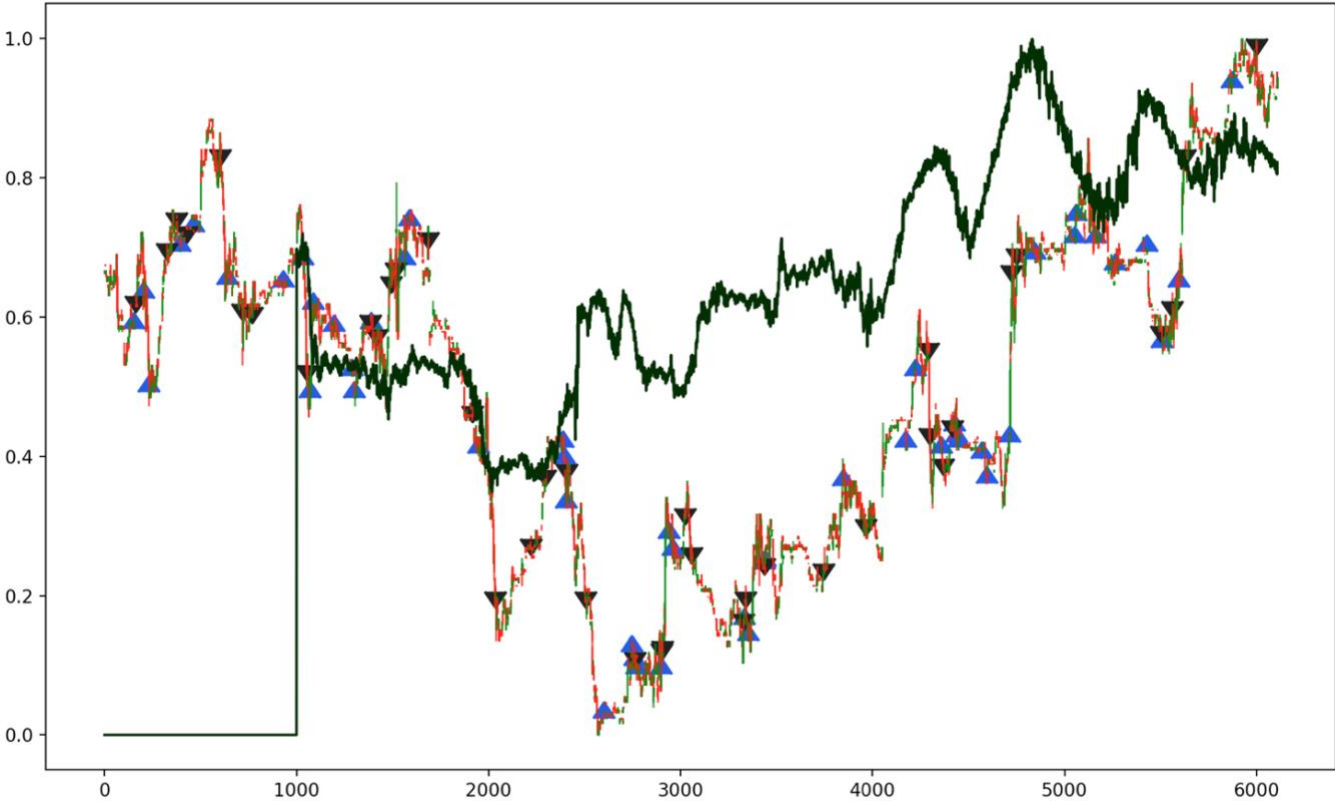Let us take a look at the representation of these indicators on our charting platform.
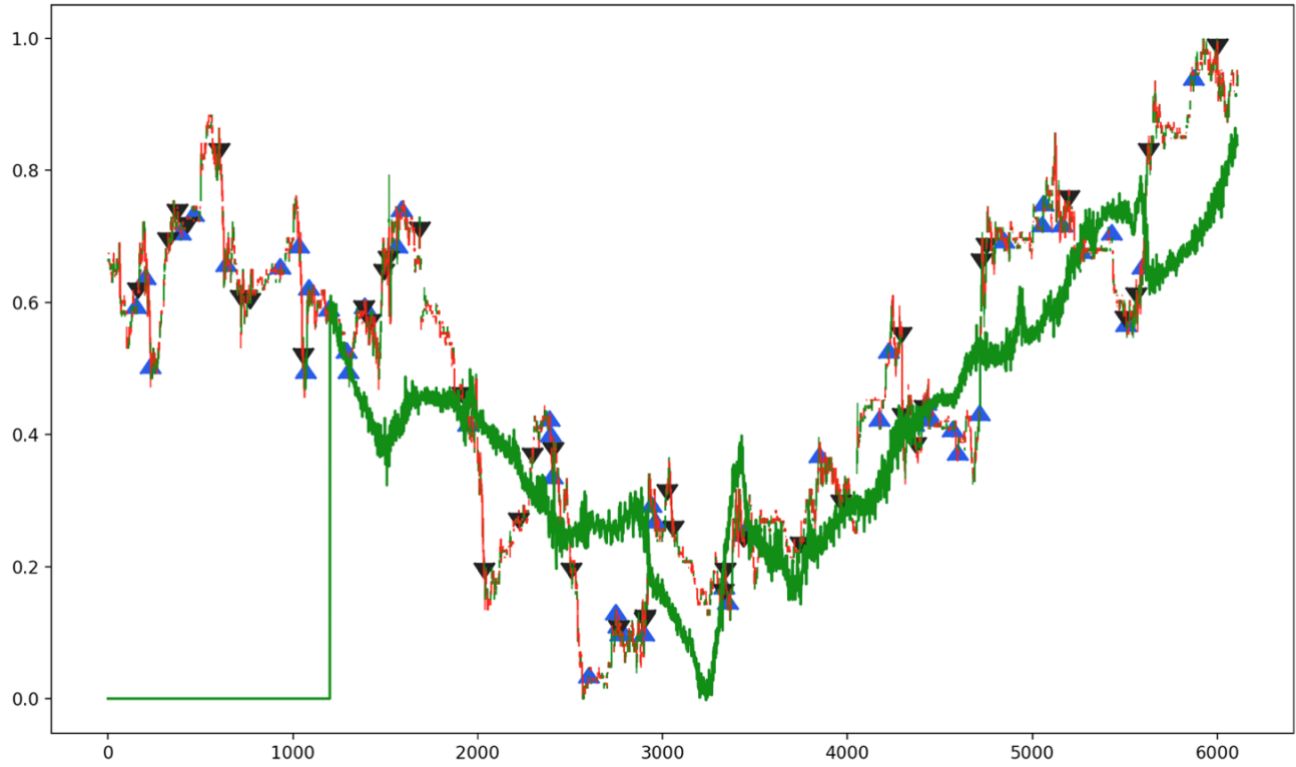

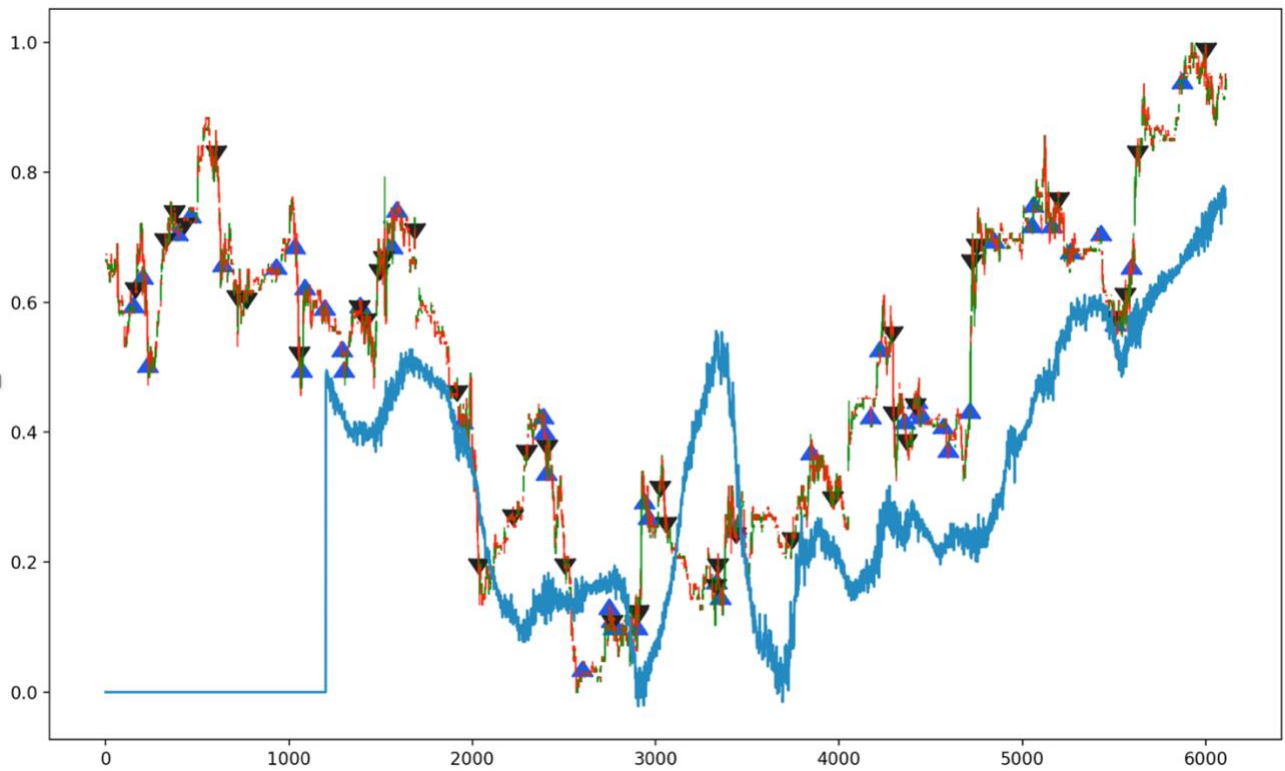Figure 8: LSTMPREDS **BLACK**

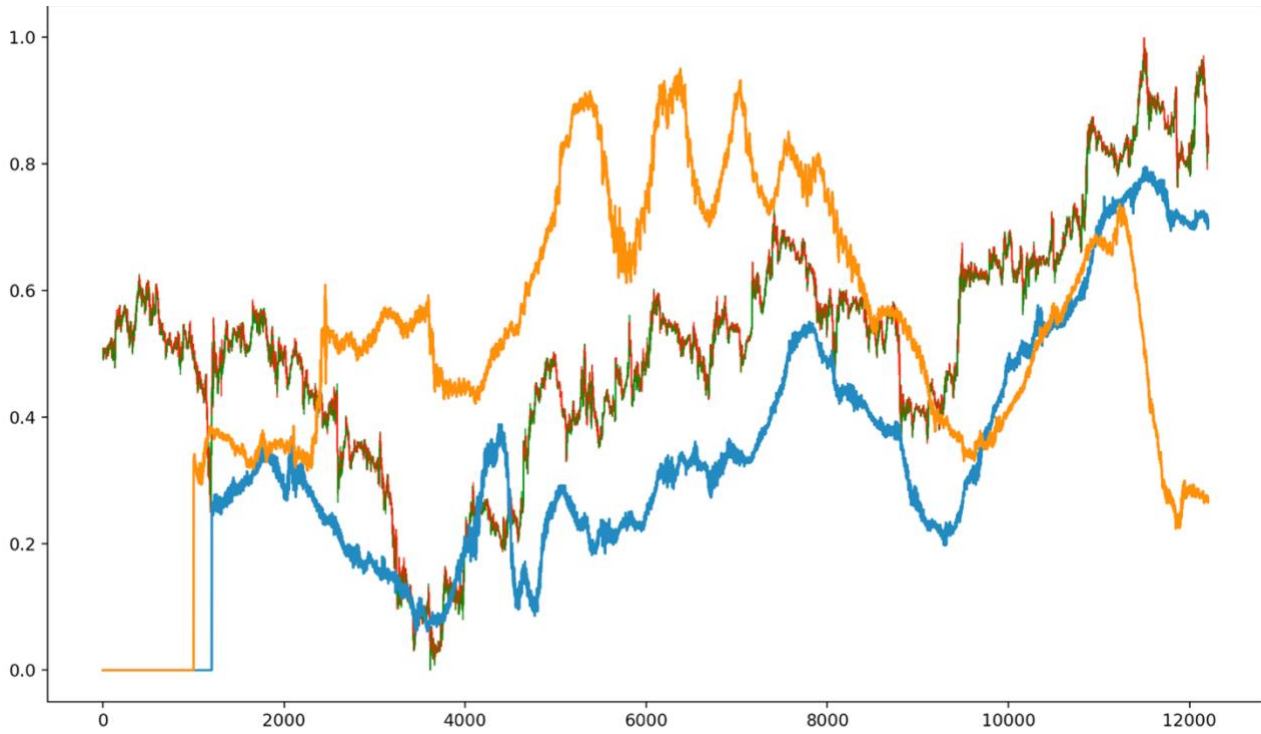Figure 9: LSTMPREDS2 GREEN

Figure 10:LSTMPREDS3 BLUE

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Figure 11: LSTMPREDS 3 & 4 BLUE and YELLOW

These indicators are highly accurate in predicting the cash flow projections based on our tests. Let us have look at its functionality with this example given below.
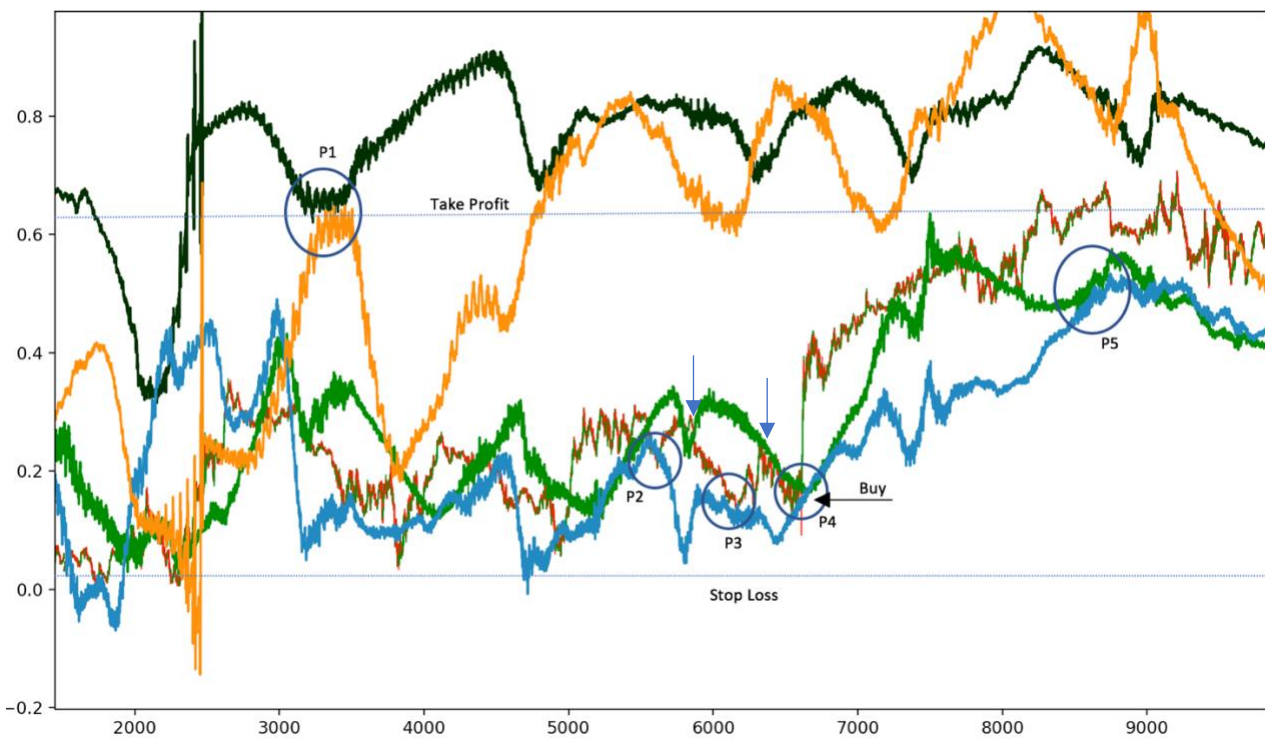

Figure 12: Long Trade using LSTMPREDS

In this example, we use all of the LSTMPREDS indicators to analyze the market. As we can see, the **Black** and **Yellow** form a pair and the **Blue** and **Green** form another pair. Here is how we analyze the chart and make our decisions:

- We notice the point of convergence and divergence of the indicator pairs that have been formed.

- At point P1 (x=3369 and y=0.636) the **Black** and **Yellow** pair converges, which indicates that the price line will rise up to that level at any given time. Although it converges at several other points after this too, but we select the first point of convergence.

- We wait for the price to develop a relationship with any of the lines before making our decision.

- We notice at points P2 (x=5610 and y=0.220) and at P3(x=6164 and y=0.133) the price line interacts and gets rejected by the **Blue** LSTMPREDS, signifying a good support.

- We notice that the price gets rejected by the **Green** LSTMPREDS, the arrows pointing downwards show us the evidence of this.

- After noticing these confirmations, we wait for the market to get inflated and drop, to touch the **Blue** line again.

- It does so, at P4(x=6564, y=0.142), and we place our buy trade slightly **above** this line to confirm that the price will rise after getting rejected by the **Blue.**

- We place our Stop loss at a level slightly below the **Blue** indicator at y= 0.014.

- We place our take profit at the level of the point of convergence P1 at y=0.636.

- Now since this is a long trade, we must be patient with this trade. The indicators converge at levels where the price is predicted to rise.

- Finally, at x=8254 and y=0.636, the price reaches the predicted level, and we gain a massive profit of y=0.494 units.

Now if we take a look at the same example at point P5 at x=8625 and y=0.490, this is another point of convergence between the pair of **Blue** and **Green** indicators. This indicates that the price line is predicted to reach this level in the longer term. Let us take a look at how we execute this trade in detail.
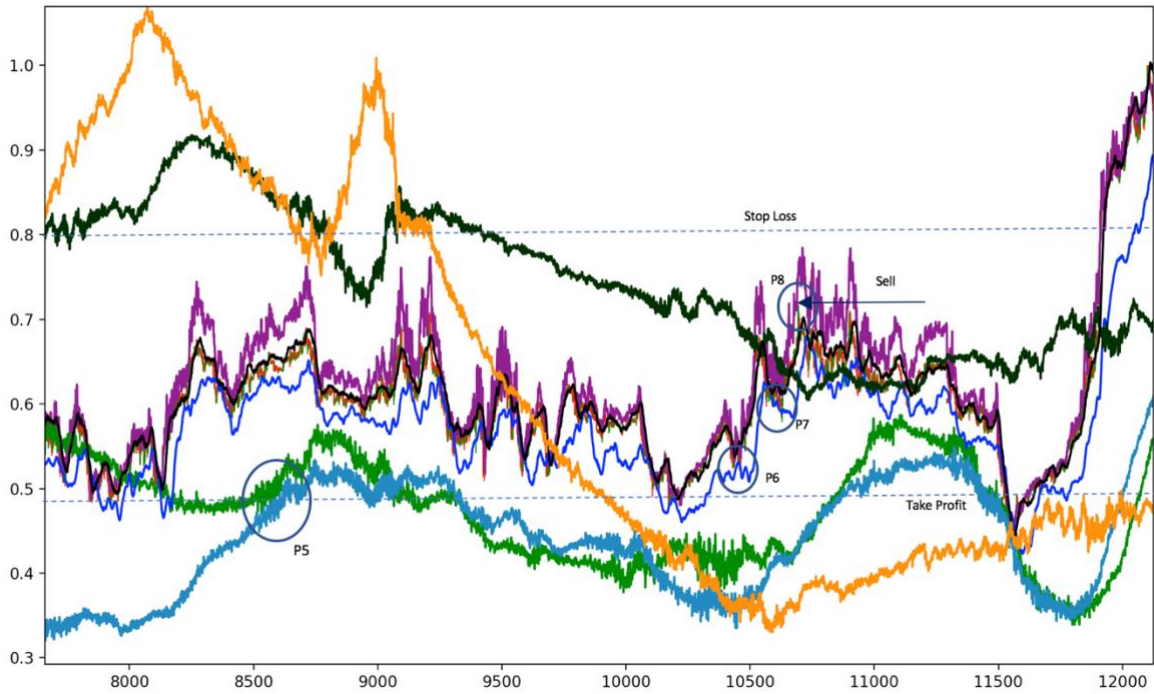
Figure 13:Short trade using LSTMPREDS

- We wait for a confirmation from the price lines interaction with our indicators to place our trades. Let's take a closer look at the chart.

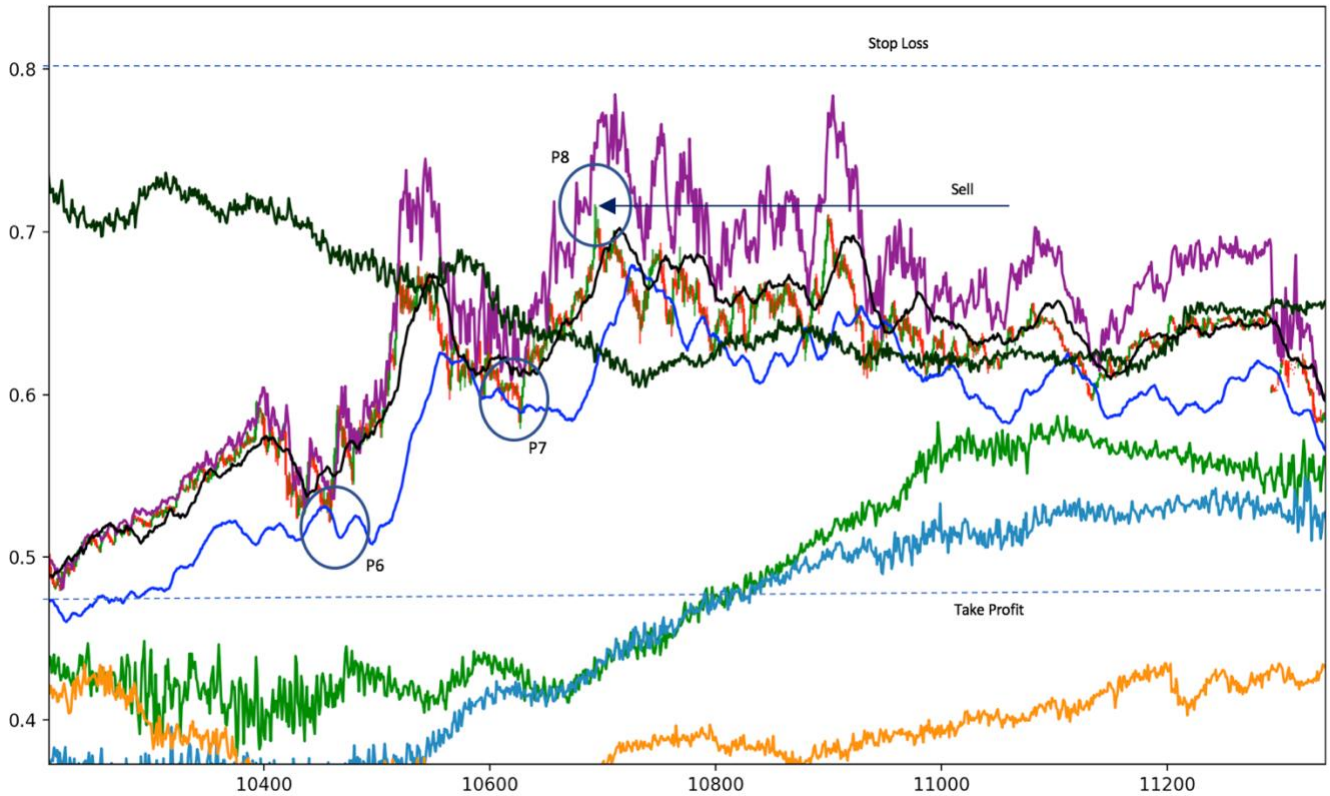Figure 14: Short trade using LSTMPREDS

- With the zoom-in feature, we get a closer look at the price line's interaction with our CTRNN **Purple** indicator and the two CNNPREDS **Blue** and **Black** indicators, as it appears to establish a strong relationship with them.

- At point P6 (x=10458.7 y=0.5258), the **Blue** line rejects the market and rises. It follows the **Purple** and **Black** lines very closely, but it breaches the **Black** line several times, therefore, we consider the **Purple** line as the resistance.

- Once again, it gets rejected by the **Blue** line at P7 (x=10627.4, y=0.5895) and rises up, confirming it to be a strong support line.

- Now we also notice our support and resistance band forming a harmonic pattern, which is it rises up from the range x= 10000-10500. It then stabilizes between 10600-11200.

- Since it begins to stabilize at this stretch, we place our sell trade at P8(x= 10693.2, y=0.7123) just **after** touches and gets rejected by the **Purple** line.

- We place our stop loss just above the resistance at y=0.8028.

- Evidently, after this stretch, the price will drop down, as the band will follow a harmonic pattern. Therefore, we place our take profit at the level of the point of convergence at P5 (x=8625 and y=0.490) as shown in Figure 13.

- Eventually, at x=11529.8 and y=0.4817, the price drops down and reaches the required level, and we obtain a profit of 0.2306.

6 OUR OFFER

We wish to offer our services in the form of partnerships with **retail** and **institutional traders** who wish to incorporate our system in their setup. We also extend our offers to **charting platforms**, **brokers**, and **trading networks**, partnering with them to integrate our Intelli-Harmonic Indicators on their platforms.

Get in touch with us at aparajit@jbscapacitors.com to enquire about business and partnership opportunities.

7 REFERENCES

Trading, T., Burns, S., Trading, Q., Meaning, P., Living, T. and Calculator, P., 2021. *The Top 8 Challenges in Trading*. [online] New Trader U. Available at: <https://www.newtraderu.com/2018/07/23/the-top-8-challenges-in-trading/#:~:text=Two%20of%20the%20top%20challenges%20in%20trading%20are,necessary%20to%20change%20your%20plans%20at%20any%20time.> [Accessed 27 June 2021].