

Summary report

Inter-IIT Tech. meet 13.0

Zelta Automations

*Curating Alphas on BTC and ETH USDT
Crypto Market*

Submitted By:

Team - 91

1. What is the logic behind your algorithms for ETH and BTC?

ANS:

BTC/USDT:

For BTC/USDT we are using HMA with supertrend strategy. The logic behind using this strategy is that The HMA uses weighted moving averages in a unique two-step calculation, combining short-term and long-term averages. This process improves accuracy while filtering short-term fluctuations, enabling early trend identification. Due to its quick responsiveness, HMA helps catch trend reversals earlier than SMAs and EMAs, giving timely buy or sell signals. HMA's parameters can be adjusted for different timeframes and volatility levels, making it adaptable to varying market conditions, especially useful in high-volatility environments. A buy signal occurs when the fast HMA (e.g., 10-period) crosses above the slow HMA (e.g., 30-period), indicating potential upward momentum. Conversely, a sell signal is generated when the fast HMA crosses below the slow HMA, signaling a downward trend. By aligning signals with HMA crossovers, the Supertrend filters out false entries in volatile or sideways market conditions.

ETH/USDT:

In our strategy for ETH/USDT, we incorporated technical indicators—Hull Moving Averages (HMAs), Relative Strength Index (RSI), and Bollinger Bands (BB)—with a polynomial regression model to dynamically optimize parameters based on market conditions. Key features include:

Dynamic HMA Parameters: Optimized using polynomial regression for responsiveness to market trends.
RSI and BB Filters: Confirm trend validity and avoid overbought/oversold conditions. Time-Based Filters: Exclude unfavorable trading periods based on historical data. Polynomial Regression helps adapt HMA parameters by capturing ETH's decelerating growth, allowing for time-sensitive adjustments (shorter HMAs in volatile periods, longer HMAs during stable growth).

Entry Conditions: Include HMA crossovers, RSI validation (below 70), and favorable BB width (0.2-2). Exit Conditions: Triggered by HMA reversals or stop-loss based on recent highs/lows.

The stop-loss mechanism adapts dynamically to market conditions, ensuring timely exits. The strategy is backed by historical data, with backtesting showing profitable trades in volatile periods (2020–2021) and adjustments for lower volatility in 2022–2023.

This approach efficiently integrates technical indicators with statistical modeling, optimizing performance for ETH trading.

2. What risk management practices were incorporated?

ANS:

For the BTC/USDT and ETH/USDT we didn't incorporate any risk management strategy because the results were not improving.

3. What was the most crucial learning point during the entire problem statement preparation?

The crucial part of learning was that building ML model and RL model also takes great time and more importantly it doesn't even work well as compared to the statistical methods that we are using daily. Also, while building strategy we got to know even implementing strategy it takes lot of skills to identify which indicator should be applied here and it takes quite a time. While developing the solution we came up with very new new strategies some of which we couldn't implement. Most important part of learning was that whatever good strategies you get at tradingview, while implementing it on python everytime it doesn't workout, so it requires quite a time to implement it very properly. We got to know lot about what's the difference between ETH and BTC market, So it is quite hard to figure out different different strategies. We also came to know about how to apply stoploss to different strategies like everytime the ATR or normal stoploss etc doesn't works for different strategy you have to find out what's best for it. There are many other things that we learnt during this process some of them we were able to tackle some of them we weren't but yeah that's the part of learning.