Week4-5 TradebotX

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PnL Summary Table

Product Name	Final PnL ($)	Max PnL ($)
SHINX	5880.00	5880.00
JOLETON	10395.00	10395.00
MISTY	15470.00	15743.00
ASH	15463.00	17338.00
LUXRAY	3273.50	5051.00
ABRA	5670.00	5945.00
DROWZEE	8293.00	8343.00
SUDOWOODO	21709.00	21734.50

Product: SHINX
Final PnL: $5,880

- On plotting graphs of data, the value was crossing z-score and rsi enough times. So, I implemented then along with macd crossover to ensure volatility apart from overbought and oversold.
- Trades are executed in blocks of 5 units, balancing risk, I tried using different values of order_size and also used 200 - period lookback
- **Buy Signal:** Triggered when:
  - MACD bullish crossover and
  - Either $RSI < 35$ (oversold) or $z - score < -1.5$ (for undervaluation)
- **Sell Signal:** Triggered when:
  - MACD bearish crossover and
  - Either $RSI > 65$ (overbought) or $z - score > 1.5$ (for overvaluation)
- **Market Making:**If RSI is neutral (45–55) and z-score is near zero ($|z| < 0.3$), market making is used adjusted for inventory.

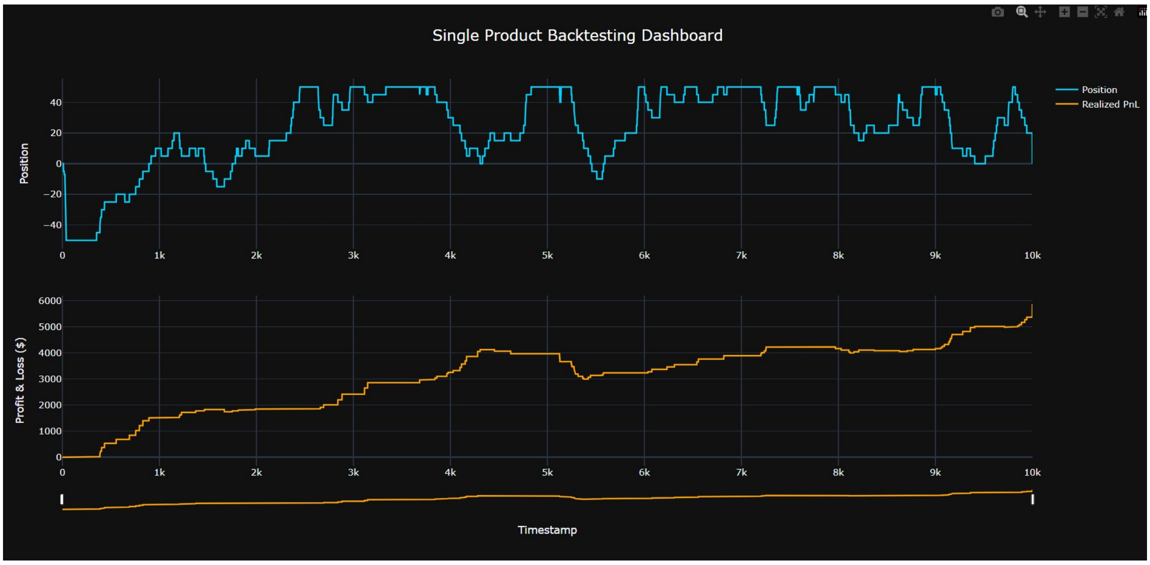

Figure 1: SHINX

Product: LUXRAY
Final PnL: \$3,273.50

- I tried different strategies but position changes were very less. So, I have adjusted parameters to ensure maximum position change and also, made change that if even any one condition is true signal activates to ensure the same.
- **Buy Signal:** Triggered if **any** of the following are true:
  - RSI < 37 (oversold)
  - MACD bullish crossover
  - Z-score < -2 (price well below mean)
  - Short-term SMA $>$ medium-term SMA (uptrend)
- **Sell Signal:** Triggered if **any** of the following are true:
  - RSI > 67 (overbought)
  - MACD bearish crossover
  - Z-score > 2 (price well above mean)
  - Short-term SMA $<$ medium-term SMA (downtrend)
- **No Signal:** If RSI is neutral ($45 \leq \text{RSI} \leq 55$) or Z-score is near zero ($|z| < 0.4$), the strategy switches to market making.

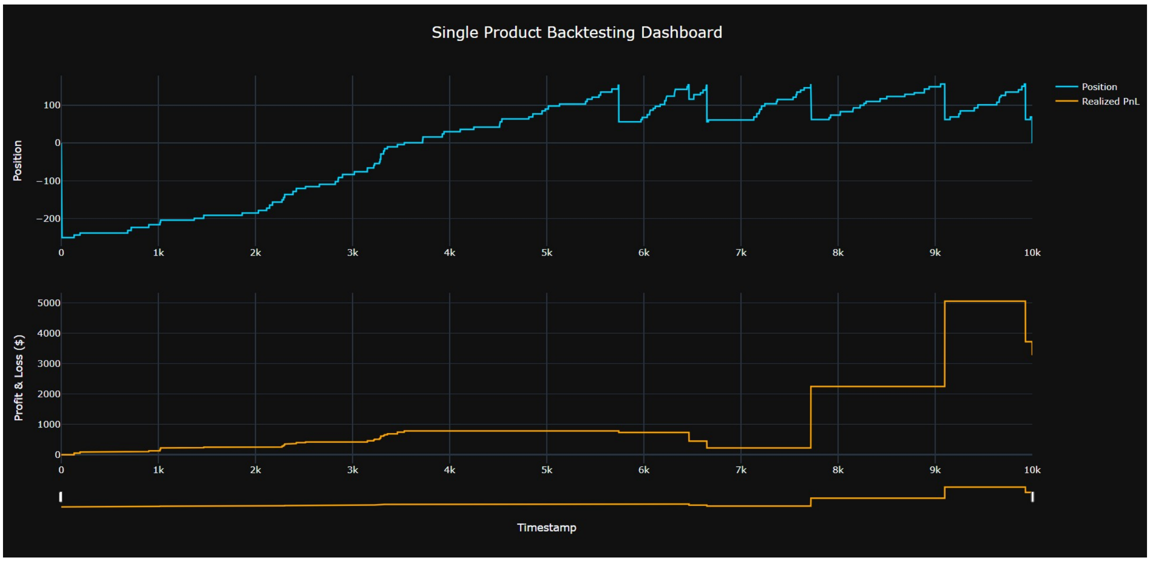

Figure 2: LUXRAY

Product: JOLTEON
Final PnL: $10,395.00

- The data is high volatile. Also, since max position limit is much more profits and losses too can be more with increase in position.
- **Signal Logic:** Entry is triggered when both z-score exceeds ± 1.8 and RSI is extreme (RSI < 35 for buys, > 65 for sells).
- **Order Size:** Trades are executed in blocks of 5 units for risk control.
- **Market Making:** In neutral conditions (z-score near 0, RSI near 50), places buy/sell orders at mid-price ± 1, adjusted by inventory skew. Avoids market making if the bid-ask spread is less than 2 units to reduce the risk.
- Here, there are places where PnL is going below 0, I tried adding stoploss but it gave less profit and also I adjusted for other parameters but it didnt work.

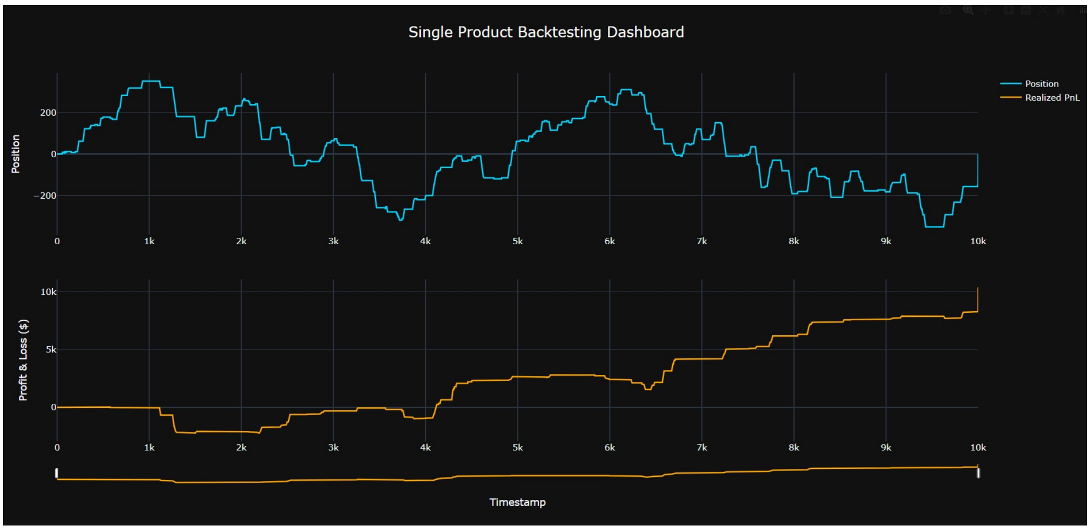

Figure 3: JOLTEON

Product: MISTY
Final PnL: $15,470.00

- At first after using indicators only, I notices that dropdown was too high. Trades were happening but there was no exit after taking profits. So, I also used exit with profit strategy with respect to profit per unit.
- **Multi-Signal Confirmation:** Combines MACD, Bollinger Bands, Z-score, and RSI to validate and to trade if any two of this four conditions are met.
- Here, I have also used lookback of 300 for long adaptibility as graph was such a way
- **Profit-Target Exits:** Positions are closed when unrealized profit per unit reaches or exceeds a fixed target.
- **Market Making:** If no directional signal is strong (RSI neutral and Z-score near 0), the strategy places market-making with inventory skew

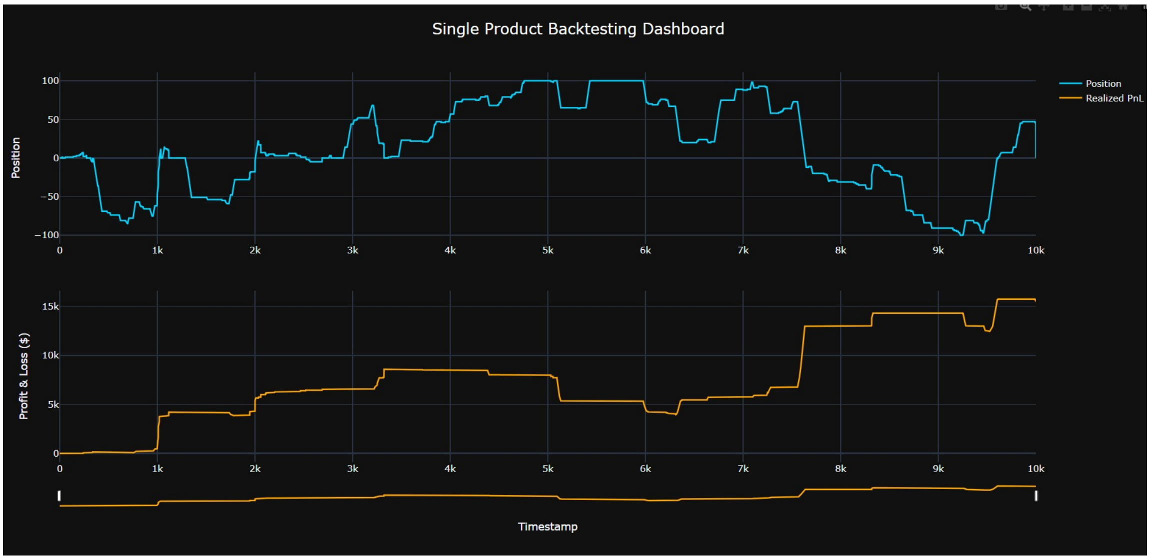

Figure 4: MISTY

Product: ASH
Final PnL: $15,463.00

- I didnt use any technical indicator here, instead just placed order if its above given spread and later use stop-loss as min-pnl was high.
- **Order Sizing:** Trades are placed up to the maximum allowed position, using available bid and ask volumes.
- **Spread Filter:** A minimum spread of 8 units is required to trigger a trade, ensuring sufficient price movement for profitability.
- **Stop-Loss:** Positions are forcibly closed when unrealized losses exceed a maximum limit ($265 per unit), protecting capital. To calculate this, Entry price is tracked for each trade and reset whenever the position returns to zero.

- **Trade Entry Logic:** New trades are entered only when the spread condition is met and current positions allow within defined limits.

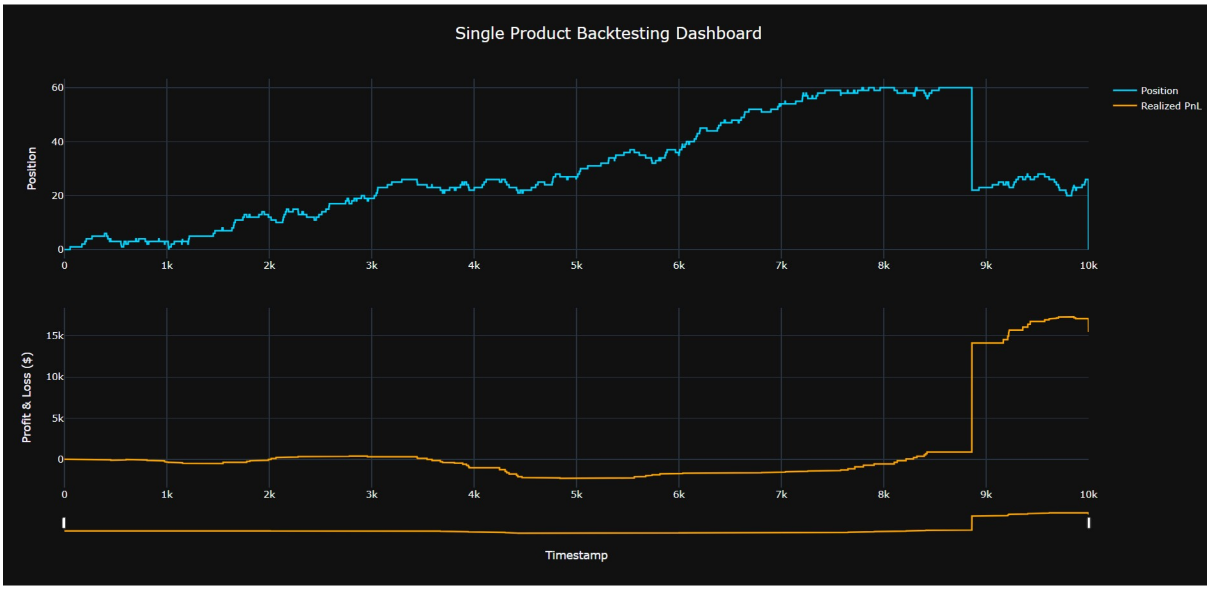

Figure 5: ASH

Product: ABRA
Final PnL: \$5,670.00

Product: DROWZEE
Final PnL: \$8,293.00

Product: SUDOWOODO
Final PnL: \$21,709.00

Figure 6: ABRA, DROWZEE, SUDOWOODO

For ABRA, DROWZEE and SUDOWOODO, I didn't use any modification and just stick with strategy provided. However, in my week 3 assignment I have used different strategies using more technical indicators. But, it also gave mostly same results with very less change in final pnl. So, I didn't change to them.

Also, I didn't use dynamic size in any of strategy because I tried to do it on basis of different parameters like position, RSI, MACD, Z-score but it didn't give any improvement so i just stick to fix size or (bid_vol and ask_vol) for all strategies.