

# VSA-EMA-RSI Strategy

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# The Idea

1. **VSA(Volume Spread Anomaly) Z-score**: An indicator that spikes when a candle's range (high-low) is unusually large or small given the volume. However, this signal **does not tell us the direction**.
  2. **EMA(Exponential Moving Average)**: Provides Direction.
  3. **RSI(Relative Strength Indicator)**: Provides Magnitude.
- Use the above indicators on **ETH-USD**.

# The Trading Plan

## Long Position:

- Unusual Volume Activity  $\rightarrow \text{abs}(\mathbf{VSA}) \geq 2$
- Upward Direction  $\rightarrow \text{Closing-Price} > \mathbf{50\text{-EMA}}$  &  $\text{Closing-Price} > \mathbf{20\text{-EMA}}$
- Momentum Check  $\rightarrow 50 < \mathbf{RSI} < 70$

## Short Position:

- Unusual Volume Activity  $\rightarrow \text{abs}(\mathbf{VSA}) \geq 2$
- Downward Direction  $\rightarrow \text{Closing-Price} < \mathbf{50\text{-EMA}}$  &  $\text{Closing-Price} < \mathbf{20\text{-EMA}}$
- Momentum Check  $\rightarrow 30 < \mathbf{RSI} < 50$

Stop Loss: Highest High/Lowest Low(last 5 candles)  $\rightarrow$  Entry Price

Take Profit: Before the next position or  $(2 * \text{stop loss})$

Position Sizing: Greedy [Maximum position of 1]



## Results

- BackTesting Duration: 60 Days
- Exposure Time: 27.5%
- Avg Hold Duration: ~9 Hours
- Starting Capital: \$100k
- Peak Capital: \$116K
- Final Capital: \$108K
- # of Trades: 44
- Win Rate: 44%

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## Strengths

- Trades with the trend
- Easy to tune (play with hyperparameters)

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## Weaknesses

- Indicators are lagged, thus delayed entry/exit
- Static Thresholds(VSA, EMA, RSI)
- No news/market awareness
- Lack of Position Sizing
- Sideways Market
- Survivorship Bias (Tuned to be profitable?)

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## Future Work

- Learnable Dynamic Thresholds
  - Size positions so expected dollar risk per trade is constant
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# THANK YOU