

Report for Technical Analysis

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Overview:

Technical Analysis: Technical Analysis is the study of historical market data, including price and volume. Using insights from market psychology, behavioral economics, and quantitative analysis, technical analysts aim to use past performance to predict future market behavior. The two most common forms of technical analysis are chart patterns and technical (statistical) indicators.

Indicators used:- Here we use two technical indicators OBV (On-Balance-Volume) and RSI (Relative Strength Index).

OBV:- On-balance volume provides a running total of an asset's trading volume and indicates whether this volume is flowing in or out of a given security or currency pair. The OBV is a cumulative total of volume

(positive and negative). There are three rules implemented when calculating the OBV. They are:

1. If today's closing price is higher than yesterday's closing price, then: $\text{Current OBV} = \text{Previous OBV} + \text{today's volume}$
2. If today's closing price is lower than yesterday's closing price, then: $\text{Current OBV} = \text{Previous OBV} - \text{today's volume}$
3. If today's closing price equals yesterday's closing price, then: $\text{Current OBV} = \text{Previous OBV}$

RSI:- The relative strength index (RSI) is a momentum indicator used in technical analysis. RSI measures the speed and magnitude of a security's recent price changes to evaluate overvalued or undervalued conditions in the price of that security.

An asset is usually considered overbought when the RSI is above 70 and oversold when it is below 30.

The RSI line crossing below the overbought line or above oversold line is often seen by traders as a signal to buy or sell.

$$\text{RSI} = 100 - (100 / (1 + (\text{Average gain} / \text{Average loss})))$$

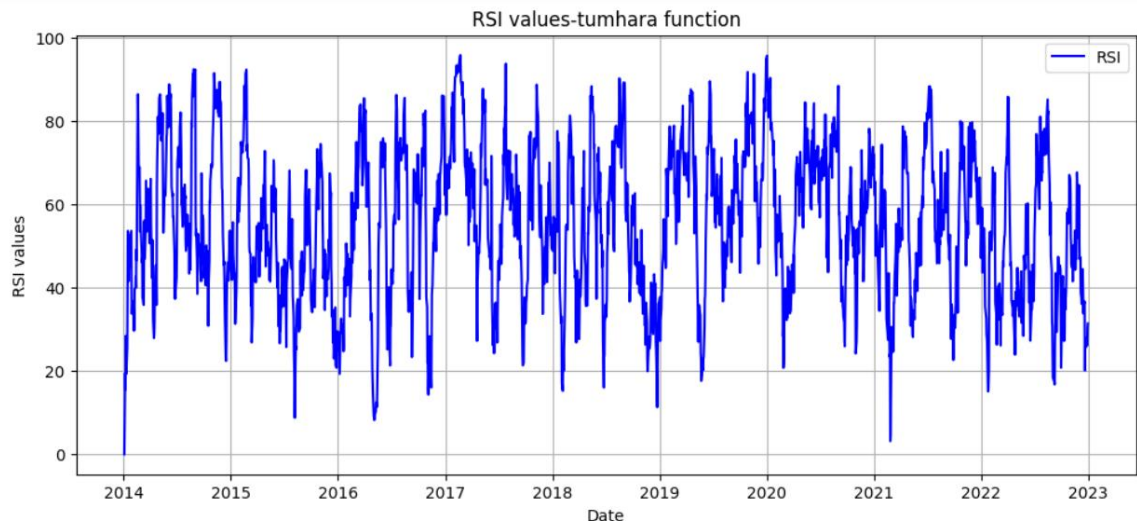
Idea in Brief:

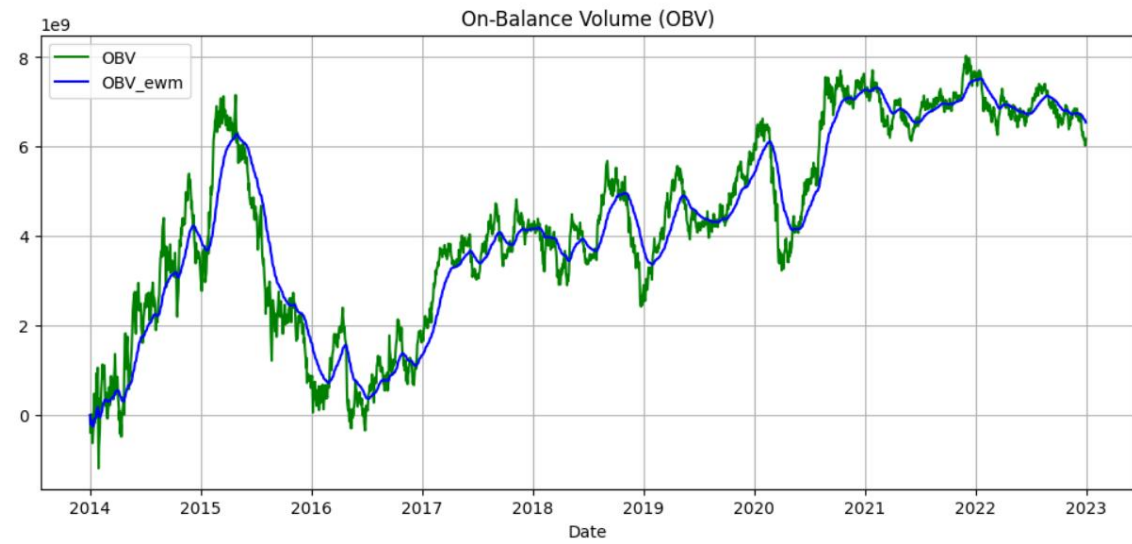
Our trading strategy focuses on utilizing a combination of the Relative Strength Index (RSI) and On-Balance Volume (OBV) indicators to make informed trading decisions in the stock market. The goal is to identify optimal buy and sell signals based on these indicators.

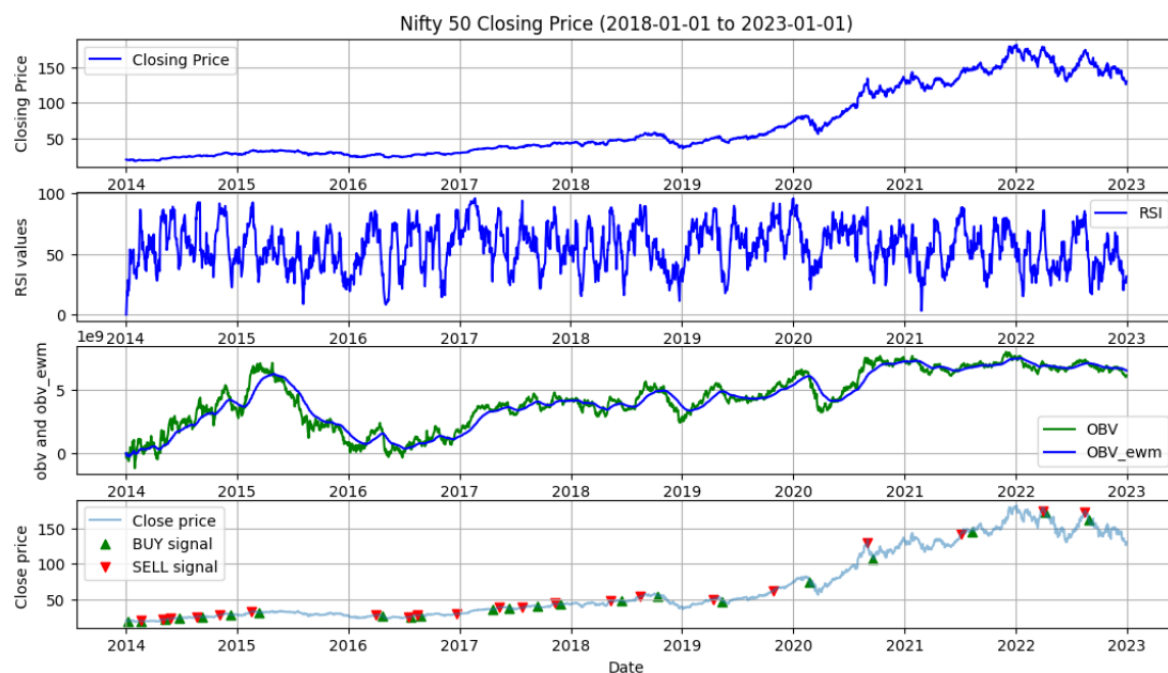
What we are doing:-

- Take Nine year historical data of AAPLE with tick interval=1Day.
- We are using OBV which generates Buy signal when goes above 50 days EMA , and Sell signal when goes below 50 days EMA.
- We are also using RSI which generates Buy signal when RSI goes below 35 and Sell signal when RSI goes above 85.
- We have defined strategy to give buy and sell signals after combining signals from both of them.
- We are taking initial portfolio value = 1lac
- We have made graph of several parameters with time which are shown below.

Graphs:-







Hypothesis:

We hypothesize that combining RSI and OBV indicators will allow us to identify potential profit opportunities and improve trading performance. RSI helps assess the overbought or oversold conditions of a stock, while OBV provides insights into buying and selling pressure.

Further Strategy Development:

- 1. Optimize Indicator Parameters:** We can further refine our strategy by experimenting with different parameter values for RSI and OBV. Adjusting the

look-back periods may improve the effectiveness of our signals.

2. **Risk Management:** Implementing risk management techniques, such as setting stop-loss orders, can help protect our portfolio from significant losses.
3. **Diversification:** Diversifying our portfolio by trading multiple assets or including other technical and fundamental indicators can enhance our trading strategy's robustness.
4. **Backtesting:** Extensive backtesting of our strategy on historical data can provide valuable insights into its performance under different market conditions.

Insights Gained:

During our analysis, we have gained the following insights:

- The RSI and OBV indicators can be effective in identifying potential entry and exit points.
- Combining multiple indicators can increase the reliability of trading signals.
- Risk management and diversification are critical for managing portfolio volatility.
- Backtesting is essential for evaluating the historical performance of the strategy.

Trade Summary:-

Number of Executed Trades: 21

Maximum Drawdown: -16.26%

Sharpe Ratio: 11.182945160719061

Strategy Return: 927.96%

Win Ratio: 85.71%

Number of profit-Making Trades: 18

Number of Loss-Making Trades: 3

Largest Loss-Making Trade: -21091.2996124523

Largest Profit-Making Trade: 270650.82958976354