### **Composite Signal 1: Trend-Following with Momentum Confirmation**

The core idea of this strategy is to only act on mid-term upward momentum signals when the overall long-term trend is favorable, thus filtering out false rallies in a bear market.

* **Sub-signal A (Long-Term Trend Filter): Dual Moving Average (SMA) Crossover**
  + **Indicators**: 50-day Simple Moving Average (SMA50) and 200-day Simple Moving Average (SMA200).
  + **State Definition**:
    - When SMA50 > SMA200, the market is defined as being in a **"Long-Term Bull Market"**.
    - When SMA50 < SMA200, the market is defined as being in a **"Long-Term Bear Market"**.
* **Sub-signal B (Mid-Term Momentum Trigger): MACD Indicator**
  + **Indicator**: MACD (Moving Average Convergence Divergence) with standard parameters (12, 26, 9).
  + **Trade Trigger**:
    - A potential **buy trigger** occurs when the MACD line crosses above its signal line.
    - A potential **sell trigger** occurs when the MACD line crosses below its signal line.
* **Combined Signal Rule**:  
  + **BUY**: Execute a buy order **if and only if** the market is in a **"Long-Term Bull Market"** (SMA50 > SMA200), AND the MACD generates a **buy trigger** (crosses above its signal line).
  + **SELL**: Execute a sell order (or go short) **if and only if** the market is in a **"Long-Term Bear Market"** (SMA50 < SMA200), AND the MACD generates a **sell trigger** (crosses below its signal line).
  + **Otherwise**: Ignore all other signals and do nothing.
* **Strategy Rationale & Advantages**:  
  + **Trade with the primary trend**: This strategy uses the moving averages to identify the "main current" and the MACD to find the right time to enter in the direction of that current.
  + **Higher Win Rate**: It aims to increase the win rate by filtering out false buy signals from the MACD during long-term bear markets and false sell signals during long-term bull markets.

### **Composite Signal 2: Mean Reversion with Volatility Confirmation**

This strategy aims to capture oversold bounce opportunities, but to avoid "catching a falling knife," it adds a volatility confirmation signal, entering only when the selling pressure shows signs of stabilizing.

* **Sub-signal A (Oversold Condition Identifier): Relative Strength Index (RSI)**
  + **Indicator**: 14-day RSI.
  + **State Definition**: When RSI < 30, the stock is considered to be in an **"Oversold Zone,"** presenting a potential bounce opportunity.
* **Sub-signal B (Reversal Stabilization Confirmation): Bollinger Bands**
  + **Indicator**: Bollinger Bands with standard parameters (20-day SMA, 2 standard deviations).
  + **Trade Trigger**: A stabilization trigger occurs when the price, after trading outside the lower Bollinger Band, **crosses back up and closes inside the lower band**. This suggests the panic selling has paused.
* **Combined Signal Rule**:  
  + **BUY**: Execute a buy order **if and only if** the RSI indicates the stock is in the **"Oversold Zone"** (RSI < 30), AND concurrently or shortly after, the price generates the **stabilization trigger** (crosses back above the lower Bollinger Band).
  + **SELL**: (A symmetrical sell rule can be designed): Execute a sell order when RSI > 70 AND the price crosses back down below the upper Bollinger Band.
* **Strategy Rationale & Advantages**:  
  + **Safer Bottom-Fishing**: Buying based on RSI < 30 alone is risky. By combining it with the Bollinger Band "re-entry" signal, the strategy waits for confirmation that downward momentum is fading, identifying a safer entry point.
  + **Risk Management**: This combination has built-in risk management by avoiding entry during the most volatile moments of a sell-off. It is very suitable for highly volatile stocks like TSLA.

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### **Composite Signal 3: Price Breakout with Volume Confirmation**

This strategy is designed to capture the beginning of a powerful new trend. A true breakout is typically supported by a significant increase in trading volume, whereas a breakout without volume is often a "false breakout" or "fakeout."

* **Sub-signal A (Price Breakout Trigger): Donchian Channel**
  + **Indicator**: 20-day Donchian Channel. This indicator consists of an upper band representing the highest price over the last 20 days and a lower band representing the lowest price over the last 20 days.
  + **Trade Trigger**: A potential **buy trigger** occurs when the closing price breaks above the Donchian upper band (i.e., makes a new 20-day high).
* **Sub-signal B (Trend Strength Confirmation): Volume Moving Average**
  + **Indicator**: 20-day simple moving average of volume (VMA20).
  + **State Definition**: When the current day's volume is **significantly higher** than its 20-day average (e.g., Today's Volume > 1.5 \* VMA20), we consider the market to have **high conviction** in the price move.
* **Combined Signal Rule**:  
  + **BUY**: Execute a buy order **if and only if** the price generates a **breakout trigger** (new 20-day high), AND on the same day, the volume provides **strength confirmation** (Volume > 1.5 \* VMA20).
  + **SELL**: (A symmetrical sell rule can be designed): Execute a sell order when the price breaks below the 20-day low with significantly high volume.
* **Strategy Rationale & Advantages**:  
  + **Validates Breakout Legitimacy**: Volume is the "fuel" for price movement. This strategy focuses on participating only in high-conviction breakouts that are supported by this fuel.
  + **Captures Start of Major Moves**: Many of the most significant rallies in stocks like AAPL, AMD, and TSLA began with a high-volume breakout. This strategy is designed specifically to capture the start of such events.