Double Candle Breakout Strategy: Quantitative Trading Approach

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1. Executive Summary

This document presents the *Double Candle Breakout Strategy* I implemented, a rules-based intraday trading approach designed for options trading on index derivatives. The strategy focuses on detecting price momentum by applying a **dual confirmation system** — first identifying a breakout in the index value itself, and then confirming the breakout in the corresponding options contract (Call/Put) before executing trades. I have ensured that this method ensures a higher probability of trade success by avoiding false breakouts and noise-based triggers.

2. Strategy Rationale

2.1. Problem Statement

Single candle breakout strategies often trigger trades during false momentum bursts, particularly in volatile market conditions. This leads to:

- **High whipsaw rates** due to noise-based breakouts.
- **Overtrading** results in excessive transaction costs.
- **Drawdowns** from low-confidence entries.

2.2. Objective

My objective of coming up with The Double Candle Breakout Strategy is designed to:

- Filter out low-confidence breakouts.
- Leverage *index-option price correlations*.
- Increase entry precision.
- Reduce false-positive signals.

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3. Methodology

3.1. Core Concept

My strategy operates on **two layers of confirmation**:

1. **Layer 1** – Detect a breakout in the **index value** (e.g., NIFTY, BANKNIFTY).
2. **Layer 2** – Confirm the breakout by checking if the **corresponding options contract** (CE or PE) has also broken the same directional threshold.
3. **Execution** – Place market orders only when both layers align within the same candle interval.

3.2. Algorithmic Steps

Step 1 – Index Breakout Detection

- Monitor OHLC (Open-High-Low-Close) data of the underlying index.
- Detect upward breakout when:

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  Current High > Previous Candle High
  ```

- Detect downward breakout when:

  ```
  Current Low < Previous Candle Low
  ```

Step 2 – Option Contract Breakout Confirmation

- Identify the corresponding option contract based on breakout direction:
    - **Upward breakout → Call Option (CE)**.
    - **Downward breakout → Put Option (PE)**.
- Apply the same breakout rule to option price data.

Step 3 – Trade Execution

- Place a market order **only if both conditions are true in the same candle timeframe**.
- Position sizing based on a fixed % of portfolio capital.

Step 4 – Risk Management

- **Stop Loss:** Fixed % from entry price (e.g., 0.5–1%).
- **Target:** Dynamic, based on volatility or ATR multiplier.
- **Max Trades Per Day:** To avoid overtrading.

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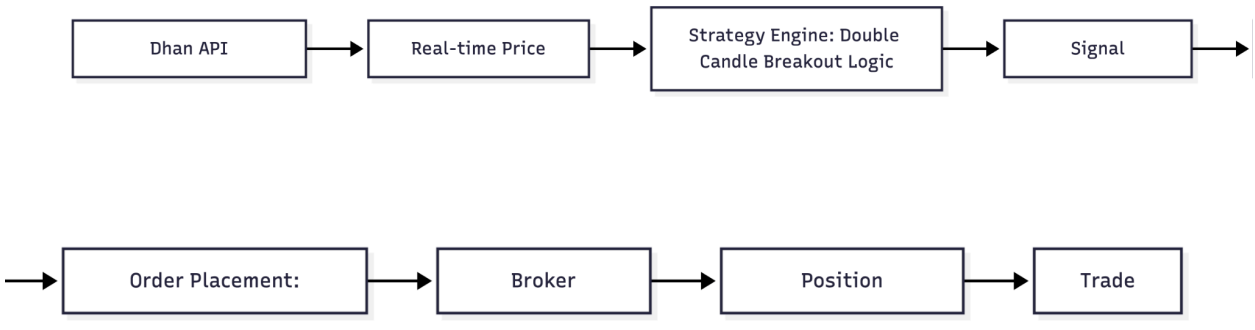
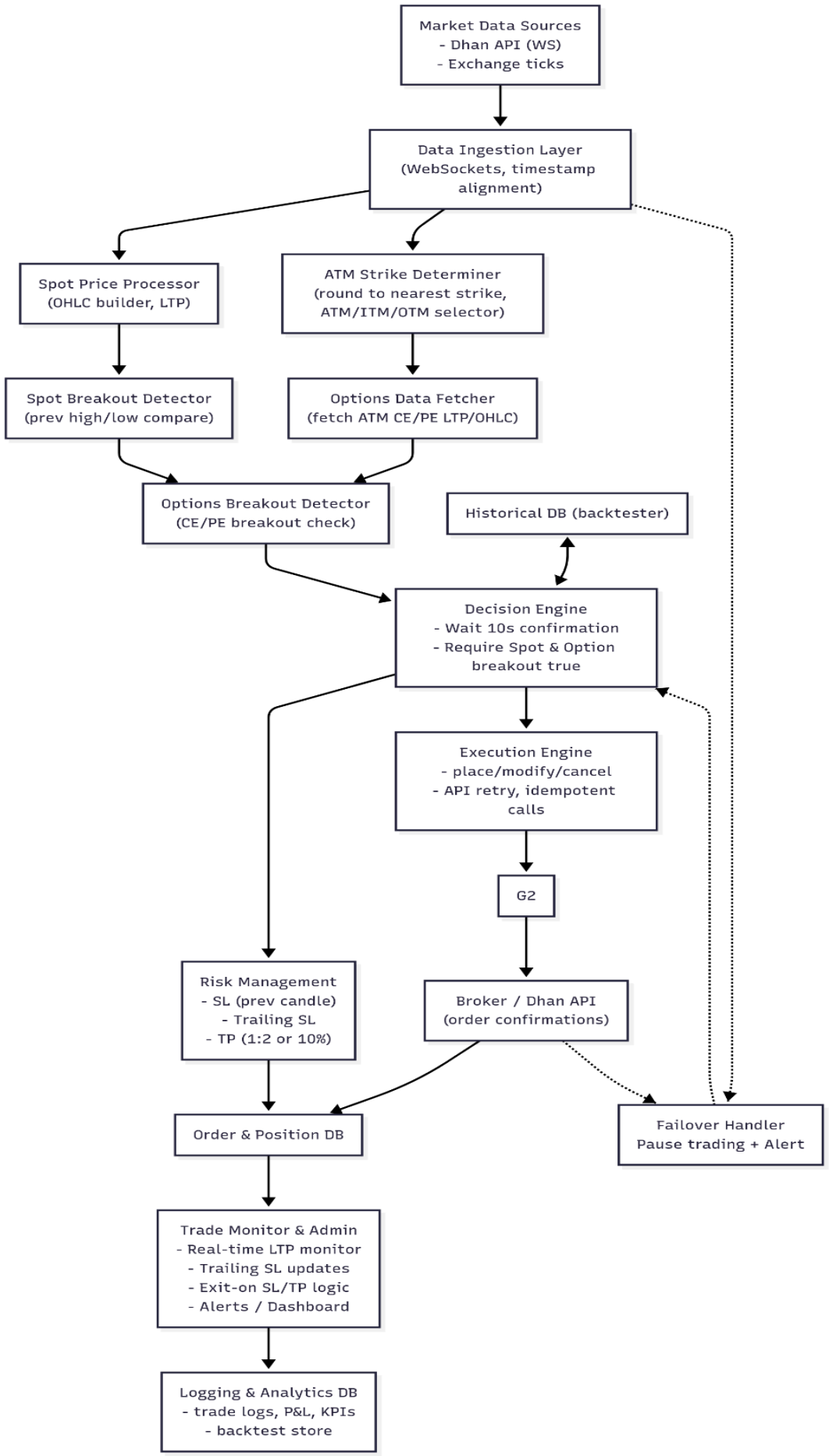
4. System Architecture

4.1. Components

- **Market Data Feed** – Real-time index & option price feed.
- **Breakout Detector Module** – Implements breakout logic.
- **Trade Validator** – Confirms dual breakout condition.
- **Order Execution Module** – Places trades via broker API.
- **Risk Management Layer** – Manages SL, targets, and daily limits.
- **Logging & Analytics Module** – Stores trade history, performance metrics.

4.2. Data Flow




Market Data Sources
- Dhan API (WS)
- Exchange ticks
Data Ingestion Layer
(WebSockets, timestamp alignment)
Spot Price Processor
(OHLC builder, LTP)
ATM Strike Determiner
(round to nearest strike, ATM/ITM/OTM selector)
Spot Breakout Detector
(prev high/low compare)
Options Data Fetcher
(fetch ATM CE/PE LTP/OHLC)
Options Breakout Detector
(CE/PE breakout check)
Historical DB (backtester)
Decision Engine
- Wait 10s confirmation
- Require Spot & Option breakout true
Execution Engine
- place/modify/cancel
- API retry, idempotent calls
G2
Risk Management
- SL (prev candle)
- Trailing SL
- TP (1:2 or 10%)
Broker / Dhan API
(order confirmations)
Order & Position DB
Failover Handler
Pause trading + Alert
Trade Monitor & Admin
- Real-time LTP monitor
- Trailing SL updates
- Exit-on SL/TP logic
- Alerts / Dashboard
Logging & Analytics DB
- trade logs, P&L, KPIs
- backtest store

5. Advantages of the Double Candle Breakout Strategy

- **Reduced False Signals:** Dual confirmation minimizes noise-based triggers.
- **High Conviction Entries:** Trades only on strong price momentum.
- **Scalable to Multiple Instruments:** Can be adapted to stocks, commodities, and forex.
- **Algorithm-Friendly:** Can be automated with minimal computational overhead.

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6. Example Trade Scenario

Scenario: NIFTY 50 Index, 5-min Candles

1. **Index Breakout:** Current candle high = 19820; previous high = 19800 → Upward breakout detected.
2. **Option Breakout:** NIFTY 19800 CE price high = ₹120; previous high = ₹118 → Breakout confirmed.
3. **Order:** Buy CE @ ₹120 with stop loss ₹118.4 (1.33% risk).
4. **Exit:** Target ₹126 (based on ATR 2x multiplier).

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7. Risk Considerations

- **Low Liquidity in Options:** May cause slippage.
- **False Correlations:** Breakouts may align by chance.
- **News-Based Volatility:** Strategy may need circuit breakers during high-impact events.

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8. Planned Advancements

- Integrating **machine learning classifiers** to detect breakout quality.
- Adding **volatility filters** to improve trade accuracy.
- Backtesting with multi-year tick data for robustness.

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9. Conclusion

The Double Candle Breakout Strategy offers a disciplined and higher-confidence alternative to conventional breakout trading methods. By combining price action signals from both the underlying index and its corresponding options, the approach significantly reduces the probability of false entries and improves overall trade quality.
