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Maximize Your Profits

Interval Overlap Escape

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Statistical Breakout (Volatility Expansion)	H1 (adaptive)	www.algobot.live

> ⚠ **Important Disclaimer** This document is for educational and informational purposes only. It does not constitute financial or investment advice. Trading forex, CFDs, and other leveraged instruments involves substantial risk of loss and is not suitable for all investors. Past backtest performance does not guarantee future results. Never trade with capital you cannot afford to lose.

Overview

Interval Overlap Escape is an original, first-principles Expert Advisor that treats each bar not as a candle but as a *price interval* — the range of prices `[Low, High]` at which trade actually occurred during that period. Rather than relying on indicators, chart patterns, support/resistance, or any published methodology, it measures a single geometric quantity: how much of their price space two adjacent bars share.

This shared-space measurement is the **interval overlap coefficient**, a Jaccard ratio applied to price. When overlap is high, buyers and sellers agree on a value region — the market is in equilibrium. When overlap collapses far below its recent norm, price is transacting where the previous period had rejected it: order flow is *relocating*, and the market is **escaping** its recent value region. The EA takes a position in the direction of that escape and holds until the market re-equilibrates or a risk level is hit.

Every statistical threshold is recomputed each bar from the instrument's own recent overlap history, so the anomaly test carries no fixed price or volatility magic number — it adapts continuously to whatever cohesion regime the market is currently in.

> **Core idea in one line:** A bar whose interval overlap with the prior bar collapses far below the local mean ($\mu - z\cdot\sigma$) is a statistically anomalous loss of cohesion — the market is leaving its value region, so trade in the direction it relocated.

How It Works

The Interval Overlap Coefficient

For each pair of adjacent bars, define the interval as the price range they traded across. The overlap coefficient is the shared span divided by the total span they jointly cover:

```
o_t = |I_t ∩ I_(t-1)| / |I_t ∪ I_(t-1)|

      max(0, min(High_t, High_(t-1)) − max(Low_t, Low_(t-1)))
    = ──────────────────────────────────────────────────────
              max(High_t, High_(t-1)) − min(Low_t, Low_(t-1))
```

The result lies in `[0, 1]`. A value near **1** means the two periods transacted over essentially the same prices (equilibrium). A value near **0** means the bar transacted at prices the previous period had rejected (imbalance / relocation). If the union span is zero, overlap is defined as `1.0`.

The Local Overlap Regime (self-adapting)

Each bar, the EA computes the mean `μ` and standard deviation `σ` of the overlap coefficient across the previous `BalanceWindow` bar-pairs — deliberately *excluding* the candidate bar so the anomaly test stays honest. This local regime describes what "normal cohesion" looks like for this instrument right now.

Entry Logic — detecting the escape

The current bar is flagged as an **escape** when its overlap collapses below the adaptive threshold:

```
threshold = μ − CollapseZ × σ
collapse  = (σ > 0) AND (o_current < threshold)
```

When a collapse is detected, direction is read from the interval **midpoint** `m = (High + Low) / 2` and confirmed by where the bar closed relative to the prior midpoint:

- **Long (escape up):** `m_current > m_prev` *and* `Close > m_prev` — the interval relocated higher and price was accepted there.
- **Short (escape down):** `m_current < m_prev` *and* `Close < m_prev` — the interval relocated lower and price was accepted there.

If neither condition holds (an ambiguous relocation), no trade is taken. Only one position is held at a time, and the EA acts once per completed bar via a new-bar gate.

Stop Loss & Take Profit — raw volatility scaling

Risk levels are scaled by a first-principles volatility statistic: the **mean bar range**, computed directly from raw `High − Low` over the last `RangeWindow` bars (no named indicator such as ATR is used). At entry:

```
Long :  SL = Ask − StopMult   × meanRange
        TP = Ask + TargetMult × meanRange

Short:  SL = Bid + StopMult   × meanRange
        TP = Bid − TargetMult × meanRange
```

Because both stop and target expand and contract with the instrument's own current volatility, the EA never applies a fixed pip distance.

Exit Logic — concept-driven early close

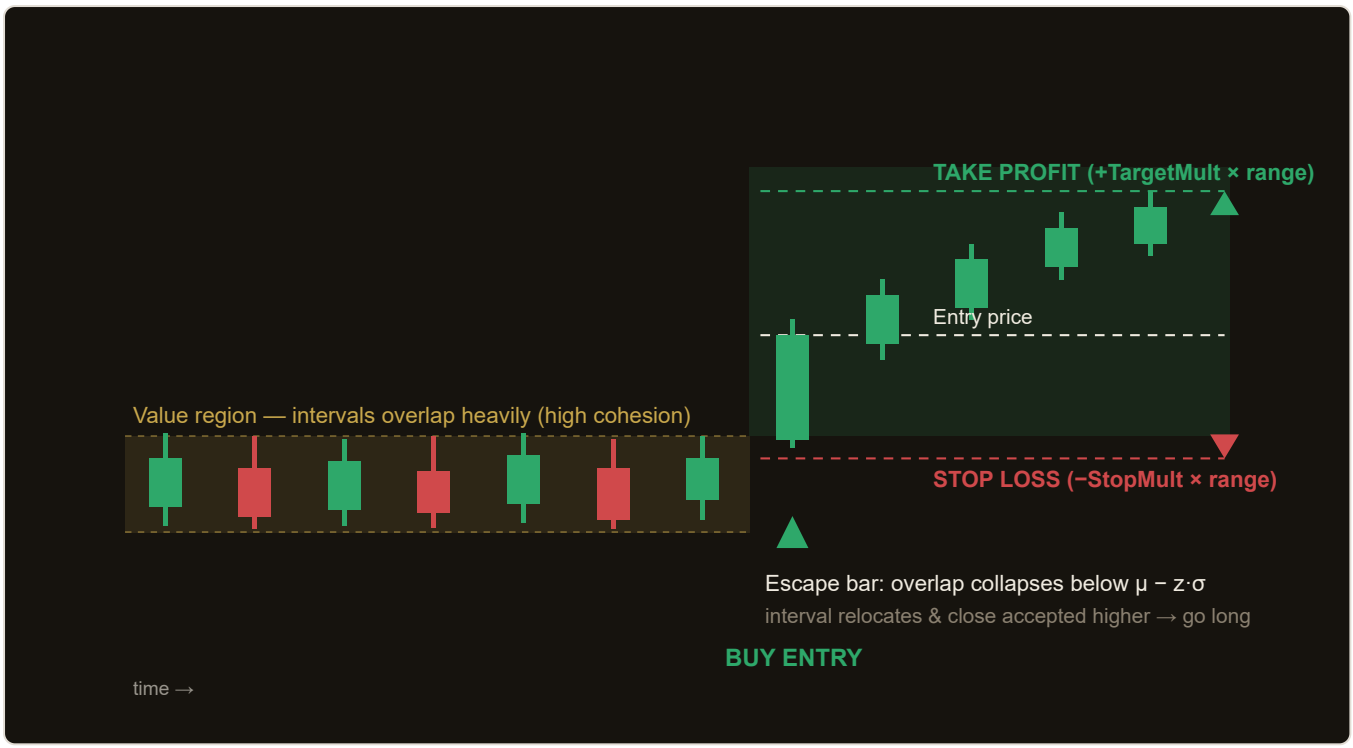
While a position is open, the EA watches the overlap coefficient every bar. If overlap climbs back **above the local mean μ**, cohesion has been restored — the market has re-equilibrated and the escape thesis is invalidated. The position is closed immediately. Otherwise, the position runs until the stop loss or take profit is reached.

Worked example

Suppose the last 40 bar-pairs had a mean overlap of μ = 0.62 with σ = 0.11, and `CollapseZ = 1.2`. The adaptive threshold is 0.62 − 1.2 × 0.11 = `0.488`. A new bar prints an overlap of just 0.19 — a sharp collapse below threshold. Its midpoint is above the previous midpoint and it closed above the prior midpoint, so the EA opens a **long**. With a mean bar range of 25 pips, `StopMult = 1.5` and `TargetMult = 2.5`, the stop sits ~37.5 pips below and the target ~62.5 pips above entry. If overlap later recovers above 0.62 before either level is hit, the trade is closed early.

Strategy in Action

The illustration below shows an example of how the strategy identifies a setup and triggers its entry and exit. This is a simplified, illustrative example for educational purposes — not real market data.



Illustrative example only. Actual market behaviour varies.

Parameters

Parameter	Default	Description
BalanceWindow	`40`	Lookback used to estimate the local overlap regime (mean μ and dispersion σ). Range 15–120, step 5. Larger values give a smoother, slower-adapting baseline.
CollapseZ	`1.2`	Anomaly threshold in standard deviations below the local overlap mean. Range 0.4–3.0, step 0.2. Higher values demand a rarer, more extreme collapse before entering.
RangeWindow	`20`	Window for the raw mean-range volatility statistic (mean of High − Low) that scales SL/TP. Range 8–60, step 2.
StopMult	`1.5`	Stop-loss distance as a multiple of the mean bar range. Range 0.5–5.0, step 0.25.
TargetMult	`2.5`	Take-profit distance as a multiple of the mean bar range. Range 0.5–8.0, step 0.25.
Lots	`0.10`	Order volume (fixed lot size). Range 0.01–1.0, step 0.05.
Magic	`7731`	Magic number used to identify and manage this EA's positions independently of other EAs on the same account.

Recommended Settings

Because every threshold self-calibrates from the instrument's own overlap history, the same defaults transfer reasonably well across symbols and timeframes. The following provides a sensible starting point:

- **Timeframe:** H1 works well as a balance between signal frequency and noise. The strategy is timeframe-agnostic — it reads only the primary chart's bars — so M30 and H4 are also viable.
- **Symbols:** Liquid instruments with clean OHLC (major FX pairs, index CFDs). Avoid very illiquid or gap-prone instruments where interval geometry is distorted.
- **Sensitivity:** Lower `CollapseZ` (e.g. 0.8–1.0) yields more frequent entries on milder escapes; raise it (1.6–2.2) to trade only the most anomalous relocations.
- **Risk/reward:** The default `StopMult 1.5` / `TargetMult 2.5` gives roughly a 1:1.67 reward-to-risk. Adjust `TargetMult` upward to let winners run further, at the cost of a lower hit rate.
- **Position size:** Set `Lots` conservatively relative to account equity; the EA holds one position at a time.

> **Tip:** Run MT5's Strategy Tester across the full parameter ranges (they are supplied as optimizable min/max/step) to find the `BalanceWindow` and `CollapseZ` combination that best fits your chosen instrument's cohesion regime before going live.

How to Install on MetaTrader 5

1. Copy `IntervalOverlapEscape.ex5` to your MT5 `MQL5\Experts\` folder
2. Restart MetaTrader 5 and refresh the Navigator panel
3. Drag the EA onto a chart matching the recommended symbol and timeframe
4. Configure the input parameters and click **OK**
5. Enable **Algo Trading** in the MT5 toolbar

> **Note:** The EA evaluates its logic once per completed bar (a new-bar gate), so it needs at least `max(BalanceWindow + 2, RangeWindow + 1)` closed bars of history before it can begin trading. Allow the chart to load sufficient history after attaching.

Risk Warning

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