Aggressive Algorithmic Trading Strategies — Developer Playbook

Stock + Crypto Edition
For: Autonomous Trading Command Center

Theme: Miami Dolphins (Aqua + Orange)

Momentum & Volatility Exploitation

- ATR Pulse Breakout - Detects explosive volatility expansion using ATR deviation logic.
- MACD Acceleration - Uses MACD histogram 2nd derivative for early breakout signals.
- RSI Turbo Reversal - Enters against overextension when RSI >80/<20 with divergence.
- Dynamic Leverage Momentum - Adjusts leverage dynamically by short-term Sharpe ratio.
- Heikin-Ashi Continuation - Filters noise and rides smoothed multi-bar trends.
- ATR Scalping Grid - Builds bidirectional orders at ATR bands; closes on expansion.

Quantitative & Statistical Models

• Stat Arb Shock Model - Cointegration pairs trading post-divergence >3σ.

• Z-Score Channel Bounce - Mean reversion entries at ±2.5σ deviations.

• Keltner Expansion - Detects dual-side volatility breakouts for rapid trades.

• Multi-Asset Spread Rotation - Rotates allocation when correlated spreads widen.

• Dynamic Correlation Reversion - Detects asset decoupling and reversion patterns.

• Volatility-of-Volatility Attack - Trades VIX/VOL spikes using vol-derivative metrics.

Machine Learning Strategies

• Deep Reinforcement Scalper - RL agent maximizing micro-PnL via reward optimization.

• LSTM Momentum Predictor - Predicts next short-term candle direction via sequence learning.

• Random Forest Vol Switcher - Classifies regime shifts by volatility profile.

• GAN Price Synthesizer - Generates synthetic probable price trajectories for prediction.

• Transformer Sentiment Correlator - NLP sentiment scoring aligned with price motion.

• Bayesian RL Trader - Combines RL with uncertainty modeling for probabilistic action.

HFT & Market Microstructure Exploits

- Latency Arbitrage Sniper - Cross-exchange latency-driven mirror trading engine.
- Front-Running Order Flow - Predicts large orders via LOB imbalance tracking.
- Spoof Reversal Detector - Detects spoofing activity to reverse-trade manipulation.
- Volume Cluster Flip - Identifies reversal points via delta and volume concentration.
- Flash-Crash Sweep - Auto-triggers deep limit buys on sudden flash dips.
- Adaptive Tick Scalper - Tick-by-tick regression predicting ultra-short trends.

Hybrid Leverage & Derivative Systems

• Delta-Neutral Perpetual Farming - Long spot + short perpetuals for funding capture.

• Cross-Exchange Funding Exploit - Arbitrages perpetual funding differentials.

• Leverage Momentum Compounding - Increases leverage after profitable streaks.

• Gamma Scalping Engine - Adjusts delta-neutral option portfolios to harvest volatility.

• Options Skew Arbitrage - Trades implied volatility asymmetries across strikes.

• AI Synthetic Hedge Fund Strategy - Weighted ML ensemble of multi-strategy bots.

Integration & System Notes

Each algorithm includes both Python and TypeScript pseudocode for Supabase + CCXT integration:

Data Inputs: OHLC feeds, WebSocket tickers, funding rates, order book snapshots
Signal Logic: Implement volatility filters, statistical thresholds, and ML predictions
Execution Flow: Create/Close orders using ccxt.create_order()
Risk Management: Limit per-trade exposure (1–2%), auto-stop after 3 losing trades
Logging: Write all trade events and errors to Supabase 'logs' and 'trades' tables
Scalability: Each bot runs asynchronously in Docker containers with real-time Supabase sync