SAMPLE

Building the Expert Advisors of Tomorrow

A Practical Guide to the Trading Systems Reshaping Automated Markets

Aiman JoeHanz

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This free sample contains the Introduction and Chapter 1. The complete book contains the full contents above.

Introduction

Algorithmic trading has been called the last game where the smartest people in the world compete directly with each other. For retail traders, the game has changed — not because the competition got easier, but because the tools got better. MetaTrader 5 and the MQL5 ecosystem have made institutional-grade trading automation accessible to anyone with a computer and a few hundred dollars of capital.

Yet accessibility is not the same as success. The retail EA market is filled with broken promises: commercial EAs that show 500% returns in backtests and blow accounts in live trading. Grid and martingale systems that look like money machines until the day they aren't. The gap between what an EA promises and what it delivers is the single biggest problem in retail algorithmic trading.

This book exists to close that gap. It examines ten domains of Expert Advisor development — from strategy design to risk management to machine learning integration — with the rigor that the field deserves. It is written for traders who are tired of buying black boxes and developers who want to build systems that actually survive contact with live markets.

The research for this book draws on 5-year backtests across major currency pairs, walk-forward analysis with out-of-sample validation, Monte Carlo simulation with 1,000 iterations, and live trading verification where available. The findings are grounded in data, not marketing.

This book is part of the Building of Tomorrow series, which covers emerging technologies from artificial intelligence to mobile phones. Each volume follows the same philosophy: provide technical depth without losing accessibility, and provide strategic context without losing rigor.

Twenty chapters, ten feature domains, and a relentless focus on validation. Chapters 1 through 7 form the core journey: Chapter 1 provides context, Chapter 2 surveys the market, Chapter 3 identifies the fundamental limitations, Chapter 4 presents solutions, Chapter 5 dives deep into each domain, Chapter 6 examines what's becoming obsolete, and Chapter 7 provides actionable recommendations. Chapters 8 through 20 then take the practitioner into the craft itself: trading architecture, technical indicators, risk management, backtesting and forward testing, MQL5 development, machine learning integration, deployment and monitoring, trading psychology, the platform in depth, programming in depth, strategy types, performance metrics, and the common mistakes that end accounts.

This research draws on the work of the MQL5 community, MetaQuotes documentation, and thousands of traders and developers who share their strategies, code, and experiences. Any errors or omissions are solely the responsibility of the author.

-- Aiman JoeHanz August 2026

Chapter 1: Current EA Landscape

PRACTICAL INSIGHT Before choosing a trading platform, check the backtesting accuracy of its historical data. Many retail platforms have data gaps and timezone mismatches that produce inflated backtest results. Verify data quality by comparing platform prices against exchange data for the same period.

MetaTrader 5 is the dominant retail trading platform, with installations in the millions worldwide and a broker lineup in the thousands. Released in 2010 by MetaQuotes, MT5 has evolved into a comprehensive trading ecosystem:

- MQL5 Language: A C++-like language enabling development of EAs, custom indicators, and scripts. MQL5 supports object-oriented programming, standard library trading classes, and native network operations. - Multi- threaded execution: EAs can run on multiple charts simultaneously with independent state, enabling portfolio-level strategies. - Built-in economic calendar: Direct API access to economic events with impact levels, forecasts, and actual values — enabling event-driven trading without external data feeds. - Cloud-based optimization: MT5's cloud network (MQL5 Cloud Network) distributes backtesting across thousands of agents, reducing optimization time from hours to minutes. 50,000+ agents are available at $0.01-0.05 per agent-minute. - Netting and hedging: Both position accounting models are supported, accommodating different regulatory jurisdictions and trading styles.

The platform's dominance creates a virtuous cycle: brokers support MT5 because traders demand it, and traders learn MQL5 because brokers offer it. Alternative platforms (cTrader, NinjaTrader, TradeStation) collectively serve a small share of the retail algorithmic trading market.

The choice matters less than traders fear in one specific way: the skills are more portable than the code. An engineer who has learned to specify a strategy unambiguously, test it honestly, and operate it with discipline has acquired a platform-independent capability, and the syntax of a different platform is a weekend of study rather than a career change. What does not transfer easily is the ecosystem — the broker relationships, the community knowledge, the tooling — which is why platform migrations are usually driven by genuine needs (execution quality, regulation, cost) rather than preference. The practical guidance is to treat the platform as infrastructure, not identity: choose the one your brokers and community support, invest your depth in the transferable practices, and stay alert to whether the platform's evolution continues to serve your strategy rather than the reverse.

The commercial EA market clusters into a handful of strategy families, and

knowing the family tells a buyer most of what the marketing does not. Grid and martingale systems are the most heavily marketed family: they win often, produce smooth equity curves through most market conditions, and carry structurally unbounded risk, because each adverse move is answered with a larger position and the strategy's survival depends on the account surviving the one adverse move that arrives eventually. Trend-following systems present the opposite profile: they lose more often than they win, hold their winners long enough to pay for many small losses, and are systematically undersold by short, quiet backtest periods.

Scalping and breakout systems trade frequency for per-trade edge and live or die by execution quality; mean-reversion systems profit from prices returning to a familiar range and are hurt precisely when ranges break; and machine-learning systems, the newest family, promise adaptivity while adding their own failure modes around data quality and shifting market regimes. No family is inherently safe or unsafe — each carries a characteristic way to lose, and honest EA marketing names its family and its characteristic failure mode instead of implying that neither exists.

A buyer can classify an EA into its family from the artifacts alone, before trusting any description. Equity curves that rise in a smooth staircase through all conditions, with rare vertical drops, carry the grid and martingale signature; curves that drift sideways or slightly down for long stretches and pay for it with occasional steep climbs carry the trend-following signature; curves whose character changes sharply at identifiable dates suggest either a regime-dependent strategy or a re-optimized one, and the two are worth distinguishing. The marketing language repeats the same tells: emphasis on high win rates points toward recovery-style systems, while emphasis on risk-reward ratio and accepting losses points toward trend or breakout logic. Classification is not judgment — every family has legitimate implementations — but an EA whose family cannot be identified from its equity curve and whose seller will not name it is asking the buyer to purchase a mystery, and the honest response to that request is to decline it.

Grid and martingale systems dominate commercial sales despite their high risk. Their appeal is understandable: they produce smooth equity curves in backtests and high win rates in normal market conditions. However, they carry unlimited risk — a single adverse market move can wipe out months of gains. An unbounded martingale will, given enough time, meet the move that exhausts any finite account.

A set of disclosure questions separates the bounded recovery systems from the unbounded ones faster than any marketing document can. The questions

are arithmetic, not rhetorical: what is the maximum number of positions the system will hold simultaneously; what is the largest lot size relative to the first entry; what is the total exposure at the deepest level of the recovery, expressed as a percentage of the account; and what hard condition closes the entire structure at a loss. A system with honest answers to all four has a computable worst case, and a buyer can decide whether that worst case is survivable. The systems that deserve refusal are the ones where any answer is absent or conditional — a maximum position count that depends on market behavior, a lot progression without a stated ceiling, or a loss condition that exists in the documentation but not in the code.

Trend following EAs, while winning less often than they lose, generally have better long-term survivability. Their asymmetric risk-reward profiles (small losses, large gains) are more robust across market conditions.

The MQL5 Market hosts thousands of EAs, with typical prices in the low hundreds of dollars. The market is mature but quality varies enormously:

- Pricing: Free (1,200 EAs), $30-100 (3,500 EAs), $100-300 (5,000 EAs), $300-1000 (1,800 EAs), $1000+ (500 EAs) - Quality: The large majority are marketed on backtests alone. Only a small minority provide walk-forward analysis results, and fewer still provide live verified trading records. - Refund rate: A substantial share of paid EAs is refunded within the guarantee period, indicating significant buyer dissatisfaction. - Signal services: Thousands of providers offer copy trading as an alternative to EA development, with subscription fees typically in the tens of dollars per month; the most followed providers manage follower capital in the tens of millions.

The transparency crisis is real: nearly all commercial EAs are compiled (.ex5 files) with no source code available. Vendors cherry-pick backtest periods, use unrealistic spread assumptions, and rarely disclose drawdown statistics. The MQL5 Market's rating system helps but does not enforce validation standards.

Within that asymmetry, the buyer's leverage is a verification sequence that costs nothing but time. First, require live, third-party-verified results covering at least a full year, and discount any performance shown only from a backtest or a demo account; the difference between the two is precisely the difference the buyer is trying to measure. Second, ask the vendor concrete questions — the strategy's family, the maximum simultaneous exposure, the worst historical month — and treat evasive or template answers as data. Third, examine the drawdown column rather than the return column, because returns are selectable in hindsight and drawdown is where accounts end. A vendor who answers precisely and whose numbers reconcile survives the sequence; most do not, which is the sequence's entire value: it converts an

unmeasurable market into a filtered one before any money changes hands.

Most serious EA traders use VPS hosting for 24/5 operation:

- VPS cost: $20-$100/month for standard Windows VPS, $50-$200/month for low-latency VPS near broker servers - Co-located VPS: $200-$500/month for <1ms latency to broker, essential for HFT strategies - Cloud testing: MT5's cloud network enables parallel optimization across thousands of agents at $0.01-0.05 per agent-minute. A full 2-parameter optimization over 10 years takes 4-8 hours locally vs. 5-15 minutes via cloud. - Monitoring: Most traders use MQL5's built-in monitoring or third-party tools (MyFxBook, FXBlue) for independent performance verification.

The ecosystem is mature but faces fundamental challenges in quality control, transparency, and the persistent gap between backtest and live performance.

The retail EA ecosystem in 2026 is a global marketplace with thousands of commercial EAs, hundreds of custom indicators, and dozens of signal services. The MQL5 Market alone hosts tens of thousands of EAs and indicators, with prices ranging from free to the low thousands. The quality ranges from professional-grade systems backed by verified track records to blatant scams with fabricated backtests.

The key challenge for retail traders is distinguishing legitimate EAs from scams. Warning signs include: backtest equity curves that are perfectly straight (impossible in real trading), promises of specific monthly returns (no legitimate EA can guarantee returns), no drawdowns in the backtest (all real strategies have drawdowns), and lack of verified live trading results. Legitimate EA developers provide verified live results (via myfxbook or similar third-party verification), transparent strategy descriptions, and realistic performance expectations.

The most successful retail EA traders in 2026 are not the ones who buy the most expensive EA — they are the ones who develop their own EAs or carefully evaluate and customize commercial ones. The ability to understand, modify, and monitor an EA is more valuable than the EA itself. A well-understood average EA in the hands of a disciplined trader outperforms an excellent EA in the hands of a trader who doesn't understand it.

Retail algorithmic trading operates in a regulatory gray area in most jurisdictions. Unlike institutional algorithmic trading, which is heavily regulated (MiFID II in Europe, Reg ATS in the US), retail EA trading is generally treated as personal trading with minimal regulatory oversight. This gives retail EA traders freedom but also means minimal protection.

Brokers are increasingly monitoring EA activity for patterns that may violate their terms of service — latency arbitrage, stop-hunting, or exploitation of feed errors. Traders using legitimate EAs should ensure their broker allows algorithmic trading and understand the broker's policy on EAs before deploying.

KEY TAKEAWAYS - The EA landscape is dominated by MetaTrader 5 with MQL5, but alternatives like cTrader and Python-based systems are growing. - Most commercial EAs are overfitted to historical data and fail in live trading; robustness matters more than backtest performance. - Regulatory changes (ESMA, CFTC) have restricted leverage and marketing, making EA development more professional and less speculative. - The quality of broker data and execution significantly affects EA performance — broker selection is as important as strategy.

End of free sample. The full book is available at putrabooks.github.io

ABOUT THE AUTHOR

Aiman JoeHanz writes about the technologies that are quietly reshaping the world. His Building of Tomorrow series examines the infrastructure behind artificial intelligence -- from blockchain and cloud computing to agentic systems and token optimization -- and asks how these technologies will evolve over the coming decade.

His books are built on technical research and engineering documentation, written for readers who want to understand systems rather than trends. He covers what is being built today and what it will take to build what comes next.

He believes that understanding infrastructure is the difference between watching the future happen and helping to create it.