Trading System Binder Edition — Detailed Checklist

1. Stock Universe

■ Add S&P; 500 tickers

These highly liquid, large-cap stocks form a stable backbone for your system. They trend cleanly and let your indicators produce reliable signals. They are essential for training the HMM model because they exhibit well-structured regime patterns.

■ Add Nasdaq 100 tickers

These are the fastest■moving, highest■momentum large-cap stocks. They give your strategy exposure to rapid-trend environments, allowing the system to catch strong runs.

■ Add top 300 Russell 2000 (high volume)

Small caps produce the biggest percentage moves. Your system needs exposure to these to capture explosive opportunities, but only the top-volume names to avoid slippage risk.

■ Add mid-cap growth leaders (150 stocks)

Mid-caps are the sweet spot: fast movers with strong institutional sponsorship. They often trend smoother than small caps and yield excellent breakout performance.

■ Build final ~1,000 ticker universe

This size allows broad diversification AND enough opportunities for the system to fire high■probability signals every week.

2. Indicator Thresholds

■ Momentum: Angle_EMA200 > +3°

This ensures you only enter trades when long-term trend momentum is positive and strengthening. It filters out weak, choppy markets.

■ Volatility: ATR_pct < 0.02 (compression)

Low volatility compression often precedes big breakouts. ATR% normalizes this across different price levels, so the signals remain consistent.

■ Volatility Expansion: ATR rising

After compression, a rising ATR indicates the stock is beginning a new movement phase. This increases probability of trend continuation after entry.

■ HLEV deep zone: HLEV < -0.4

HLEV identifies structural price location over long horizons. Deep zone indicates accumulated energy and value area—your ideal entry region before expansions.

■ EMA Structure: EMA30 > EMA90 for bullish

A simple but powerful trend filter to confirm that shorter-term movement aligns with long-term direction. Reduces false breakouts.

3. Volatility + Momentum Matrix

■ Code matrix rules

This matrix enforces that signals only occur when volatility and momentum align. It prevents trades during high-volatility whipsaws or low-momentum drift.

■ Integrate into classifier preprocessing

Feeding volatility–momentum context into your HMM increases regime detection accuracy and reduces noisy transitions.

■ Validate on sample tickers

Helps ensure that the matrix correctly filters out bad setups in real charts and confirms alignment before trades trigger.

4. HMM Configuration

■ Use 4 states: Up/LowVol, Up/RisingVol, Down/HighVol, Sideways/LowVol

These states map directly to real market regimes. Four is optimal: enough to capture nuance, not enough to overfit.

■ Add features: angle, ATR%, HLEV%, EMA spread

These features together describe momentum, volatility, structure, and trend. Perfect combination for accurate state inference.

■ Test transition matrix

Ensures transitions follow realistic market behavior (e.g., uptrend doesn't suddenly jump to panic regime). Detects model instability.

■ Validate stationary distribution

Checks long-term balance of states. Ensures one state isn't dominating due to modeling error.

■ Compare states visually to charts

Visual validation ensures the HMM aligns with human interpretation—crucial for trust in the model.

5. Signal Generator

■ Build single function that outputs BUY/SELL/HOLD

Central decision engine. Ensures every trade follows the same rules, eliminating emotional or inconsistent trading.

■ Include angle + HLEV + ATR + EMA + HMM

Combining independent signals increases edge and dramatically reduces false positives.

■ Ensure signals only fire when all conditions align

Protects against over■trading by forcing high■probability convergence before action is taken.

6. Position Sizing Module

■ Use 1% account risk per trade

Prevents catastrophic losses and ensures longevity. Professional-grade risk management rule.

■ Compute stop distance = ATR_20 × 2.5

Volatility-adjusted stops expand with noisy stocks and tighten with stable ones. Reduces premature exits.

■ Shares = (Account × 0.01) / StopDistance

Ensures position sizes automatically scale with risk, not arbitrary amounts. Core principle of systematic trading.

■ Automatically reduce size in high volatility

Keeps large swings from crippling your account. Protects during market stress.

7. Automation Architecture

■ Daily data fetch across 1,000+ tickers

Enables broad scanning for rare high-quality setups. Automation ensures reliability and consistency.

■ Compute indicators and HMM states

Transforms raw data into model-ready inputs. Required for signal generation.

■ Run signal generator

Produces actionable BUY/SELL decisions. Forms the heart of the automated trading engine.

■ Place orders through Schwab API

Makes your strategy truly hands-off and ensures timely execution.

■ Store everything in parquet + SQLite/MySQL

Parquet is fast and compact. Database storage allows structured analytics and historical review.

8. Logging & Analytics Dashboard

■ Track P/L per trade

Allows you to calculate expectancy and see whether each setup type is profitable.

■ Track MAE/MFE (max adverse/excursion)

Shows how far trades move for or against you—critical for optimizing stop placement.

■ Plot equity curve

A visual heartbeat of your system. Reveals drawdowns, performance waves, and system health.

■ Log regime changes

Understanding regime context improves interpretation of performance and helps refine signals.

■ Display active signals on dashboard

Lets you see opportunities and exposures at a glance, improving confidence and oversight.

9. 12–18 Month Plan

■ Months 1–3: Build final model + signals

Foundation phase. Build model, rules, pipeline. Initial backtests.

■ Months 4–6: Optimize & scale testing

Test across full universe. Refine thresholds. Improve automation.

■ Months 7–9: Paper trade full automation

Simulated live environment. Fix real-world issues. Validate performance.

■ Months 10–12: Small real-money phase

Deploy cautiously. Measure with real fills, slippage, and volatility.

■ Months 12–18: Scale capital & reach consistency

Grow position sizes, expand capital, and achieve consistent profitability.