Systematic Trading Framework

App Summary

What it is

A research-first systematic trading framework for quantitative finance that supports the lifecycle from hypothesis-driven research to robust backtesting and ML-based strategy evaluation.
It emphasizes time-aware evaluation, reproducibility, and risk-aware modeling.

Who it is for

Quantitative researchers and ML engineers running time-series research and systematic trading experiments.

What it does

- Loads OHLCV data from Yahoo Finance or Alpha Vantage FX, with validation.
- Runs config-driven experiments via YAML (inheritance, defaults, validation).
- Builds causal features: returns, volatility, trend, momentum, oscillators, indicators, lags.
- Trains a LightGBM classifier with time-based splits and forward-return targets.
- Generates signals and runs vectorized backtests with costs, slippage, vol targeting, and drawdown guard.
- Writes experiment artifacts (config, summary, equity curve, returns, positions, turnover) to logs.

How it works

- Components: config loader, data providers, feature pipeline, model and signal registry, backtest engine, risk controls, artifact logger.
- Data flow: YAML config -> load_ohlcv -> validate_ohlcv -> feature steps -> model (optional) -> signals -> run_backtest -> logs/experiments.

How to run

- python3 -m venv .venv and source .venv/bin/activate
- pip install -r requirements.txt
- python -m src.experiments.runner config/experiments/trend_spy.yaml