

ChaosTheoryLabs

Senior Software Engineer Quantitative Trading Systems

Company: Chaos Theory Labs, *part of BleuBox Group Limited*

Reports to: Head of Artificial Intelligence

Location: Remote first, with regular in-person Company Days

Experience Required: Minimum 5 years commercial experience

Salary: £90 - £120k, plus bonus

ABOUT THIS ROLE

We are looking for an exceptional Senior Software Engineer with meaningful experience in quantitative trading, financial markets or institutional trading technology to join Chaos Theory Labs. The role combines strong production software engineering with the specialist knowledge required to build, test and operate systematic trading systems safely.

You will work across research, back-testing, broker connectivity, market data, execution, risk controls and production infrastructure. The successful candidate must be able to understand not only whether software is technically correct, but also the financial and operational consequences of its behaviour when it is placing leveraged orders in live markets.

THE OPPORTUNITY

This is an opportunity to help take a systematic futures-trading capability from research and UAT into robust live operation. You will work closely with trading, quantitative and engineering colleagues, own critical components end-to-end and engage directly with brokers and technical counterparties when required.

We are looking for a production-minded engineer rather than a purely academic quant: someone who can challenge a backtest, reason about market and execution risk, diagnose a FIX or broker-integration issue, and still write maintainable, thoroughly tested software.

WHAT YOU'LL GAIN

- **Build from the ground up** – design and implement core trading infrastructure with meaningful influence over architecture and engineering standards.
- **Breadth and development** - work directly on systematic futures strategies, execution infrastructure, risk controls and quantitative research tooling.

- **Autonomy and trust** - challenge assumptions and improve the safety, reliability and performance of the trading stack.
- **Leadership potential** - grow towards Staff Engineer as the trading and engineering capability expands.

COMPANY BENEFITS

- Company bonus scheme
- Generous 31 days annual leave entitlement, plus a day for your birthday
- Regular in-person Company Days
- Employee Assistance Plan
- Health care

SKILLS AND QUALIFICATIONS

Education

A degree, or equivalent practical experience in Computer Science, Mathematics, Quantitative Finance, Physics, Engineering, Data Science or another relevant quantitative discipline.

Programming Languages

Expert knowledge of C++ is essential to succeed in this role. Desirable for proficiency in other programming languages for example Python, C#, Go or Rust.

Essential skills

Core Software Engineering

- Minimum five years' commercial software-engineering experience, including production systems.
- Strong understanding of algorithms, data structures, concurrency, asynchronous processing and performance trade-offs.
- Proficient with Git, code review and collaborative development workflows.
- Strong clean-code and testing discipline, including unit, integration, regression and end-to-end testing.
- Experience with SQL databases, APIs, profiling, monitoring and production debugging.
- Experience with event-driven architecture, message queues and reliable stateful systems.
- Ability to design deterministic, observable systems whose historical behaviour can be reconstructed from logs and persisted events.

Algorithmic Trading and Futures

- Practical understanding of exchange-traded futures, including contract specifications, tick sizes and values, notional exposure, leverage, initial and maintenance margin and mark-to-market P&L.
- Experience developing, testing or operating systematic or algorithmic trading strategies.

- Understanding of futures contract lifecycles, expiries, rollover processes, front-month selection and continuous-contract data.
- Strong understanding of order types and order states, including acknowledgements, partial fills, cancellations, rejects, duplicate orders and stale orders.
- Understanding of market microstructure, liquidity, bid/ask spread, slippage, latency and transaction costs.
- Experience with real-time and historical market-data feeds, including handling missing, delayed, duplicated or out-of-sequence data.
- Experience designing robust backtests and recognising look-ahead bias, overfitting, unrealistic execution assumptions and other common sources of misleading performance.
- Understanding of exchange trading calendars, market sessions, holidays and contract-specific trading hours.

Trading Risk and Reliability

- Experience designing or implementing automated pre-trade and post-trade risk controls.
- Ability to implement hard limits for position size, order size, daily loss, account exposure and strategy-level risk.
- Understanding of margin utilisation, available liquidity and the relationship between futures notional exposure and account capital.
- Experience with kill switches, trading halts and fail-safe behaviour.
- Ability to design safe behaviour following loss of market data, broker connectivity or internal service failure.
- Experience preventing duplicate orders or unintended position accumulation after reconnection or restart.
- Ability to reconcile internal strategy state against broker executions, fills, positions and realised/unrealised P&L.
- Strong audit-logging discipline so orders, decisions and system state can be reconstructed after an event.

Quantitative methods

- Strong probability and statistics, including statistical inference and confidence intervals.
- Experience analysing time series, volatility, distributions of returns and correlation.
- Understanding of drawdown, expected value, Sharpe/Sortino or comparable risk-adjusted performance measures.
- Experience with Monte Carlo simulation, robustness testing and sensitivity analysis.
- Ability to distinguish statistical significance from economically meaningful and executable results.
- Experience with NumPy, SciPy, pandas or equivalent quantitative/statistical libraries.

Highly Desirable

Broker and Exchange Connectivity

- Experience integrating trading systems with broker or exchange APIs.
- Practical knowledge of FIX, including sessions, sequence numbers, heartbeats, logon/logout, execution reports, acknowledgements, rejects and recovery/ reconciliation.
- Experience diagnosing issues across application, network, broker and exchange boundaries.
- Understanding of UAT/paper-trading versus production environments and controlled production release.
- Experience with Interactive Brokers, CME or comparable institutional brokerage/ exchange infrastructure is advantageous but not essential.

Infrastructure and Operations

- Experience with Docker, CI/CD and Infrastructure as Code; Kubernetes experience is desirable where appropriate.
- Strong production monitoring, metrics, alerting and incident-response practices.
- Experience designing restart, recovery and reconciliation procedures for stateful automated systems.
- Strong change-management discipline around software capable of deploying capital.

AI and Machine Learning

- Experience developing or evaluating machine-learning models for predictive or optimisation problems.
- Familiarity with scikit-learn, PyTorch, TensorFlow or equivalent.
- Experience with genetic algorithms, deep learning or LLM technologies is useful but secondary to trading-systems and production-engineering expertise.

PERSONAL ATTRIBUTES

- Intellectually sceptical - challenges attractive backtests and assumptions rather than accepting headline performance.
- Risk-aware - thinks about failure states, reconciliation and capital protection before optimisation.
- High ownership - follows problems across strategy, code, infrastructure, broker connectivity and execution.
- Precise and methodical - understands that small implementation differences can have material financial consequences.
- Commercially pragmatic - balances engineering quality, safety, speed and business value.
- Calm and systematic when diagnosing live or time-sensitive production issues.