

Lachlan Bridges

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Professional Profile

Software engineer and applied mathematician who builds substantial systems across backend services, web applications, AI tooling, data pipelines and quantitative research. Strong in Python and TypeScript, with a practical focus on clear architecture, automated testing, structured logging and documentation. Comfortable taking ambiguous technical problems from investigation through working software and reliable operations.

Technical Skills

Languages: Python, TypeScript/JavaScript, SQL, Bash, PowerShell, Solidity, R, MATLAB

Applications: React, Node.js, Express, FastAPI, REST APIs, WebSockets, pandas, NumPy

Systems: PostgreSQL, SQLite, Docker, Linux, GitHub Actions, Caddy/nginx, systemd

Specialties: system design, debugging, test automation, MCP/LLM workflows, quantitative modelling

Engineering Experience

Independent Software Development and Quantitative Research | 2022–Present

- Build substantial personal and collaborative software for market research, mathematics, publishing and home education.
- Built Cracktrader, a modular Python framework sharing strategy APIs across backtest, paper and live modes, with asynchronous market data, exchange integrations and deterministic execution.
- Co-founded and technically led Bridges Publishing through its main production period in 2023–2024, building internal tooling for public-domain book production, cover generation, catalogue publishing and Amazon/KDP release workflows.
- Develop TypeScript and React applications backed by REST/MCP services, PostgreSQL or SQLite, authentication and structured operational workflows.
- Build AI-enabled systems with typed tools, validated structured outputs, auditable changes and deterministic post-processing.
- Collaborate with another developer on architecture, implementation, testing and practical use of the systems.
- Operate personal Linux/VPS infrastructure using Docker Compose, Caddy/nginx, systemd, cron and shell automation.

Selected Projects

Cracktrader – Private Python runtime for quantitative research, simulation and execution across CCXT exchanges and prediction markets. Supports complex order types, real-time WebSocket data and shared backtest/paper/sandbox/live APIs. Public evidence includes 1,706 named test functions, 426 Python test files and a documented synthetic-feed benchmark of roughly 642k ticks/second.

Product: cracktrader.github.io/ • Documentation: cracktrader.github.io/docs/

Maff – Self-hosted mathematics research platform with a TypeScript REST/MCP API, React workbench, PostgreSQL/Prisma, Auth0, audit logs, Lean integration and Docker/Caddy deployment.

Bridges Publishing Tooling – Commercial public-domain publishing workflow for 41 editions sold internationally through Amazon/KDP, including semantic EPUB/PDF production, Python cover generation, metadata handling and a static catalogue.

Academic Experience

Graduate Research Assistant, University of Adelaide | 2019–2021 – Built reproducible simulation and analysis workflows in Python, R and MATLAB for stochastic-process research.

Research Assistant, Technical University of Munich | 2019 – Developed modelling and simulation tools for logistics networks.

Tutor, University of Adelaide | 2017–2021 – Taught mathematics, statistics, numerical methods and introductory computer science.

Education

Master of Philosophy (Applied Mathematics) | University of Adelaide | 2017–2019

Bachelor of Mathematical Sciences (Applied Mathematics and Statistics) | University of Adelaide | 2014–2016