

# Marcel Roux

Senior Software Engineer – High-Throughput Distributed Systems

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Senior software engineer with 8+ years of professional experience building and operating data-intensive, correctness-sensitive distributed systems with high concurrency and strict ordering guarantees. Specialised in event-driven ingestion pipelines, stream processing, and backend APIs where performance, fault tolerance, and operational reliability are critical.

Recent work focused on large-scale blockchain data ingestion and analytics platforms, delivering end-to-end production ownership using Rust, Python, Kafka, ClickHouse, and Postgres.

## Experience

### Data Engineering Team Lead, Vybe Network – Vancouver, BC, Canada

2025–2026

- Led a team of **3 engineers (4 including myself)** responsible for blockchain ingestion systems, analytics pipelines, and data APIs.
- Planned epics and technical priorities aligned with business OKRs, balancing feature delivery, reliability, and technical debt.
- Owned on-call operations and incident response for customer-facing systems, driving post-incident reviews and reliability improvements.
- Coordinated cross-team initiatives across data science, product, and platform engineering.
- Remained hands-on with system design while mentoring engineers and improving CI/CD and documentation standards.

### Senior Software Engineer, Vybe Network – Vancouver, BC, Canada

2023–2025

- Designed and operated event-driven, streaming ingestion pipelines processing **thousands of transactions per second** with strict ordering and correctness guarantees.
- Built Python-based live transaction and account parsers backed by Kafka, Postgres, and Kubernetes in production.
- Contributed to a Rust- and ClickHouse-based ingestion architecture, implementing concurrent, fault-tolerant pipelines with explicit backpressure and correctness-preserving offset management.
- Developed extensible protocol parsing frameworks, scaling supported protocols from single digits to **50+ protocols**.
- Built production internal and public backend APIs using FastAPI and Actix Web, including caching, access control, and rate limiting.
- Improved observability and operational insight through Prometheus and Grafana adoption.

### Senior Data Engineer, ExploreAI – Cape Town, South Africa

2021–2023

- Built highly parallelised model training and inference workflows using Spark, MLflow, and scikit-learn, reducing runtimes from days to minutes.
- Developed robust ETL pipelines with Azure Data Factory and PySpark for large-scale time-series datasets.
- Introduced data lineage, metadata capture, and governance patterns used across multiple production projects.

### Data Engineer, ExploreAI – Cape Town, South Africa

2020–2021

- Performed extensive exploratory data analysis to inform downstream analytics and modelling.
- Developed time-series anomaly detection models identifying operational issues ahead of production baselines.
- Improved performance of strategic optimisation models, reducing execution time from weeks to hours.

### Software Engineer, BridgIoT – Stellenbosch, South Africa

2017–2020

- Re-architected reporting systems to serverless AWS Lambda, reducing compute costs by **80%**.
- Designed and built containerised APIs and reporting engines using Python, Flask, Docker, ECS, and S3.
- Implemented ingestion layers for heterogeneous IoT protocols (LoRa, SIGFOX, GSM, NB-IoT) using MQTT-based architectures.
- Established CI/CD pipelines and optimised container builds, reducing deployment times by **90%**.

## Education

### Master of Engineering (MEng), Electrical and Electronic Engineering (*cum laude*),

2017

Stellenbosch University

Dissertation: Optimisation of Electric Water Heater Demand-Side Management through Smart Grid and Predictive Scheduling.

### Bachelor of Engineering (BEng), Electrical and Electronic Engineering, Stellenbosch

2015

University

## Technical Skills

**Languages:** Rust, Python, SQL

**Distributed Data Systems:** Kafka, ClickHouse, Postgres, Redis

**Workflow & Data Pipelines:** Airflow

**Backend & APIs:** Actix Web, FastAPI, Flask

**Infrastructure & Operations:** Docker, Kubernetes, CI/CD, AWS, GCP, Azure

## Languages

English (Fluent) Afrikaans (Fluent)