

NICOLAI SKOGSTAD

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Technical Skills

- **Languages:** Python, Java, JavaScript, SQL, HTML5/CSS, C, Rust, TeX
- **Developer Tools:** Git, GitHub Actions, VS Code, Vim, Emacs, Visual Basic, Microsoft Office, Docker, AWS
- **Libraries/Frameworks:** ReactJS, Node.js, Spring Boot, FastAPI, Flask, Quill, JWT Auth, .NET, CRDT, MongoDB, MySQL, PostgreSQL
- **Environments/OS:** Ubuntu, Arch Linux, Kali Linux, Kubernetes, L^AT_EX

Experience

University of Melbourne Rover Team

Software Engineer

Apr 2024

- Developed cross-platform telemetry UI with **WebAssembly**, improving refresh responsiveness by **15%**.
- Refactored core modules in **Rust**, reducing boot time by **10–15%** and improving memory use by **5%**.
- Integrated **GStreamer** into **egui (WebGL)**, enabling smooth, GPU-accelerated video feeds.
- Implemented async I/O with **Tokio**, lowering rover network latency by **10–15%**.

Melbourne Space Program

Software Engineer

Jan 2025

- Built **random forest anomaly-detection model** in **scikit-learn**, reducing sensor spillage incidents by **70%**.
- Optimised **multithreaded C++ pipelines** with **ZeroMQ**, decreasing data processing latency by **20ms**.
- Tuned **PID controller** parameters for robotic arm, improving trajectory accuracy by **20%**.
- Deployed **Prometheus + Grafana** with custom exporters, reducing downtime by **15–20%**.

EMU5 – VEX U Robotics

Software Engineer

Apr 2024

- Engineered modular **hardware–software interfaces** for robotics platforms, increasing subsystem flexibility.
- Designed real-time pipelines for **sensor fusion**, boosting responsiveness during competitions.
- Delivered prototypes with mechanical/electrical teams, shortening iteration cycles by **5–8%**.
- Optimised core logic in **C++**, improving consistency and execution speed.

Melbourne University Racing (MUR) Motorsports

Software Engineer

Jan 2024

- Developed **Python/C++ telemetry tools** for real-time car performance insights during testing.
- Built **robust automated simulation workflows**, significantly accelerating design validation by **5%**.
- Automated data collection pipelines with **Python**, saving **10+ hours per cycle** in manual effort.
- Integrated software with **embedded controllers**, enabling seamless subsystem communication.

CISSA – Computing and Information Systems Students Association

Industry Officer

Jan 2025

- Partnered with **EY, Xero, Optiver, and Atlassian** to deliver career events for **2,000+** CIS students.
- Collaborated with a **70+ member cross-functional team**, driving outreach and event delivery.

Projects

Anomaly Detection in Financial Transactions

Python Scikit-learn Flask

- Developed a **fraud detection system** using logistic regression to identify suspicious patterns in transaction data.
- Built a **feature extraction pipeline** using **pandas** and **NumPy** to preprocess and transform financial records.
- Deployed model through a **Flask API**, structured in a **modular architecture** for scalability and maintainability.
- Implemented **model evaluation and monitoring** with precision-recall metrics and automated alerts for data drift.

Cloud-Native Microservices Platform

AWS Kubernetes Docker Node.js Terraform CI/CD

- Architected and deployed a cloud-native microservices system on **AWS EKS** with **Docker** and **Kubernetes**.
- Implemented **Infrastructure as Code (IaC)** using **Terraform** for VPCs, EC2, and RDS clusters.
- Built **CI/CD pipelines** using GitHub Actions and AWS CodePipeline for automated deployments.
- Designed an **event-driven architecture** with **AWS SQS** and **Lambda** for asynchronous processing.
- Integrated **Prometheus, Grafana, and AWS CloudWatch** for monitoring and observability.

Education

University of Melbourne

Bachelor of Science, Computing and Software Systems

Jan 2023

Melbourne, VIC

Co-Curriculars: Melbourne Student Forum Delegate, Engineering Open Day Volunteer, Hackathon Participant/Organizer, Career Fair Volunteer, Open Source Contributor. Committee Member (5+ clubs), Student Representative.