

Maximus Philips Chan

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EXPERIENCE

Redback Racing

Sydney, Australia

Autonomous Vehicle Engineer

Feb 2026 - Present

- Develop a GraphSLAM mapping system using C++ and ROS2 enabling the car to take in cone positions and self-drive. This algorithm achieved a 4ms callback speed enabling the car to drive a theoretical maximum of 10m/s.
- Built CI/CD pipeline on Github utilising Github actions, Python, and Bash on a self-hosted runner to automatically calculate and evaluate accuracy of mapping system (through incremental point fitting) each time a new change is made to the mapping system. This achieved 32cm average accuracy over a 40m track.

Full-stack Software Engineer

Sept 2024 - Jan 2026

- Built a real-time telemetry system using React/Next.js and SciChart, optimizing client-server data pipelines to achieve end-to-end network latency under 500ms.
- Provisioned and managed cloud infrastructure using Terraform, defining network resources (EC2, Lambda, and API Gateway) as code to ensure consistent, repeatable deployments across environments.
- Used Postman to design, test, and validate API endpoints and network request/response behavior, identifying latency bottlenecks and ensuring reliable service-to-service communication.
- Improved backend network performance by replacing AWS DynamoDB scan operations with efficient query operations, reducing unnecessary full-table reads, lowering data transfer latency and infrastructure cost.
- Architected and implemented a real-time math evaluation engine in TypeScript, utilising a custom direct-acyclic-graph based algorithm to model complex mathematical relationships.

PROJECTS

Custom Content Management System (CMS) - Contract Work

- Built a CMS for a solar energy company capable of managing products, location, and service pages for a growing solar company using React/Next.js, Python/Flask, and PostgreSQL.
- Administered client DNS infrastructure, ensuring accurate routing of requests to designated servers/environments.
- Managing deployed virtual machines on DigitalOcean running Docker containers and provisioned databases using Supabase. With integrated CI/CD (through GitHub actions) for smooth deployment processes.

Network Address Translation (NAT) Simulator

- Implemented a fully-functional IPv4 NAT gateway in Python, handling bidirectional UDP packet translation with IP/UDP checksum recomputation, TTL management, and RFC-compliant NAT table lifecycle with configurable port pool and timeout-based eviction.
- Built a complete IP fragmentation and reassembly engine supporting configurable MTU-based packet splitting on outbound traffic and stateful fragment buffering for inbound reassembly.
- Designed a multi-threaded architecture with three concurrent threads (inbound, outbound, cleanup) using thread-safe locking to handle simultaneous bi-directional packet flows, with ICMP error generation matching RFC 792 semantics.

EDUCATION

University of New South Wales

Feb 2023 - May 2027

Bachelor of Computer Science and Commerce (Business Analytics)

Sydney, Australia

- **Relevant Coursework:** Computer Networks, Operating Systems, Programming in Rust

SKILLS

Languages : C, C++, Rust, React, Typescript, CSS, Python

Tools : Jira, Confluence, Git, Github, Figma, Docker,