Ewen MacCulloch

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EDUCATION

Macquarie University **01 2024 – 01 2028**
Bachelor of Engineering (Honours), Software Engineering — WAM: 84.23, ***Merit List Holder*** *Sydney, NSW*

PROFILE

Software Engineering student at Macquarie University, focused on **backend infrastructure, Linux systems, cloud-native tooling, APIs, and distributed systems**. Built Go and C++ systems projects involving **Kubernetes autoscaling, Linux containers, REST APIs, WebSockets, service metrics, and developer automation**. GitHub Campus Expert with experience mentoring 500+ students and supporting technical projects across GitHub, Unity, Unreal Engine, OpenCV, and itch.io deployment workflows.

CORE STRENGTHS

- Backend Engineering
- Cloud-Native Systems
- Docker & Kubernetes
- Linux Systems
- REST APIs & WebSockets
- Distributed Systems
- Automation & Tooling
- Databases & Caching
- Technical Communication

PROJECTS

Nexcast — Go, Docker, Kubernetes, Autoscaling, Metrics, HTTP API

- Improved infrastructure automation by building a **forecast-driven autoscaler** in Go, measured by replica recommendations generated from service traffic metrics and capacity settings, by converting `services.yaml` configuration into Docker and Kubernetes scaling decisions.
- Increased reliability of scaling behaviour by adding cooldown windows, scale-up and scale-down steps, and cluster-metric fallback handling, reducing unsafe scaling decisions when service or cluster data is unavailable.
- Enabled observability and external integration by exposing HTTP endpoints for node state, service state, rolling history, and per-service reconcile-cycle observations for collectors and dashboards.

Qube — Go, Linux, Containers, Linux Namespaces, cgroups v2, REST API, WebSockets

- Built a lightweight container runtime in Go using Linux namespaces and cgroups v2 to isolate workloads and control process, CPU, and memory resources.
- Implemented a Docker-like CLI and daemon supporting run, start, stop, delete, eval, snapshot, image pulls, port mappings, volumes, and environment variable configuration.
- Exposed REST API and WebSocket endpoints for programmatic container management, with `qube.yml` config launches for repeatable infrastructure workflows.

Zippy — C++, Linux, File Watching, CLI, CMake, Make

- Reduced edit-build-run friction by building a Linux file-watching CLI in C++, measured by automatic command reruns on file or directory changes, by implementing configurable watch paths and command templates.
- Improved CLI reliability by adding debounce delay, structured `Zippy.json` configuration, optional log persistence, and separated stdout/stderr output for cleaner automation and debugging workflows.

EXPERIENCE

GitHub **06 2025 – Present**
GitHub Campus Expert *NSW*

- Mentored 500+ students through technical workshops and project support, teaching GitHub version control, pull requests, collaboration workflows, and professional code etiquette.
- Supported student software, game, and computer vision projects by helping teams debug Git/GitHub workflows, deploy builds to **itch.io**, and prototype with **Unity**, **Unreal Engine**, and **OpenCV**.
- Advised student teams on repository structure, branching strategy, issue tracking, release workflows, and deployment handoff for project submissions.

LedLabs **07 2024 – 01 2025**
Assistant Electrical Engineer *Sydney, NSW*

- Produced client-ready compliance reports across photometry, colourimetry, IP, and IK testing, documenting clear pass/fail outcomes and technical risk summaries for external clients.
- Improved testing reliability by identifying measurement anomalies, calibration issues, and setup inconsistencies in collaboration with engineers and technicians.
- Converted technical measurements into concise reports and risk summaries to support external client decision-making.

Hideout2081 **10 2024 – Present**
Bartender *Sydney, NSW*

- Maintained accurate POS handling and reliable customer service during high-pressure peak shifts.

TECHNICAL SKILLS

Languages: Go, C++, C, Python, Java, JavaScript, SQL, Rust, Bash, PowerShell, x86-64 Assembly
Backend/Infrastructure: Linux, Docker, Kubernetes, NGINX, REST APIs, WebSockets, Gin, Node.js, Express.js, Bun, Git, GitHub
Systems/Data: Linux containers, distributed systems, operating systems, network security, metrics, automation, MongoDB, ScyllaDB, Redis
Frontend/Other: React, Next.js, TensorFlow, PCBs, microcontrollers

CERTIFICATIONS

• Cisco Network Defence • Cisco Networking Basics • Logistic Regression & Naive Bayes • Tree-Based Models • Neural Networks • CNNs