

MEHUL NILESH FURSULE

Sydney, Australia | Australian Citizen | +61 451 344 315 | mehulfursule@gmail.com
linkedin.com/in/mehul-fursule | github.com/Mehul72 | mehulfursule.com

SUMMARY

Software Engineer (Python, TypeScript, Java, Go) shipping production backend services: Backend Engineer at Enterprise AI Group; previously Search and LLM infrastructure at TikTok; promoted from intern to Software Developer at FUJIFILM and presented company-wide in Singapore. Builds systems that survive production: fail-closed guards, multi-region monitoring, idempotent pipelines, tests pinned to every fix. UNSW Computer Science and Commerce, graduating Nov 2026.

EXPERIENCE

Enterprise AI Group

Backend Engineer

Sydney, NSW

Sep 2026 – Present

Python, TypeScript, microservices, REST APIs, CI/CD, cloud infrastructure, AI-native development

- Ship backend services and REST APIs in Python and TypeScript on a microservices platform for enterprise clients, owning each change from design through tests and code review to production deployment via CI/CD.
- Direct AI coding agents (Claude Code, Codex) that write a large share of the team's code, and own what ships: specify the change, review and correct the output, write the tests and fix the defects before release.

TikTok

Software Development Engineer Intern

Sydney, NSW

Jun 2026 – Sep 2026

Search & LLM infrastructure / Python, Go, distributed microservices, Apache Thrift RPC

- Shipped an autonomous UI-exploration agent, adopted by **3+** teams after senior review, that maps a live admin surface into a graph of pages and actions, ranks journeys by real user click analytics and emits executable test seeds; lifted reachable-state coverage from **5.9% to 15.6%** and grew its offline self-test suite from **174 to 895** checks.
- Hardened the agent after a live run touched a production record on a shared database: rebuilt its guard fail-closed and view-only by default, blocking mutations and gating creates behind a second flag, every rule pinned by an offline test.
- Built an LLM service that turns requirements documents into executable test cases, plus **12** agent skills for the team's QA bot; both spread to other teams and now answer production data questions that once took a manual investigation.
- Recovered **50+** blocked cases in an **870+** case Python suite for a multi-region microservice deployment, tracing failures to ACL configuration, per-data-centre reachability and a client/server Apache Thrift IDL mismatch.
- Built a health-monitoring service across **7** regions that polls an operations API and pages on-call engineers via a chatbot; it has caught **5+** multi-region incidents. Fixed a bug where a total outage reported zero targets down.
- Provisioned dedicated macOS and Windows end-to-end test nodes after shared runners left runs hanging, cutting execution from **45+ minutes to a 7-minute** baseline and then **3x** faster again through parallelisation.

FUJIFILM Business Innovation Australia

Software Developer

North Ryde, NSW

Dec 2025 – Jun 2026

Java 17, Spring Boot, AWS Lambda, Snowflake, React, Python

- **Selected for a company-wide international presentation in Singapore** on the Aurora ERP FP27 upgrade, a major platform migration: cleared critical defects and restored charge-correction workflows with **zero regressions**, modernised deprecated VBScript into IDS components, and bridged legacy AS/400 programs to a web UI.
- Built the two-phase internal AI engineering system behind it: retrieval grounds each request in the knowledge base and legacy source, then an execution phase plans and runs the change, turning **a week of work into half a day**.
- Designed the REST APIs behind two production dashboards: a fleet analytics platform over a Snowflake warehouse with RSA key-pair auth on AWS, fronted in React with custom SVG visualisations including a zoomable Australia-wide device map, and a React 19 operations monitor covering **30+** enterprise systems.
- Engineered an event-driven automation platform on AWS Lambda (Java 17, Spring Boot, EventBridge) with **20+** production functions, and replaced a **19-step** manual workflow with a Python pipeline processing **300,000+** records a month via the Salesforce REST API and SFTP, cutting **a day of manual work to under 5 minutes**.

Software Engineering Intern

Jun 2025 – Dec 2025

- Automated NSW Department of Education contract management and built a Deed of Novation compliance tool, cutting manual processing up to **40%** and document turnaround **30%**, with real-time safety alerting across **15+** departments.

EDUCATION

Bachelor of Commerce / Computer Science, University of New South Wales (UNSW)

Expected Nov 2026

Coursework: Data Structures & Algorithms, Algorithm Design, Computer Systems, Software Engineering, Databases, AI

PROJECTS

HookRelay: Multi-Tenant Webhook Delivery Platform | github.com/Mehul72/hookrelay 2026
Go, Kafka, PostgreSQL, Redis, Docker Compose, k6

- Built a webhook delivery platform (HMAC signing, retries, distributed rate limiting, dead letters, replay) benchmarked at a median **1,888 events/s** ingestion and **164 deliveries/s**: event, delivery and outbox rows commit in one PostgreSQL transaction, publishers scale with `FOR UPDATE SKIP LOCKED`, and Kafka offsets commit only after durable writes.
- Made crashes recoverable with leased, owner-fenced delivery claims and outbox-routed retries with jittered backoff, then fault-tested crashes at three points, lease-expiry races, duplicate claims and Kafka, Redis and Postgres outages.

ContractGuard: Breaking-Change Detection for API Contracts | github.com/Mehul72/contract-guard 2026
Go, GraphQL (gqlgen), MongoDB, Redis, Next.js, TypeScript, OpenTelemetry

- Built a GitHub App that blocks breaking API changes before merge: semantic diff engines for OpenAPI 3.0/3.1 and GraphQL SDL grade each change by severity (a nullability change is breaking on a request body, compatible on a response) and diff **1,000-path** documents in **85 ms** at p50.
- Enforced multi-tenant isolation by threading an authenticated principal through every resolver and scoping every query to the caller's installations; made webhook ingestion idempotent with a unique-indexed MongoDB transaction per delivery, so provider retries fail on duplicate key.

Nomi: On-Device LLM Assistant for macOS | github.com/Mehul72/nomi 2026
Swift 6, SwiftUI/AppKit, MLX, Accessibility API, ScreenCaptureKit, SQLite FTS5, Model Context Protocol

- Built a macOS assistant in the MacBook notch that runs a **14B** model locally on Apple Silicon via MLX with no API keys or cloud inference, plus a resumable, SHA-256-verified downloader and a manager that unloads under memory pressure.
- Implemented the agent loop end to end: schema-validated streamed tool calls, risk-based confirmation, time and step budgets, and tools for the filesystem, screen OCR, Accessibility API automation, EventKit and any MCP server; hybrid cosine and BM25 retrieval over SQLite FTS5. **167** tests across **38** suites.

Kerbside NSW: On-Device Parking Sign Reader | [App Store](#) 2026
Swift 6, SwiftUI, Vision, WidgetKit, ActivityKit, Swift Testing

- Published a solo iOS app to the App Store that saves where a car is parked and reads NSW parking signs entirely on device: **zero network calls**, no analytics or third-party SDKs, and an empty privacy manifest at review.
- Built a two-pass Vision pipeline (OCR finds the pole, rectangle detection and colour sampling split stacked plates), using the ML model only where a deterministic parser fails, with **six** architectural invariants enforced as build-failing tests.

Also built: [Crossbar](#), a VS Code extension running two coding-agent runtimes in one conversation; [Switchboard](#), a macOS menu bar audio router shipped as a signed DMG over **five** releases; [iOS Location Simulator](#), a Python tool overriding an iPhone's GPS over the iOS 17 RemoteXPC tunnel; and **30 portable engineering skills** installable with one command.

TECHNICAL SKILLS

Languages: Python, Java, Go, Swift, TypeScript, JavaScript, C, C++, C#, SQL

Backend & Distributed Systems: Spring Boot, FastAPI, Node.js, .NET, REST and GraphQL API design, OpenAPI, microservices, Apache Thrift RPC, Kafka, event-driven architecture, transactional outbox, idempotency, multi-tenant authorisation, concurrency, system design

Cloud, Data & Tooling: AWS (Lambda, EventBridge, S3, API Gateway), Docker, CI/CD, GitHub Actions, Git, Linux, Agile/Scrum, OpenTelemetry, PostgreSQL, Snowflake, MongoDB, Redis, SQLite, JPA/Hibernate

Client: SwiftUI, AppKit, Vision, WidgetKit, Core Audio, Accessibility API, App Store release, React 19, Material UI, Next.js, Tailwind CSS, VS Code Extension API

AI & Testing: AI agents, retrieval augmented generation (RAG), Model Context Protocol (MCP), AI-assisted development (Claude Code, Codex), unit, integration and end-to-end testing, pytest, Vitest, Swift Testing, Playwright, fault injection

LEADERSHIP & CERTIFICATIONS

Events Subcommittee, UNSW Indian Society (Jan 2025 – Dec 2025). Organised events for **500+** attendees, presented to **100+**, secured sponsor funding and grew attendance **30%** year on year.

Peer Mentor, UNSW Business Society (Feb – May 2025). Weekly academic and careers sessions for a first-year cohort.

Administration Assistant, Australian Electoral Commission (Aug 2023 – Jun 2025). Led polling teams through the 2023 referendum and was selected for a sensitive electoral-integrity project.

Certifications: Commonwealth Bank Software Engineering Job Simulation, Deloitte Australia Technology Job Simulation, Introduction to Generative AI, UNSW Leadership Foundations Program.