HSING-WEI (CYNWELL) LIAO

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Profile

Graduate/Junior Software Engineer in Melbourne, completing a Master of IT (expected Aug 2026). Built and shipped production backend systems and **event-driven pipelines** (webhooks, queues/outbox, retries, observability). Strong in **Java/Spring Boot**, **Python/Django** and **TypeScript/Node.js**; hands-on **Cloud + IaC** (GCP, AWS, Docker, CI/CD). Interested in backend roles and LLM-enabled systems where reliability and performance matter.

Technical Skills

Languages: Java, Python, JavaScript, TypeScript, SQL
Backend: Spring Boot, Spring Security, Django, Django REST framework, Flask, Node.js
Frontend: React, Next.js, HTML, CSS
Cloud/DevOps: GCP (Cloud Run, Pub/Sub), AWS (EC2, RDS, S3, Lambda), Terraform, Docker, Git, Linux
Datastores: PostgreSQL/PostGIS/pgvector, MySQL, Firestore, Redis, Elasticsearch
Testing/Observability: JUnit 5, pytest, Testcontainers, OpenTelemetry, Prometheus/Micrometer, LangSmith
ML/LLMs: Ollama, Gemini, LangChain/LangGraph, Hugging Face Transformers

Education

The University of Melbourne   Melbourne, VIC, Australia
Master of Information Technology (Computing)   Jul. 2024 – Aug. 2026
- Mobile Computing Systems Programming – ParkPie (**Best Project of the Year**, formally commended by Prof. Vassilis Kostakos for Outstanding Idea and Implementation)
- Led cross-functional teams in 2025 FEIT Hackathon (zoomies, Finalists) and 2024 FEIT Hackathon (levelfield.ai, Finalists), coordinating task delegation, design decisions, and demos under 3-day deadlines

Harvard University   Cambridge, MA, USA
Short-term Exchange, Project Management   Jul. 2025 – Aug. 2025
- Awarded Engineering Exchange Scholarship issued by FEIT, University of Melbourne

Queensland University of Technology (QUT)   Brisbane, QLD, Australia
Bachelor of Business (International Business)   Jul. 2020 – Aug. 2024
- QUT Executive Dean's Commendation for Academic Excellence issued by Executive Dean, Jul. 2024
- Recipient of Ministry of Education (Taiwan) Study Abroad Scholarship
- Dual bachelor's degree program with Bachelor of Business Administration at FCU (GPA 4.0)

Experience

AI Software Engineer Intern   Nov. 2025 – Present
Startupbootcamp   Melbourne, VIC, Australia
- Collaborated in a 5-person **Agile** team following **SDLC**, pairing with the engineering manager on backend, delivering Next.js Server Actions and webhook pipelines to synchronise Firestore and Airtable with idempotency
- Engineered an **event-driven RAG pipeline** with Gemini processing **100+ startup datasets**, applying **staged LLM routing** to balance cost/performance and JSON repair strategies to guarantee structured output
- Proactively identified a **dual-write race condition** across **2 datastores** and proposed the **Transactional outbox pattern** with atomic enqueue, lease-based claiming, exponential backoff, and dead-letter queues
- Independently proposed and implemented a latency optimisation that reduced founder submission time by ~**66%** (3x boost) by **decoupling Airtable writes** via Next.js `after()` and async background processors
- Went beyond assigned scope to introduce **3 operational safety controls** (opportunistic job draining, manual replay endpoints, and Vercel cron recovery), ensuring **zero data-loss** resilience during low-traffic periods
- Partnered with non-technical team members to build React-based Founder View (**1,000+ startups**), Investor Dashboard (**100+ investors**), and Admin Console for managing AI-generated portfolio data pipelines

Data Analytics Teaching Assistant   Oct. 2025 – Present
TibaMe   Remote
- Mentored 10+ learners per cohort in data analytics and visualisation (Power BI) and SQL (Microsoft SQL Server), providing one-on-one guidance to accelerate comprehension of complex topics
- Identified recurring learner pain points and developed targeted troubleshooting walkthroughs for data wrangling, dashboard design, and analytics workflows

Front of House Staff   Nov. 2023 – Jul. 2024
Jackpot Dining   Brisbane, QLD, Australia
- Coordinated with a team of 10+ staff across front-of-house and kitchen during peak service periods, building strong communication and collaborative problem-solving skills under pressure

Projects

ParkPie Landing Website | *TypeScript, Next.js 16, React 19, Tailwind CSS, Vitest* | <u>Live</u> Nov. 2025 – Present
- Architected a high-performance marketing platform using Next.js 16 and React 19, achieving a **100% Lighthouse performance score** via zero-layout-shift font loading, edge-cached content, and semantic HTML
- Engineered a cost-effective "Headless CMS" solution using Airtable and Incremental Static Regeneration (ISR), enabling non-technical teams to manage content while serving pages with **sub-millisecond latency**
- Secured public infrastructure with a **defence-in-depth** strategy, combining IP-based fixed-window rate limiting, honeypot fields, and strict Zod schema validation to eliminate automated abuse vectors
- **Mitigated critical React2Shell exposure (CVE-2025-55182)** by orchestrating a zero-downtime upgrade to Next.js 16 and enforcing stability via automated regression testing
- Orchestrated automated SEO pipelines that dynamically generate sitemaps, RSS feeds, and Open Graph metadata from CMS content, ensuring real-time indexability without manual deployments

cheap.guide App Backend | *Java, Spring Boot, MySQL, Terraform, GCP* | <u>Website</u> Jul. 2025 – Present
- Served as Principal Backend Engineer & Solution Architect in a 4-person cross-functional team, delivering a Spring Boot backend with REST APIs for auth, posts, geospatial search, AI moderation, and notifications
- Integrated Firebase Auth (JWT) with role-based access control (RBAC), enforcing authorisation across **30+ protected endpoints** serving **3 user roles**
- Researched and proposed replacing a Redis sidecar with Caffeine in-memory caching, eliminating **~$400/year** in infrastructure overhead while achieving **sub-millisecond data retrieval**
- Set up async workflows with Google Pub/Sub (handling **16 concurrent threads**) and provisioned GCP infrastructure via Terraform, reducing deployment time with verifiable Infrastructure-as-Code
- Established **CI/CD** with GitHub Actions utilising multi-stage Docker builds (reducing image size by ~40%) and ensured production observability with OpenTelemetry tracing and structured logging

ParkPie App Backend | *Python, Django, PostgreSQL, LangChain, Docker, AWS* | <u>GitHub</u> Jul. 2025 – Present
- Led backend and AI development as AI & Backend Lead in a 6-person **Agile** co-founding team, driving **SDLC** from design to deployment for a **geospatial-first** Django + **PostGIS** backend with optimised spatial queries
- Pioneered an agentic AI pipeline with LangGraph and LangChain to orchestrate multi-step reasoning for parking sign interpretation, innovating a hybrid cloud/local inference approach with Google Gemini and Ollama
- Deployed a scalable vector database with **pgvector** in PostgreSQL 17 to power semantic search for Retrieval-Augmented Generation (RAG) on parking regulations
- Configured **CI/CD** with Docker Compose and GitHub Actions, enforcing **Test-driven development (TDD)** and quality gates with strict type-checking (mypy), linting (ruff), and automated test suites
- Added comprehensive observability with LangSmith for LLM tracing and OpenTelemetry + the LGTM stack (Loki, Grafana, Tempo, Mimir) to monitor complex agentic workflows and API performance

Social Media Analytics System | *Python, Flask, Kubernetes, Elasticsearch, Redis* | <u>Demo</u> Apr. 2025 – May 2025
- Spearheaded a 5-person team to deliver a cloud-native analytics system for the 2025 Australian federal election, coordinating sprint planning, code reviews, and cross-module integration (University of Melbourne)
- Developed a scalable Reddit harvester/processor with Fission, ingesting and normalising **168,000+ posts** in real-time while managing API rate limits
- Built a comment-tree collector to enrich sentiment and engagement analysis; exposed data via a REST API backed by Elasticsearch
- Created interactive Jupyter Notebook visualisations for filtering and trend analysis; presented findings to 400+ students in class

Licenses & Certifications

AWS Certified Solutions Architect – Associate Jan. 2026 – Jan. 2029
Skills: Amazon Web Services (AWS), Solution Architecture

Google IT Automation with Python Specialization Certificate Jan. 2025
Skills: Python, Linux, Git, Software Testing, CI/CD, Google Cloud Platform (GCP)