Houston Karnen

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PROFESSIONAL SUMMARY

Graduate Master of IT (Distributed Computing) student passionate in backend and infrastructure. Two years' experience across full-stack web, distributed systems, cloud computing, and DevOps. Comfortable from design to deployment – whether it's a React front-end, Node back-end, or Terraform pipeline. Looking for a graduate software-engineering / infrastructure role where I can build scalable services and keep learning.

EDUCATION – University of Melbourne

Master of Information Technology - Distributed Computing (Distinction) _Jan 2024 – July 2025_
Key Areas: Distributed Algorihms & Systems, Cluster & Cloud Computing

Bachelor of Science - Computing & Software Systems _Jan 2021 – Dec 2023_
Key Areas: Algorithms, Databases, Software Design, Cybersecurity

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, TypeScript, C, SQL
Frameworks & Libraries: React, Tailwind, Node.js, Express, Flask, Spring Boot, XState, MPI
Cloud & Infrastructure: AWS (EC2, S3, IAM, VPC), Azure (App Service, Storage), Kubernetes, Docker, Fission, OpenStack,
IaC & DevOps: Terraform, Git, GitHub Actions, SLURM, CI/CD, Agile
Data& ML: PostgreSQL, MySQL, MongoDB, Elasticsearch, LangChain, HuggingFace
Tools: Jira, Confluence, Postman, Jupyter, Unix / Linux CLI

CERTIFICATIONS & ACHIEVEMENTS

- AWS Certified Cloud Practitioner _Ongoing_
- Microsoft Certified: Azure Fundamentals (AZ-900) _2025_
- Melbourne Employability Accelerator _2023_
- Melbourne International Undergraduate Scholarship _2021_

EXPERIENCE

Full Stack Developer _Mar 2025 – July 2025_
Clinical Reasoning Simulations – University of Melbourne x University of Eastern Finland

- Developed deterministic simulation engine using **YAML + XState v5**, modelling medical scenarios in real time and serving >50 concurrent learners
- Integrated **LangChain + LLaMA 3** chatbot; 95% accuracy mapping multilingual text to clinical actions
- Exposed **RESTful APIs** on **Node.js** secured with **JWT** authentication, with 80% **Jest** coverage
- Added **xAPI** logging on **PostgreSQL**; wrote onboarding docs and Postman suites

Intern / Full Stack Developer _June 2024 – Dec 2024_
Queue Solutions

- Refactored legacy **jQuery** modules into **React + TypeScript**, cutting 30 bundle size and reducing bugs
- Built motivational-modelling graph tool with **MaxGraph** now used by 200+ UniMelb IT capstone students
- Practised two-week Scrum sprints; led backlog refinement and demo sessions with client

Co-Founder / Full Stack Developer
StudyGenie – EdTech   *Jan 2024 – Dec 2024*
- Bootstrapped Azure-funded SaaS that parses course materials and auto-generates personalized quizzes via **Azure OpenAI**
- Deployed **Flask REST API + React dashboard** on **Azure App** Services; data stored in **Azure Storage**
- Integrated **Google OAuth2** for role-based access; onboarded 50+ pilot users

Web Developer   *July 2023 – Oct 2023*
Longbeach Community Centre
- Implemented **MERN**-based portal that digitized class attendance and tutor / admin controls; eliminated 100% paper records for 20+ weekly classes

SELECTED PROJECTS

DevOps / Full Stack Developer – AWS Portfolio Deployment (Personal) *July 2025 – Aug 2025*
- Containerized **React + TypeScript** e-portfolio in **Docker** and served it on Amazon Linux 2023
- Provisioned **VPC, public subnet, IGW, security group, EC2 t3.micro** via **Terraform**; first-boot setup (Docker install + repo clone) automated with cloud-init user-data

NLP Data Engineer – Fact-Checking Pipeline   *Apr 2025 – June 2025*
- Two-stage retrieval system using Sentence-BERT + FAISS for semantic indexing of 1M+ documents; cross-encoder reranking and dynamic filtering boosted recall by 18%
- Chained Google **Gemma-3-1B-it** for claim classification; authored technical report

Java Developer – Distributed Chat Application   *Apr 2025 – June 2025*
- Peer-to-peer chat application with Bully leader-election and heartbeat failure detection, recovering in ~1s across 10 nodes; achieved 98%
- Designed Swing GUI and modular managers for dynamic joins, routing, graceful shutdowns

Devops / Cloud Engineer – Traffic & Air Quality Analytics   *Apr 2024 – June 2024*
- Built serverless ingest on **Kubernetes + Fission – OpenStack MRC**; harvested VicRoads & BoM APIs hourly into **Elasticsearch**
- Visualized PM2.5 vs congestion in Jupyter; produced high-distinction report

Data Engineer – SPARTAN HPC Cluster   *Mar 2024 – Apr 2024*
- Parallel-processed 120GB JSON Twitter dataset using **mpi4py** and **ijson** with round-robin scheduler; **3x faster** on 8 cores vs 1
- Automated benchmarking and job scheduling via SLURM (1N1C, 1N8C, 2N8C)

Java Developer – Collaborative Whiteboard   *Mar 2024 – May 2024*
- Multithreaded server coordinating drawing & chat for 10+ clients
- Added save/load, permission management, and network fault tolerance; scored 97%

Activities
- CISSA (Computing & Information Systems Students Association)
- UniMelb Information Security Club
- UniMelb Rover Team – Software Engineering team
- Chess club
- Anime & Manga Club

Languages
- English (Fluent)
- Indonesian (Native)
- Chinese (Intermediate)

References available upon request