

HARVEY J. HOULAHAN

Applied ML / Data Systems Engineer | NYC & Australian Citizen

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Portfolio: www.hjhportfolio.com



QR Portfolio

Australian engineer from Australia's cotton heartland, now pioneering traceability tech trusted by global giants like Target and Cargill. At FibreTrace, my frontline industry knowledge shapes luminescent-pigment solutions that track cotton throughout, blending real-time provenance with AI-powered analytics to spot supply bottlenecks and drive scalable, sustainable production. I also am employed by Friday Technologies, an Apple-recognized consultancy, crafting iOS, visionOS, and macOS innovations with Core ML and generative models. This fusion of rural roots and computer engineering expertise equips me to connect real-world challenges with tech that delivers transparency and impact at scale.

ACADEMIC FIELDS

Bachelor of Medicine, Bachelor of Surgery (MBBS)

James Cook University, Townsville

Direct Admittance 2022

- (Deferred after 6 months)

B.S. in Advanced Computer Science

Monash University, Melbourne

Expected Graduation, Nov 2025

- **Concentrations:** Artificial Intelligence/Machine Learning, Advanced Algorithms and Data Structures
- **GPA:** 3.6/4.00, *current High Distinction*
- **Related Coursework:** Data Structures & Algorithms, Neural Networks & Deep Learning, Computer Architecture, Data Science, Machine Learning, Artificial Intelligence, Object-Oriented Programming, Statistics & Applications

EXPERIENCE

Friday Technologies (Recognized Apple Consultancy)

Albert Park, Melbourne

AI/Backend Engineer (Contract/On-Site/Hybrid)

March 2025 –

Current

- Led innovation initiatives recognized by Apple, leveraging Core ML, visionOS, and generative models to create cutting-edge prototypes and spatial-computing demos.
- Architected a cloud-native healthcare platform, designed scalable back-end systems, and ML infrastructure to support real-time diagnostics and remote monitoring.
- Designed generative-AI and LLM-powered prototypes for iOS and backend systems, including semantic utilities, agent-style workflows, and rapid evaluation loops for ML-driven features.

Step One Clothing Limited

Barangaroo, Sydney

Software Engineer/Web Developer (Contract/Hybrid)

August 2025 – Current

- Engineered an NLP-driven semantic search engine mapping natural-language queries to structured product metadata, improving discoverability and conversion.
- Made an accessible navigation system with analytics and editorial feedback, reducing change lead time and errors.
- Built a premium Shopify mega-menu and CMS components with Liquid, enabling merchandising teams to edit content autonomously.

FibreTrace iOS App

Moree, NSW

iOS Engineer In development

October 2024 - Current

- Conceived and pitched a native SwiftUI product-passport app for FibreTrace's world-first fibre-level verification tech. This product was designed in challenging existing consumerism, manufacturing, and transparency for a greener, circular economy.
- Built the app end-to-end: QR/NFC scan, signed deep link of the journey, Story & Impact, offline-first caching, haptics, and App Clip entry. Also features role-based UI (Consumer vs Brand), certificates and a clean API contract ready for shipping.
- Integrated predictive modeling and structured data pipelines enabling chain-of-custody analytics, anomaly detection, and secure inference flows.

Australian Energy Market Operator (AEMO)

Software Engineer Intern Casual
2024

CBD, Melbourne

Oct 2023, Aug

- Built high-throughput data ingestion and transformation pipelines across terabyte-scale energy datasets, contributing to real-time analytics used for national grid operations.
- Engineered high-throughput C parsers for market/telemetry files (efficient binary ingest, streaming, mmap-based I/O), with Python bindings to feed ETL thus reducing ingest/computation by 35%.
- Delivered C# micro-services to interface with AEMO's MMS schemas/APIs and upstream SQL stores accelerating daily reporting and reliability tooling for ST/MT PASA workflows.

Townsville Grammar School

Australia

Residential Tutor/Coach
2022

Townsville,

Jan 2022 – Dec

- Held responsibility for the care and supervision of boys from Year 7 to 12, ensuring a safe and supportive residential environment.
- Coordinated a comprehensive range of academic and extracurricular activities—including tutoring sessions, group study, and one-on-one mentoring—to support student success.
- Actively coached sports teams, including rugby and swimming, promoting teamwork, discipline, and a healthy lifestyle.
- Collaborated with educational staff to develop and implement programs that balanced academic rigor with personal development and well-being.

PROJECTS

Modaics

Melbourne, Australia

- Reinvented Depop showcasing emerging brands to challenge fast fashion front; this involved hosting workshops, classes, pop-ups through a social media driven experience which in turn curated a community across Sydney, Melbourne and Brisbane.
- Currently in IOS development of App in partnership with Royal Melbourne Institute of Technology Accelerator Program.

AgriIQ (WIP)

Moree, Australia

- Prototyping a world-first smart ear-tag capable of predicting pregnancies within 7 days (94% accuracy), generating continuous health indices, and supporting selective-breeding insights across multispecies herds.
- Developed ML pipelines for early detection and predictive insights, aligning with LLM-era agentic monitoring patterns

ACTIVITIES AND LEADERSHIP

Monash University

Teaching Assistant for FIT2014 (Algorithms and Data Structures)

Melbourne, Australia

Aug 2024 – Nov 2024

University College, University of Melbourne

Melbourne, Australia

Social Executive

Aug 2023 – Dec

2023

- Voted executive of 300+ member college hosted social events, promote alumni and work with UMelb board of execs.

The Southport School

Southport, Gold

Coast

Foundation Prefect, Senior Dux of Boarding, Cohort 2021 Proxime Accessit Dux

December 2021

SKILLS

AI / LLM Systems: RAG fundamentals, data pipelines, embedding search, semantic search, agentic systems, vector databases (FAISS/Pinecone familiarity), prompt engineering, model evaluation, agent-style workflows, on-device ML (CoreML).

Programming: Python/PyTorch, JavaScript/TypeScript/Node backend, Swift/SwiftUI, C/C++, Java, Rust (familiar), SQL.

Cloud & Data Engineering: AWS (Lambda, S3, DynamoDB, API Gateway), ETL/ELT pipelines, data modeling, distributed systems, API design, real-time data processing, Snowflake-style analytics workflows.

Full-Stack & Frontend: React, React Native, Next.js, Node.js, HTML/CSS.

Tools & Infra: Docker, Git, Jupyter, CoreML, VSCode, PyCharm, Xcode, CI/CD workflows, Agile.