

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)	CBD, Melbourne
<i>Software Engineer Intern Casual</i>	<i>Oct 2023, Aug</i>
2024	
<ul style="list-style-type: none"> • 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	Townsville,
Australia	
<i>Residential Tutor/Coach</i>	<i>Jan 2022 – Dec</i>
2022	
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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	Melbourne, Australia
<i>Teaching Assistant for FIT2014 (Algorithms and Data Structures)</i>	<i>Aug 2024 – Nov 2024</i>
University College, University of Melbourne	Melbourne, Australia
<i>Social Executive</i>	<i>Aug 2023 – Dec</i>
2023	
<ul style="list-style-type: none"> - Voted executive of 300+ member college hosted social events, promote alumni and work with UMELB board of execs. 	
The Southport School	Southport, Gold Coast
<i>Foundation Prefect, Senior Dux of Boarding, Cohort 2021 Proxime Accessit Dux</i>	<i>December 2021</i>
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.	