

HARVEY J. HOULAHAN

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Australian engineer raised in renowned cotton farming belt, now building world-first traceability tech that global brands rely on. Firsthand experience in the cotton industry directly informs my work at FibreTrace, where we develop luminescent-pigment product-passport technology used by companies like Target and Cargill to trace cotton across the supply chain. By combining real-time provenance with AI-driven predictive analytics, we help partners anticipate supply-chain bottlenecks and ensure transparent, sustainable production at scale. I currently also engineer casually for an Apple recognized consultancy, Friday Technologies. As a team, we innovate in iOS, VisionOS and MacOS applications. The amalgamation of farming experience and academic pursuit of computer engineering lets me bridge industry and tech to deliver transparent, sustainable solutions.

ACADEMIC FIELDS

Bachelor of Medicine, Bachelor of Surgery (MBBS)
Direct Admittance 2022

James Cook University, Townsville

- (Deferred after 6 months)

B.S. in Advanced Computer Science
Expected Graduation, Nov 2025

Monash University, Melbourne

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

Albert Park, Melbourne
March 2025 –

- 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

Software Engineer/Web Developer (Contract/Hybrid)

Barangaroo, Sydney
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

iOS Engineer In development

Moree, NSW
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

Software Engineer Intern Casual
2024

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

Townsville,

Residential Tutor/Coach
2022

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.

AgrIQ (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

Melbourne, Australia

Teaching Assistant for FIT2014 (Algorithms and Data Structures)

Aug 2024 – Nov 2024

University College, University of Melbourne

Melbourne, Australia

Social Executive
2023

Aug 2023 – Dec

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

The Southport School
Coast

Southport, Gold

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

December 2021

SKILLS

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

Programming: Python, JavaScript/TypeScript, 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.