

# HARVEY J. HOULAHAN

Manhattan, New York NY

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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)**

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

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**

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

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**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

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**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

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**  
Coast

Southport, Gold

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

December 2021

## SKILLS

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**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.