

# DANIEL HUSSEY

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## PROFILE

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ML engineer with five years of production experience across neurotech, satellite systems, and environmental monitoring, plus a hardware background from a Mechatronics & Space Engineering honours degree. Continuing independent work on LLM evaluation and learned manipulation alongside a medical degree at the University of Sydney. Looking for roles at frontier AI and robotics labs working on capable systems and labor automation.

## CURRENT (2024 – Present)

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### MD Candidate (Northern Clinical School)

2024 – Present

*University of Sydney*

- Clinical rotations across acute care, paediatrics, psychiatry, and general practice
- Independent technical work alongside studies (see Selected Projects)

### BI & Data Engineering Consultant (part-time)

2024 – Present

*Analytic Solutions Australia*

- Power BI dashboards, Databricks/Hive Metastore data pipelines, and ETL workflows on Azure for SME clients

## ENGINEERING EXPERIENCE

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### Software Engineer → Senior Software Engineer

Mar 2023 – May 2024

*Corehesion — Digital Environmental Monitoring*

- Promoted to Senior within 7 months. Led data-intensive backend workflows for a digital air sampling product
- Cut report-generation latency by replacing on-demand PDF generation with progressive caching on data change, alongside query optimisation and database-level caching
- Owned full feature lifecycle from requirements through production deployment in cloud environments

### Data Scientist — Neuroimaging & Clinical ML

Nov 2020 – Oct 2021

*Omniscient Neurotechnology*

- Applied ML to neurological data in collaboration with hospitals and universities; XGBoost, deep learning, skull stripping, brain region parcellation, SMOTE for class balancing, SHAP for interpretability, distributed compute on Ray/AWS
- Built internal experiment-tracking and run-observability tooling to accelerate the full ML loop — feature selection across questionnaires and metrics, parcellation decoding, run logging with embedded SHAP and importance plots — compressing time from research brief to reportable results from ~4 weeks to 1–2 weeks

### Student Engineer — Satellite Systems

Jul 2019 – Jan 2020

*CUAVA (USyd Space Research)*

- Designed and implemented a satellite radiation counter payload that shipped to low Earth orbit on CUAVA-1 (launched by SpaceX, deployed from the ISS by JAXA), counting ionising radiation events across five on-board sensors
- Firmware on a sleeping microcontroller woken by hardware interrupts on each particle event (handling simultaneous edges across sensors without dropped counts); reviewed the PCB design, implemented I2C comms to the satellite's on-board computer, and ran end-to-end verification testing

### Intern → Sales Engineer (part-time)

2017 – 2018

*Daisee — NLP / Speech Analytics*

- Technical pre-sales and integration support at an NLP company building speech analytics products
- Early exposure to NLP fundamentals (n-gram language models), computer vision transfer learning (experimenting with vision models trained on MRI applied to CT), and cloud provisioning with Docker

## SELECTED PROJECTS

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### Action Chunking Transformer — Robotic Manipulation 2025

*Independent implementation*

- Reproduced and extended the ACT architecture for learned manipulation policies

### SpecGuard-Chem — LLM Safety Evaluation for Medicinal Chemistry 2025

*MD research project, supervised by Prof. Thomas Balle (USyd)*

- Evaluation framework probing LLM behaviour on medicinal-chemistry safety queries. Submitted to NeurIPS '26

### Senvaro — AI Clinical Documentation Tool 2024 – Present

*Independent product (senvaro.com/demo)*

- End-to-end clinical documentation workflow: in-browser consultation recording, Australian-English medical transcription, and structured note generation (consultation, progress, discharge formats)
- In-browser transcription via WebGPU and ONNX runtime for low-latency, privacy-preserving inference; Azure Speech Services as a server-side fallback
- ASP.NET Core backend on Azure Container Apps, Vercel-hosted frontend, LLM integration for note generation; Australian-hosted data, encrypted storage and transit, audit-ready review workflows

## EDUCATION

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### Bachelor of Engineering Honours (Mechatronics, Space) — Advanced Program 2017 – 2022

*University of Sydney*

- Distinction average. Vice Chancellor's Award for academic excellence. Albert Scholarship
- Honours thesis: 3D hand gesture recognition using Doppler RADAR and RNN/LSTM networks. 91.7% classification accuracy. Grade: 82/100
- Key coursework: Machine Learning, Optimisation & Control Theory, Digital Signal Processing, Biomechatronics
- Industry placement (2022): full-stack and IoT firmware testing for a construction-tech SaaS platform

## TECHNICAL SKILLS

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ML/AI: Deep learning, transformers, LLMs, CNNs, RNNs/LSTMs, NLP, computer vision, XGBoost, SHAP

Frameworks: PyTorch, scikit-learn, Ray

Languages: Python, C#, TypeScript, embedded C

Infrastructure: AWS, Azure, Docker, Databricks, experiment tracking

Web: ASP.NET Core, Next.js, React

## AWARDS & LEADERSHIP

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- Albert Scholarship — community and academic achievement
- Vice Chancellor's Award, University of Sydney
- Engineers Without Borders National Finalist (2017)
- Kokoda Award for Leadership, St Paul's College
- National-level debating; inter-college public speaking