Lucas Barbosa

Founder · SWE · Research Engineer

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Mission & Principles

Intelligence at scale needs computation, data, and rigour. I strongly believe that physics and economics bound them; however, ingenuity makes them abundant. So I reject narrow specialization and as a generalist own the vertical stack end-to-end, from data and models to the networks and clients that serve them. I build reproducible training and reliable inference paths; owning the path buys latency, observability, and safety. The world can benefit from more scientific thinkers. Writing and proofs: lucasbarbosa.net/posts↪.

Experience

UNSW – Honours Researcher **2024 – 2025**

Full-time – Sydney, AU

- Post-trained SOTA VLA policies using online PPO, TD3 and SAC on OOD manipulation tasks, **improving average task success by ∼20%**.
- Fine-tuned GR00T-N1.5 with LoRA on a single RTX 5080 and integrated into a low-cost tabletop arm demo.
- 3D-printed a tabletop teleoperation manipulator for data collection and evaluation.

PwC AI – Software Engineer, Tech Lead **2022 – 2025**

Full-time, part-time – Sydney, AU

- Led 6-person team to publish a peer-reviewed trust-verification system for deepfakes; shipped game-theoretic incentive model, principal author of the technical whitepaper, and directed prototype UI/UX.
- Technical lead on a flagship Wage Remediation platform delivered on Azure in under six weeks, integrating time-series MSSQL and ETL pipelines; **multi-million-dollar incremental cost savings**, CI/CD anomaly detector scanning 100k+ payroll records, and coordinated cross-functional launch.
- Architected SmartAudit a 10k MAU, RabbitMQ-driven audit platform handling 5k msgs/s across 40+ microservices in 14 countries; Cut frontend memory 80% with Solid and React v8 optimisations enabling 100-page PDFs on low-spec browsers.
- Built fault-tolerant graph-purge service (1 TB/month) reducing Postgres latency 40% and load by over 80%.
- Fast-tracked to Senior Consultant - **top 1% youngest at firm**.

Progue – Software Engineer, Tech Lead **2021 – 2022**

Part-time – Sydney, AU

- Built DOCX data-lake and ms latency vector search API **3× accounting workflow speed**.
- Deployed full-stack platform with React, Django and MongoDB on K8s for high availability and scale.

Cercle – Software Engineer Intern **2021 – 2022**

Inter/part-time – Sydney, AU

- Launched serverless real-time QR-scanning platform (Lambda, API Gateway, DynamoDB) ingesting 500+ scans/day; cut scan errors 40% and drove product roadmap for funding round.

Lattice – Founder, Software Engineer **2015 – 2022**

Full-time, part-time – Sydney AU

- Delivered bespoke software to 5+ clients at age 16 whilst still ranking in the **top 3% academically**.

Publications

Barbosa, L., Kirshner, S., Kopel, R., Lim, E.T.K. and Pagram, T. (2025), "Toward trustworthy content: the role of challengers, juries and veracity bonds in digital media platforms", Industrial Management & Data Systems, Vol. ahead-of-print No. ahead-of-print. [Paper↪] [Website↪]

Barbosa, L., Kirshner, S., Kopel, R., Lim, E.T.K. and Pagram, T., (2025). "A New Incentive Model For Content Trust", arXiv:2507.09972 [Paper↪]

Awards and Honours

- 99/100 in Data Structures and Algorithms (COMP2521)
- 99.1/100 in Honours Thesis A (MMAN4951)
- UNIHACK '24↪ hackathon winner
- Technion Yom Ha'Atzmaut '25↪ hackathon winner
- Oakhill College Provincial's Excellence Award (top 1% of students in academics and leadership).

Education

UNSW – B. Eng (Hons) and CS

- Developed online RL adapters for vision language action transformers, letting low-cost robot arms learn manipulation skills from live teleoperation.
- Investigated tungsten-based composite shielding for fusion reactors, running Gadi HPC LAMMPS simulations that projected 30% thinner neutron shields.
- HD WAM average on core computing subjects.

Oakhill College – HSC

- ATAR: 96.80[1]; House captain.
- Co-Founder of XYZ Mathematics club (first student run academic club)
- NCSS Summer School '18
- UNSW HS1917 '17; ProgComp Distinction '17

Technical Skills

Programming Languages	C/C++, Rust, Python, JavaScript, TypeScript, SQL, PHP, Java, MIPS
AI/ML	PyTorch, XGBoost, JAX, RL, CNNs, LLMs, VLMs, VLAs
Control Systems	PID, Kalman Filters, LTI Systems, MATLAB, SolidWorks, ROS 2, Embedded
Web Framworks	React, Solid, Astro, Nest.js, Node.js, Bun
Cloud	GCP, Azure, AWS, IaC

[1]The ATAR (Australian Tertiary Admission Rank) is a percentile score from 0.00 to 99.95 that ranks high-school graduates for admission to Australian universities.