Lucas Barbosa

Engineering (Hons) and Computer Science · UNSW

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Experience

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, authored whitepaper, and directed prototype UI/UX.
- Technical lead on a flagship Wage Remediation platform delivered on Azure in 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 millisecond-latency vector search API, **tripling accounting workflow speed**.
- Designed and deployed full-stack platform with React frontend and Django backend, backed by MongoDB and Kubernetes for high availability and scalability.

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**.
- Scaled PHP codebases, implementing PSR-12 standards and caching to cut page loads 40%.
- Created inventory-tracking system that cut food waste 25% and saved 10 h/week for hospitality clients.

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

University of New South Wales – B. Eng (Honours) 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
- ATAR: 96.80[1]; House captain.
- Co-Founder of XYZ Mathematics club
- NCSS Summer School '18
- UNSW HS1917 '17
- UNSW ProgComp Distinction '17

Technical Skills

Programming Languages	C/C++, Rust, Python, JavaScript, TypeScript, SQL, PHP, Java, Assembly
AI/ML	PyTorch, XGBoost, JAX, RL, CNNs, LLMs, VLMs, VLAs
Control Systems	PID, Kalman Filters, LTI Systems, MATLAB, SolidWorks, ROS 2, Embedded
Molecular Dynamics	LAMMPS, Gadi HPC, Ovito, Conjugate Gradient optimization
Framworks	React, Solid, Astro, Nest.js, Node.js
Cloud	GCP, Azure, AWS

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[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.