

LUCAS BARBOSA

ENGINEERING (HONOURS) AND COMPUTER SCIENCE

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WORK EXPERIENCE

Research Lead

PwC AI

Sydney Jan 2024 – present

- **Pioneered a novel trust-verification method for online content**, leading a 6-person team of academics and engineers to publish in a peer-reviewed journal.
- Deployed a game-theoretic incentive model with financial stakes to automate internet-scale information validation.
- **Authored a technical whitepaper** synthesising technical concepts developed with engineers and academics, and directed UI/UX development of the prototype.

Tech Lead

PwC

Sydney Jun 2023 – Jan 2024

- **Architected and delivered a wage-remediation platform on Azure in six weeks**, integrating existing MSSQL time-series and unstructured payroll feeds, building ETL pipelines, and optimizing data ingestion for downstream analysis.
- Developed and automated a Python anomaly-detection model using Pandas and scikit-learn, deployed via Azure DevOps CI/CD to run multi-hour batch jobs that surface payment discrepancies across 100k+ records.
- Translated user interviews, complex wage legislation and modern-award rule requirements into clear flow charts and mindmaps, coordinated sprints with product, UX and QA teams, and aligned several stakeholders to launch a solution competitive with Yellow Canary's integrated offering.

Software Engineer

PwC

Sydney May 2022 – present

- Developed the **Smart Audit Platform**, a 10k MAUs web-based real-time collaboration platform built on 40+ microservices and AI models, served across 13 APAC and US markets on the back of a 5k msg/s RabbitMQ cluster.
- **Reduced frontend memory usage by 80%**, enabling 100+ page PDF rendering on low-resource browsers via Solid.js/React.js optimisations.
- Engineered a fault-tolerant graph-search microservice that purges 1TB/month with 99% reliability, reducing Postgres latency by up to 40% under peak loads.
- **Boosted dev productivity 5×** by introducing a modern multi-language monorepo toolchain and hosting technical workshops enabling four engineering teams with 29+ devs to scale to 100+ packages in the same codebase.
- **Fast-tracked to Senior Consultant**, becoming one of the youngest in the firm.

Software Engineer

Progue

Sydney 2021 – 2022

- **Built a DOCX data lake**, mined XML from thousands of Word file tokens and loaded it into a structured NoSQL model, creating an indexable firm-wide knowledge base.
- **Shipped a millisecond-latency vector search API**, enabling semantic queries over the data lake and cutting accounting workflow turnaround times by 3×
- Containerized microservices with Docker and Kubernetes to enable zero-downtime deploys.

Software Engineer Intern

Cercle

Sydney 2021 – 2022

- **Launched a real-time QR-scanning platform**, rolling out a serverless AWS stack (Lambda, API Gateway, DynamoDB) that ingested 500+ cup scans / day and surfaced gamification metrics in under 200 ms.
- Ran data-driven UX sprints, leading in-person tests; insights cut scan errors 40% and boosted feature adoption.
- **Shaped the product roadmap**, co-prototyping four new features and translating them into engineering specs for the next funding round.

Founding Engineer

Lattice

Sydney 2016 – 2022

- Delivered bespoke software to 5+ clients at age 16 while maintaining academic excellence with a 96.80 ATAR.
- Scaled PHP codebases, implementing PSR-12 standards and caching to cut page loads 40%.
- Implemented an end-to-end inventory management system for cafe clients, adding real-time stock tracking, expiry alerts and auto-reorder rules; cut food waste by 25% and saved staff 10h/week.

ABOUT ME

A bright future can be built with infinite energy and labour. These resources are constrained by physics and economics, but can become abundant by engineering at the edge. This is my life's mission. Ideas are my own maybelucas.com/posts.

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. [[Link](#)] [[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 [[Link](#)]

EDUCATION

University of New South Wales

- Pursuing B Eng (Honours) and Computer Science
- Honours student under Prof. Will Midgley developing advanced robotic learning algorithms
- Researcher in advanced shielding materials for nuclear fusion reactors
- 99/100 in Data Structures and Algorithms (COMP2521)
- 99.1/100 in Honours Thesis A (MMAN4951)
- Winner of [UNI HACK '24](#)
- Winner of [Technion Yom Ha'Atzmaut '25](#)

Oakhill College

- ATAR: 96.80¹
- House captain
- Provincial's Excellence Award
- 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, Steepest-Descent & conjugate gradient optimization
Framworks	React, Solid, Astro, Nest.js, Node.js
Cloud	GCP, Azure, AWS

¹The 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.