

Oliver Wuttke

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EDUCATION

Flinders University

Adelaide, Australia

Bachelor of Computer Science, Major in AI (Honors year commencing 2027); GPA 6.8/7

2024 – 2027

- Summer Research Scholarship 2025-2026 recipient
- Chancellor's Letter of Commendation for academic achievement.

EXPERIENCE

Multi-modal Character AI Research | Undergraduate Researcher

November 2025 – Current

- Created a character which could efficiently and dynamically be aware of its context and surroundings without explicit instructions through the use of VLM and LLM API's.
- Experimented in different optimization techniques to reduce frequency of image processing whilst allowing the AI character to maintain a high level of environmental context.
- Designed and evaluated cache-vs-compute strategies for image processing in model context pipelines.

PROJECTS

FastQ++ - Ultra-Low Latency Lock-Free Queue | C++

- Designed and implemented a single-producer, multi-consumer lock-free queue optimized for low-latency workloads, inspired by the FastQueue architecture from David Gross's CppCon 2024 talk "When Nanoseconds Matter: Ultrafast Trading Systems in C++".
- Performed iterative benchmarking and profiling against industry-standard concurrent queue implementations, identifying optimization opportunities and improving throughput and latency.
- Analyzed the design trade-offs underlying lock-free, low-latency data structures, including throughput vs. latency optimization, memory-ordering semantics, and cache-coherency behavior.

Work Stealing Thread Pool and DAG Task Scheduler | C++

- Designed and implemented a thread pool that takes advantage of safe task stealing and manages false sharing efficiently. Built a task scheduler that efficiently manages task dependencies through a DAG structure.
- Optimized for scalability by minimizing contention and ensuring only runnable tasks enter worker queues.
- Ensured thread-safe execution with fine-grained locking, per-worker queues, and careful cache-line-aware memory layout.

Table Top Predictions | Python

- Analyzed a real-world Ludii games dataset and trained multiple traditional machine learning models to predict game category, origin year, region, best-performing AI agent, and UCT score, achieving a balanced accuracy of 0.98 on game category prediction.
- Utilized a variety of Python modules such as sklearn, numpy, xgboost, matplotlib, seaborn and pandas for data processing, model training, evaluation, and data visualization.

EXTRA-CURRICULAR AND COMMUNITY INVOLVEMENT

Mathematics TA | Tutor

February 2026 – Current

- Led tutorial sessions for Maths 1A (Calculus) where I taught core course concepts, guided students through problem-solving exercises, and provided one-on-one support.

STEM Ambassador

May 2025 – Current

- Facilitated STEM outreach workshops with industry partners, engaging high-school students and promoting career pathways in science and technology.

CISCO Mastertech 2025 Hackathon

November 2025

- Represented the South Australian team in the NIIN (National Industry Innovation Network) to compete in the Coles × Cisco Mastertech 2025 Hackathon.
- Developed and delivered a prototype solution addressing real-world business constraints for Coles and Cisco executives.

STEM Support | Tutor

July 2025 – November 2025

- Provided tutoring and support to students seeking help with first year computing and mathematics topics at Flinders.

IRU Student Panel on Generative AI Usage | Guest Speaker

September 2025

- Participated in a student panel on generative AI usage within my degree and field.
- Pushed for generative AI usage in universities to more accurately mirror usage in industry by teaching students how to use generative AI responsibly and effectively.

SKILLS

- **Programming Languages:** C++, Python, SQL, Java, PHP, JavaScript, HTML/CSS.
- **Technologies and Tools:** Docker, Git, CMake, Linux, Relational Database Management Systems (MySQL and PostgreSQL).
- **Libraries and Frameworks:** numpy, pandas, pytorch, sklearn, xgboost, matplotlib, seaborn, C++ Standard Library.