

Thomas Bale

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Experience

- Demonstrator and Graduate Teacher**, University of Bristol Aug 2025 –
• Delivering Lectures and Workshop Exercises. Mentoring a small team of students through their year long project. Helping students in workshops. (Software Engineering Project)
• Helping students in workshops. (Computer Systems A, Programming Languages and Computation)
- UK HPC Student Team**, UKSCC May 2025 – Jun 2025
• Represented the UK at ISC SCC. Optimised OpenMX and LLMs (llama) on a 208 core, 8xH100 cluster.
• Experience with load balancing, networking, OpenMP, MPI and CUDA programming.
• Worked with SLURM, LAPACK, BLAS, ScALAPACK, FFTW, ELPA, OpenBLAS, Intel MKL and custom profiling.
• Explored LoRA, QORA, DoRA, transformer engine and FP8, flash attention 3 for llama 8B.
- Machine Learning Research Assistant**, University of Bristol Feb 2025 – Aug 2025
• Developed a scalable ML workflow for generating photorealistic, emotional faces for psychological research.
- Co-Founder & Operator**, Veloworks Components Sep 2024 -
• Co-founded and operate a business producing 3D-printed performance cycling components.
• Manage operations encompassing sponsorship, marketing, technical stages, and financial activities.
- Machine Learning Software Engineer Intern**, DigitalU3 Sep 2024 – Mar 2025
• Engineered a machine learning-based system with a strong focus on efficiency and scalability.
• Collaborated in an AGILE team, contributing in sprints, code reviews, and iterative delivery.
• Developed a scalable web application with integrated backend and structured database.

Education

- University of Bristol**, BSc in Computer Science Sep 2023 – Current
• 78.33% avg; First Class
• Treasurer and Planning & Control Team Lead in Formula Student AI, Founder, President, Competitions Lead UoB Quantum Computing Society
- Colchester Royal Grammar School**, A-Levels Sep 2021 – Jul 2023
• A*A*AA - Computer Science (ranked 1st in cohort; 100% NEA), Maths, Further maths, Physics

Technical Projects

Quantum Cross-Chain Arbitrage - \$5000 Hackathon Win

- Built a hybrid quantum-classical arbitrage bot for executing cross chain flash loans.
- By using QAOA with custom graph construction, liquidity/slippage modelling, and flash loans with Vyper.

Technologies and Skills

Languages: Python, Go, Java, C, C#, Haskell, HTML/CSS, JavaScript,

Frameworks/Tools: SQL, API/REST, Git/Github, React Native, PyTorch, TensorFlow, Qiskit, AWS, Cursor

Skills: AGILE & Test-Driven Development, Quantum Programming, Machine Learning (ML), Artificial Intelligence (AI), High performance computing (HPC), CAD, Generative AI, Computer Vision, LLM, A/B Testing, NLP