

Thomas Bale

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Experience

Demonstrator and Graduate Teacher, University of Bristol Aug 2025 –

- Supporting 3 x year 2 computer science modules. Acting as a mentor and assisting students in workshops.

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.

Machine Learning Engineer Intern, DeepSynthetics Dec 2024 - May 2025

- Enhanced model performance by 250%+ for predictive modelling in all weather horse racing.

Education

University of Bristol, BSc in Computer Science Sep 2023 – Current

- 83.5% avg; ranked top in cohort: CSA
- Founder & President UoB Quantum Society, 4 x Hackathon Wins, Ironman Switzerland, ISC SCC

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 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, Prompt Engineering, User Research