Thomas Bale

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Experience

Machine Learning Researcher, University of Bristol – Bristol   Feb 2025 – Current
- Developed scalable NN workflows for generating photorealistic, emotional faces for psychological research.

Co-Founder & Operator, Veloworks Components – Hybrid   Sep 2024 - Current
- Co-founded and operate a small business producing 3D-printed performance cycling components.
- Design new products, manage custom orders, sponsorships, marketing, printing, and financial operations.

Founder & President, University of Bristol Quantum Computing – Hybrid   Dec 2024 – Apr 2025
- Founded and grew the society to organise the university's first quantum computing hackathon.
- Lead weekly sessions, technical challenges, and member projects focused on accessible quantum learning.

Machine Learning & Software Engineer, DigitalU3 – Remote   Sep 2024 – Mar 2025
- Developed ML-based fire detection system for dual deployment into IoT platforms.
- Engineered a scalable web application, integrating backend APIs and a structured database system.

Education

University of Bristol, BSc in Computer Science   Sep 2023 – Current
- 83.5% avg (First class Honours); ranked top in cohort: CSA
- 4 x Hackathon Wins, Ironman Switzerland 140.6, Team Lead and Coach (MIT iQuHack), HPC Cluster Challenge, Social Secretary (Swimming), Triathlon Club.

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
- President (CSS Society), Team Lead (Greenpower Electric Car)

Felsted School, GCSEs   Sep 2018 – Jul 2021
- 9× Grade 9s, A*, Distinction; 100% in DT NEA; Arkwright Scholarship Finalist.

Personal projects

Quantum Cross-Chain Arbitrage - $5000 Win   github.com/TumCucTom
- Built a quantum-enhanced arbitrage bot for executing cross blockain flash loans.
- Led backend: graph construction, liquidity/slippage modeling, and flash loan execution.
- Tools/skills: Leadership, Blockchain, DeFi, Flare, Vyper, Qiskit

Concurrent vs Distributed Implementations Analysis   github.com/TumCucTom
- Built concurrent versions of Conway's Game of Life using Go and parallel processing techniques.
- Developed distributed implementations with AWS EC2 instances and RPC communication.
- Optimised scalability and fault tolerance: reducing communication overheads, halo exchange and more.
- Tools/Skills: Go, RPC, AWS, Distributed Systems, Concurrency Optimisation.

Technologies and Skills

Languages: Python, Go, Java, C, C#, SQL, Haskell
Frameworks/Tools: PyTorch, TensorFlow, Qiskit, AWS, Node.js
Skills: Quantum Programming, Machine Learning, HPC, CAD Design, AGILE & Test-Driven Development