

Thomas Bale

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Experience

Machine Learning & Software Engineer, DigitalU3 – Remote Sep 2024 – Current

- Contract to design a product for the u3core suite for a neural network approach for fire, smoke and oil detection.
- Dual deployment for AI edge and cloud cameras. Included is a web app for real time data visualisation, logs and live video streaming.

Co-owner, Veloworks Components – Bristol Sep 2024 - Current

- Co-own and run a small business, where we create 3D printed, performance cycling products.
- My role involves designing new products and customising existing designs for customers, arranging sponsorships with influencer athletes and cycling/tri clubs, social media marketing, overseeing the printing process and managing accounts.

Casual Lifeguard, Everyone Active SLM – Bristol Nov 2023 - Dec 2024

Academic Tutor, Self-Employed – Remote/London area Jul 2021 - Sep 2023

- Tutored in Maths, English, Physics and Computer science for A-level, GCSE and 11+.

VAT Database Management, Triconsultants Ltd – Remote Jul 2021 - Sep 2021

- Managed a database for VAT from receipts and invoices for a small business that ships luxury goods to Vietnam.

Education

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

- 83.5% avg in contributing modules (1st class - 4.0 GPA eq)
- **Activities:** Founder and president of UoB quantum computing. MIT quantum hackathon - team lead and coach for 2 teams. CIUK HPC cluster challenge- best result of 2nd . Comprep swimming (Social Secretary), Triathlon.

Colchester Royal Grammar School, A-Levels Sep 2021 – Jul 2023

- A*A*AA - Computer Science, Maths, Further maths, Physics
- 100% Achieved in comp sci programming NEA | 1st in cohort for computer science
- **Activities:** CSS (President), Greenpower formula car (Team Lead & Electronics Lead & Composites)

Felsted School, GCSEs Sep 2018 – Jul 2021

- 9,9,9,9,9,9,9,9,9,A*,Distinction including Maths and English | 100% in DT NEA | Arkwright Final Candidate

Personal projects

\$5000 winning project - Quantum Cross-Chain Arbitrage github.com/TumCucTom

- Winners for ETH Oxford's DeFi hackathon (\$5000). A quantum-enhanced cross-chain arbitrage bot that uses QAOA and Flare's blockchain protocols to execute fast, secure, profitable cross-chain arbitrage via flash loans.
- Team of 3 - I programmed all backend: QAOA; graph construction inc liquidity, slippage, gas calculations and flash loan executions with viper.
- Tools/skills used: Blockchain, DeFi, Flare, Vyper, Qiskit

Infer from underlying patterns in Wordle TumCucTom/georgia-AI

- A ML AI that infers the NYT wordle using only the results of how other people guessed. Implements optimisation techniques for learning and post-processing.
- Tools/skills used: python, pytorch, numpy, NN optimisation techniques, beam search.

Quantum Finance Predictions github.com/TumCucTom

- A web app that takes a stock symbol, fetches historical data and outputs predictions for future movement. Solution for a 3h creative quantum hackathon.
- Tools/skills used: Python, Qiskit, ML, AI, Node and vue.js, LaTeX, Jupyter

Technologies and Skills

Languages and Technologies: GO, C, Java, C#, SQL, Haskell, Python, Qiskit, Torch, Tensor, Node.js, R, AWS

Skills: AGILE Methods, HPC, Quantum programming, Test Driven Development, ML, AI, CAD, databases, first aid