

# Thomas Bale

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## Experience

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

- Contract to create a ML micro-service top layer to integrate on top of an existing IoT platform for fire, smoke, and oil hazard detection.
- Integration with AI edge and cloud cameras for dual deployment, SMS alerts, augmentation, preprocessing, and hyper parameter optimisation for the NN, database queries and async encryption for user data.
- Quasar web-app, login pages, data and logs pages, user and admin privileges.

**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:** MIT iQU quantum hackthon - team lead and coach for 2 teams. CIUK high performance computing cluster challenge- best result of 2nd . Competitive swimming (Social Secretary), Triathlon and CSS.

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

## Personal projects

**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

**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 Traffic Flow [In Progress]** github.com/TumCucTom

- A project leveraging the Quantum Approximate Optimization Algorithm (QAOA) to enhance local traffic management in Bristol, England. Web-app to visualise the traffic and optimisations coming.
- Tools/skills used: python, qiskit, data science, quantum algorithms, flask, vue.

## 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