Toby Pullan

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SUMMARY

Computer science student with a strong foundation in programming and a passion for technology. Eager to apply theoretical knowledge to practical projects and gain hands-on experience in the tech industry. Seeking opportunities to contribute to innovative projects and continue learning.

EDUCATION

2024 - present	Computer Science BSc at **Durham University** (**Ranked #1 out of 192**, Grade 89%)
2022 - 2024	A Levels at **Hills Road Sixth Form** (A* Further Maths, A* Maths, A* Physics, A Computer Science, A* EPQ)

WORK EXPERIENCE

Software engineer, Turbostream Ltd — July 2025 – September 2025

High speed GPU-accelerated Computational Fluid Dynamics simulation software

The software compiles from the same JAX kernel definitions to native code for different hardware backends (CPU or GPU). In the internship, I:

– created an automated test suite for a series of unstructured grid kernels for multiple backends, including JAX and CUDA, to enable rapid feedback in agentic coding environments for optimising simulation software;

– optimised GPU kernels using CUDA. Implemented a warp aggregation optimisation to reduce atomic add calls to global memory.

PROJECTS

Blog   Link to Blog

An artificial intelligence blog with posts about how backpropagation works within neural networks. Working on a new post exploring how reinforcement learning could be implemented on top of GPT-2 to encourage chain-of-thought behaviour.

Basic neural network library   Link to Repo

Created a basic neural network library, including backpropagation functionality, inspired by Andrej Karpathy's Micrograd library.

Bike proximity sensor for track cycling   Link to Demo

A seat-mounted sensor for velodrome racing that wirelessly connects to a screen attached to the handlebars. The screen displays the distance to the team-mate racing behind you, allowing optimal racing formation.

TECHNICAL SKILLS

Languages	Python, Javascript, C#
Libraries	JAX, Numba (with CUDA), PyTorch
Developer Tools	Git, GitHub (including workflows), Claude Code