

Lucas Tompson

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EDUCATION

University of Warwick, MEng Computer Science

Sept 2024 – June 2028

Predicted first-class. Cumulative average: 71.5%

- **Year 3 modules:** Machine Learning; Mathematics of Machine Learning; Neural Computing; Compiler Design; Approximation and Randomised Algorithms; Project Management for Computer Scientists
- **Relevant Years 1-2:** Stochastic Processes; Algorithms; Operating Systems and Networks; Data Analytics; Artificial Intelligence; Formal Languages; Database Systems; Linear Algebra and Calculus; Data Structures; Computer Organisation and Architecture

Churston Ferrers Grammar School

Sept 2016 – July 2023

- A Levels: Mathematics (A*), Further Mathematics (A*), Computer Science (A), Physics (A), EPQ (A*)

RECENT PROJECTS

Third-year project: Post-Training Diffusion Language Models

- Research project investigating Diffusion Language Models' behaviour under supervised fine-tuning.
- Conducting empirical experiments before formalising results through a theoretical lens.

Custom Autograd for Diffusion Models *Python, NumPy (In Progress)*

- Building an autograd from first principles, designed specifically for derivative capabilities required for diffusion.
- Inspired by Andrej Karpathy's micrograd and George Hotz tinygrad.

Grokking Detection with Variational Inference *Python, PyTorch*

- Built a variational loss-landscape probe to investigate and anticipate delayed generalisation in transformers.
- Reproduced Nanda's mod-113 grokking setup as a testbed.
- Designed a pre-registered, multi-seed evaluation with baselines, a no-grok control, an ablation and sign tests.

Airport Modelling System *Python, SimPy, NumPy, Raylib*

- Project manager for a team of six building a discrete-event airport traffic simulation for a commercial-style brief set by Dorset Software.
- Won Dorset Software's award for Most Effective Teamwork out of 50+ teams; solution graded 85%.
- Ran an agile workflow with prioritised sprints, paired development, and CI testing (PyTest and GitHub Actions).

WORK EXPERIENCE

Barclays Investment Bank — *Software Engineer, Fixed Income Finance*

June 2026 – Aug 2026

- Engineered a trade reconciliation pipeline to facilitate a critical trade flow migration.
- Leveraged Git, GitLab, Maven and CI/CD, pushing two projects to production with >85% JUnit test coverage, while collaborating in a global agile team of 40+ engineers in 2-week sprints.

IT Workhouse — *Network Installations Engineer*

Sept 2023 – Sept 2024

- Installed bespoke network systems and provided support to commercial and private clients with a small team.

RELEVANT SKILLS

- **Programming:** Java, Python, C/C++, SQL
- **Machine Learning:** PyTorch, TensorFlow, scikit-learn, NumPy, pandas, Matplotlib
- **Developer tools:** Git, GitHub, GitLab, Maven, JUnit, Bash/Zsh, Jupyter, LaTeX, Claude Code

ACHIEVEMENTS

Vice President, Warwick Sailing & Windsurfing Club · School President (2022-23) · Service to the School & Community Award (2024) · Grade 7 drums