Harry Langford

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Education

University of Oxford		2024 – 2025
>	MSc in Advanced Computer Science	
University of Cambridge		2021 - 2024
>	Graduated with distinction, ranked 5 th out of 113 students	
>	Highly Commended final year Dissertation	
>	First class in first, second and third year, ranked 18th, 5th and 5th	
The	Royal Grammar School, High Wycombe	2014 - 2021
>	4 A*s in Maths, Further Maths, Physics and Computer Science at A Level	

hjel.me

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Employment

Research Intern, Cambridge Computer Lab

12 weeks, Summer 2024

12 weeks, Summer 2023

- Compared the effectiveness of ML backdoors to adversarial examples under different threat models. Worked with both vision and text models. This work is being written up for publication.
- ♦ Profiled LLM inference to evaluate whether batching and compressing similar queries at the input level could lead to higher throughput.

Research Intern, Cambridge Computer Lab

- ✓ Investigated weight-invariant backdoors embedded in the computation graph of neural networks. Automated their construction and overcame the limitations of previous methods. The resulting paper was accepted into S&P: the top security conference.
- ♦ Discovered and implemented a novel method of locking neural networks to specific hardware. This method degrades the model performance to near-random guessing when they are pruned or quantised. This work was incorporated into a paper which has been accepted at SaTML.

Projects

♦ Uncertainty estimation for spiking neural networks

The resulting dissertation was **highly commended**. Generalised uncertainty estimation methods to spiking neural networks, evaluating theoretical correctness, and empirical correctness on downstream tasks with neuromorphic data. Over 12000 lines of code.

- Sequence classifier expressivity Compared the theoretical expressivity to the empirical expressivity for sequence classification models. Resulting work was commended by a Cambridge lecturer.
- Generalising graph positional encodings to edges
 Generalised graph positional encodings to edges. Proved theoretical expressivity benefits.
 Empirically evaluated the effect on performance.

Skills

- ✓ Programming Written over 30,000 lines of Python code. Completed projects and coursework in C++, Java and OCaml.
- *♦* **Machine Learning** Substantial experience working with machine learning systems.
- \checkmark Linux \triangle Using Linux for 2 years. Experience with development on GPU servers and HPC.

Accomplishments

- ♦ Churchill College Prize Scholarship: 2022, 2023, 2024
- ♦ Jon Rabone prize for 'the most meritorious performance for an undergraduate in Churchill College in the Computer Science Tripos Exams': 2022, 2023
- ♦ 3rd group in Hack Cambridge 2022 out of 107 participants