

# 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 **5th** 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

## Employment

**Research Intern, Cambridge Computer Lab** 12 weeks, Summer 2024

🔗 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** 12 weeks, Summer 2023

🔗 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 submitted to [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.

🔗 **Linux** 🐧 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