Harry Langford

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Education

University of Oxford **2024 – 2025**

- Started the Advanced Computer Science masters at Oxford

University of Cambridge **2021 – 2024**

- Graduated with **distinction**, ranking 5th out of 113 students
- Highly Commended final year Dissertation
- First class in first and second year exams, ranking 18th and 5th

The Royal Grammar School, High Wycombe **2014 – 2021**

- A* 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 for both vision and text. 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 which are 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 severely degrades the performance of models 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**. I generalised uncertainty estimation methods to spiking neural networks, evaluating theoretical correctness, and empirical correctness on downstream tasks with neuromorphic data. Written over 12000 lines of code.
- **Sequence classifier expressivity**
  Investigated how the languages which sequence classification networks are theoretically able to recognise compare to the languages which they empirically learnt to recognise. Resulting work was commended by a Cambridge lecturer.

Skills

- **Programming** Written over 30,000 lines of Python code. Completed coursework and smaller projects in C++, Java and OCaml.
- **Machine Learning** Substantial experience working with machine learning systems.
- **Linux** 🐧 Using Linux on my main laptop. In addition to experience in remote development on GPU servers and HPC.

Accomplishments

- Ranked 1/38 in my college group's 2nd year mocks
- 1 in STEP 2 and STEP 3
- BPhO2 2021 Silver, BPhO 2021 Top Gold, BMO 2021 distinction,