HOAGY CUNNINGHAM

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Academic

- 2:1 - Average of 67 - in Politics, Philosophy and Economics from The Queen's College, Oxford - 70+ in both mathematical exams.
- 7 A Levels: 3 A*s - Maths (aged 12), Chemistry, Biology; 4 As - Further Maths, History, Physics, English Lit.
- Twice awarded UKMT Olympiad Gold Award for top 50 performance in problem-solving from a field of >150,000.
- 14 GCSEs: 8A*s, 5As and a B
- MOOCs including Game Theory, Computational Neuroscience, Applied Calculus and Machine Learning.
- Following Oxford's Mathematics course module by module, currently on term two. Example notes here.

Experience

Economist in **UK Home Office** (Law Enforcement Economics and Border Security teams)
October 2019 - December 2021

- Analysing costs and benefits of programmes of £100m to £10b total spend, collating detailed information and assessing quantitative risk
- Original analysis and literature reviews of topics such as the total public value to solving a crime, and the decision function underlying the choice of location and method for attempting to cross the border.
- Conveying complex economic concepts and modelling in clear and concise fashion to senior leaders.

AI Safety Lesson Developer at **RAISE** (AI Safety Education Startup)
September 2018 - May 2019

- Summarized key papers in Inverse Reinforcement Learning, teaching the core concepts and underlying mathematics.
- Responsible for developing a set of lessons explaining Christiano's iterated distillation and amplification approach - including the script for the Rob Miles video on Iterated Amplification.
- Wrote solutions for a pre-requisites course teaching background material, especially in logic and set theory.

Researcher at **FullFact** (Independent Fact Checking Organisation)
Summer 2015

- Sole responsibility for fact-checking (example) the bill that became the Energy Act 2016.
- Analysed large troves of government statistics, uncovering fortunate updates touted as policy success.
- Presented objective analysis of claims while under pressure from stakeholders and industry experts.

Skills

Programming

- Fluent in Python through projects in Machine Learning, economics and code-breaking. Familiar with NumPy, pytorch, regular expressions, web scraping.
- Used R and VBA in professional capacity to build models used to inform policy decisions by the UK Home Office.

Communication

- Experienced debater on both prepared and unprepared topics. Awarded a position on a month long cultural programme in the US by the American Embassy through debating ability.
- Required to read and defend essays twice weekly in front of leading experts throughout my time at University.
- Worked as a paid tutor on a range of subjects from GCSE Maths through to previously unstudied modules of undergraduate Economics.

Self Motivation

- Entered and self-taught a wide range of qualifications, including A Levels and undergraduate courses.
- Ran a marathon two days after completing Finals.

Miscellaneous

- Attended AI Safety Camp 2, working on interpretability in Atari game-playing agents, by using adding the entropy of the attention locations as a loss term to incentivize clear locations of attention.
- Attended MIRI Summer Fellows culminating in the post 'When Do Utility Functions Constrain?'
- Planned and co-created timeglo.be, a globe for searching historical events. Featured on visualnews.com, referenced by BBC, 20,000+ hits.
- Selected to the University Challenge team of my college in each year of university. Captained it twice.
- College Academic Representative, organised tutor-student meetings and mediated disputes.
- Keen pianist and rock climber.
- On LessWrong as Hoagy - some posts visible there.

Current Projects - Drafts at hoagyc.github.io

- Working on helping John Wentworth with his work on what he calls the natural abstraction hypothesis by creating differentiable physical simulations within which to test algorithms to find objective notions of structure in complex environments.
- Working through a pytorch textbook using lung scans to learn how to better deal with machine learning with medium to large datasets.