

Callum McDougall

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EDUCATION

University of Cambridge

Cambridge, UK

Master of Mathematics

2018 – 2022

Year 4: Distinction, Year 3: Class I [rank 11/222], Year 2: Class I [honorary], Year 1: Class I [rank 38/232]

- **Awards:** Dr J.A.J. Whelan Prize in Mathematics, Christ's College Academic Scholarship (1st, 2nd & 3rd years)
- **Courses:** Statistics, Optimisation, Applied Probability, Automata & Formal Languages, Logic & Set Theory

Westminster School

London, UK

STEP: S, S ("Outstanding") grades in papers II and III (top 15 in the country)

2013 – 2018

A Levels: Maths (A), Further Maths (A*), Economics (A*), Physics (D1, equivalent to high A*)*

- UKMT: Certificate of Distinction in 2nd round of British Mathematical Olympiad (top 25 of 30,000 students)
- Senior Cheyne Prize for Mathematical Excellence (awarded to one senior student annually)

EXPERIENCE

ARENA

London, UK

Co-founder

Sep 2022 – present

- Co-founded the Alignment Research Engineer Accelerator, alongside Mathieu Putz
- Designed curriculum around Jacob Hilton's published Deep Learning Curriculum, including a combination of exercises and more open-ended projects

MLAB2

London, UK

Participant

Aug 2022 – Sep 2022

- Participated in the second Machine Learning Alignment Bootcamp
- Activities included assembling and training transformers, and doing transformer interpretability exercises based on the material in A Mathematical Framework for Transformer Circuits
- Designed our public-facing website [here](#)

AI Safety Camp

Cambridge, UK

Participant

Jan 2022 – present

- Working in a team of three, researching selection for modularity in evolved systems & modern deep learning
- Have given several summary talks on our team's progress
- Responsible for two LessWrong posts (links [here](#) and [here](#))
 - The first one sketches out different theories for modularity in the biological literature
 - The second one summarises our team's approach and current results

SERI MATS programme

Virtual

Participant

Oct 2021 – Dec 2021

- Attended weekly discussions with Evan Hubinger to discuss his research agenda, and his views on alignment
- Wrote up a distillation of John Wentworth's *Natural Abstraction Hypothesis*, linking it to other topics such as interpretability research and neuroscience (link [here](#))

Cambridge Existential Risks Initiative

Cambridge, UK

Committee member

Sep 2021 – Sep 2022

- Designed syllabus for & organised an introductory course on existential risks
- Organising CERI activities such as the AGI Safety Fundamentals Programme
- Co-leading a reading group on *Human Compatible: Artificial Intelligence and the Problem of Control*

Jane Street Capital**London, UK***Quantitative Trading Intern**Jun 2021 – Aug 2021*

- Participated in team-based mock trading sessions, requiring delegation and coordination
- Built a volatility model for corporate bonds using Gradient Boosted Trees
- Developed methods for interactive visualisation of the GBT result in Python
- Received a full-time offer as a trader

Effective Altruism, Cambridge**Cambridge, UK***Facilitator**Jan 2020 – Mar 2020*

- Facilitated the Effective Altruism Introductory Fellowship for two groups of Cambridge residents
- Helped to promote discussion of important topics, and helped fellows engage with ideas
- One fellow is now a member of the EA Cambridge Extended Committee

PROJECTS

Computational Thread Art*Jul 2019 – present*

- Created a Python program which renders images as a series of lines between nodes, joined by a Eulerian path
- Experimented with different search depths to improve performance
- Designed a custom loss function to enhance accuracy in specific regions of the image (full code on [GitHub](#))
- Physically created these pieces using bike wheels & coloured thread
- Built and programmed a robotic gantry system to automate the threading (link to video [here](#))
- Designed a website to feature this art, using Django & Heroku (website link [here](#))

SKILLS, ACTIVITIES & INTERESTS

Technical Skills: Python, Excel, VBA, SQL, LaTeX, JavaScript, HTML**Certifications & Training:** [Guinness World Record holder](#)**Activities:** member of Cambridge Existential Risks Initiative, Effective Altruism**Interests:** chess, rock-climbing, mathematical art