

Luke Hayward

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Education

Brasenose College, University of Oxford: MMathPhys Mathematical and Theoretical Physics 2024 – 2025

Grade: Distinction (81.6%)

Modules: Machine Learning, GR, Algorithms and Computation, Networks, Dissertation, Quantum Information, Random Matrices

Brasenose College, University of Oxford: MPhysPhil Physics and Philosophy 2021 – 2024

Grades: Third Year: 1st Class - 3rd in cohort. Second Year: 1st Class (83%) – 3rd in cohort. First Year: 1st Class (80%) – 4th in cohort.

Awards: Academic Scholarship; Academic Exhibition; 6 Termly Collections Prizes; Instrumental Scholarship 2021-23

King Edward VI School (St stratford-Upon-Avon) 2014 – 2021

A-Levels: Mathematics (A*), Further Mathematics (A*), Physics (A*), Chemistry (A*), EPQ (A*) | GCSEs: 11 GCSEs (All grade 9)

IPhO Bronze Medal, Governors' Prize for Academic Research, Moseley Prize for Physics, and McKelvie Memorial Prize for Music.

Experience

Machine Learning Research Intern – Gatsby Computational Neuroscience Unit, UCL September 2025 – Present

- Researched asymptotic limits of transformer architectures across various hyperparameter axes, applying DMFT techniques to derive closed-form expressions for training dynamics.
- Actively participated in Machine Learning Journal Club and Research Talks to improve my knowledge and share ideas.

Machine Learning Research Intern – Hong Kong University June – August 2025

- Conducted independent research applying machine learning techniques to model many-body quantum systems.
- Achieved 10x speed-up compared to traditional simulation methods, obtaining results matching analytic predictions.
- Presented findings to committee of HKU Professors; awarded HKU Presidential PhD Scholarship for top research.

Analyst Intern – Future Planet Capital March 2023

- Researched and pitched an investment opportunity, coming 1st out of 17 interns, by performing quantitative analysis using market data and company datasets to assess impact, risk, exit strategies, and potential returns.
- Collaborated with the Fund Manager to initiate data requests and write comprehensive quarterly reports, evaluating KPIs to support informed decision-making, and implementing Monte Carlo sampling in python.
- Analysed and quantified market structures; leveraged analytical skills to drive informed decision-making and optimise investment strategies, including devising a novel approach to quantifying environmental impact.

President – Brasenose College Boat Club June 2024 – June 2025

- Manage an Executive Committee of 8 and a £45,000 annual budget to deliver goal-oriented training to 120 athletes, competitive success in HERR and Summer Eights, and a training camp in Portugal.
- Initiated a £100,000 infrastructure project to build new racking on brownfield land in collaboration with three other Colleges. Liaised with contractors, chaired discussion groups, and produced a detailed financial report.
- Spearheaded a recruitment campaign to revive dwindling membership, implementing various events from a Freshers' Fair stall to a £500 social event that recruited 97 out of 107 incoming college first year students.

Team GB Medallist – International Physics Olympiad (IPhO) January – July 2021

- Selected on account of my analytical, problem-solving and lateral thinking skills as one of 5 Team GB contestants from over 30,000 top UK physics students via 4 theoretical papers and an online selection camp.
- Competed in two five-hour exams (one theoretical, one practical), against teams from 76 countries, personally achieving a Bronze medal placing me in the top 130 physics students globally.
- Took part in problem-solving workshops with leading Cambridge academics, as well as practical masterclasses, where I honed my python data-analysis skills and fluency in statistical methods by spotting trends and considering edge-cases in large datasets, before developing quantitative models to fit the data.

Tutor – British Physics Olympiad & Freelance July 2019 – Present

- Planning and delivering results-driven lessons; consulting on Oxbridge College and subject choice; guiding and honing Personal Statements using a tried-and-tested method which tailors the format to each student's passions and strengths.
- Private tuition for Physics Olympiad candidates, guiding students through national rounds, and preparing them for the IPhO.
- Balancing efficiently up to 10 concurrent private students, as well as leading masterclasses in nuclear and relativistic physics at the British Physics Olympiad training and selection camps

Skills

Python – Completed 100 Days of Code Python Bootcamp | **Problem-solving** – Mentoring current IPhO students in this

Interests and Leadership

Musical and Financial Director – Brasenose College Big Band October 2022 – July 2025

Editor – The Oxford Scientist Journal October 2022 – July 2024

- Edited the Journal, and authored pieces such as 'Zero: The Revolutionary Invention of Nothing'.

Organ Scholar – King Edward VI School September 2019 – July 2021