# Thomas Walker

Imperial College London
BSc Mathematics

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in LinkedIn Profile

## EDUCATION

**University of Oxford - MSc Advanced Computer Science**　　　　　*October 2024 - September 2025*

– Conditional offer.

**Imperial College London - BSc Mathematics**　　　　　*September 2021 - June 2024*

– First Class Honours - 89% Final Grade

**Reading School - A-levels**　　　　　*September 2019 - June 2021*

– Mathematics: A*, Further Mathematics: A*, Physics: A*, Extended Project Qualification: A*

## EXPERIENCE

**Student Researcher**　　　　　*June 2024 -*

*Helmhotz Munich - AIDOS Lab - Dr Bastian Rieck*

– Looking at the interplay between the topology and interpretability of neural networks.

**Student Researcher**　　　　　*July - September 2023*

*Imperial College London - Safe Artificial Intelligence Lab - Professor Alessio Lomuscio*

– Investigating neural network generalization with a focus on PAC learning theory. Refined the evaluation of PAC bounds using testing certificates on regions of the input space.

**Student Researcher**　　　　　*September - October 2022*

*Imperial College London - Dr Dean Bodenham*

– Investigating how programming languages (Python, R, C++) generate pseudo-random numbers. Developing a repository of functions to align pseudo-random number generators.

**Data Consultant**　　　　　*June - September 2022*

*BAE Digital Intelligence*

– Investigating project operations and developing strategies to improve resource utilization. Tasks involved working with database infrastructure (SQL, Java), AWS and developing a data dashboard in Python (Dash, Selenium).

**Website Administrator**　　　　　*December 2021 - June 2024*

*Imperial Wiki Society*

– Working on a student-led initiative to develop an online platform to host supplementary material for modules taught at the university. My focus is on managing the project and developing resources for the mathematics modules.

## PAPERS

**Tightening PAC Bounds with Formulation Verification**　　　　　*2024*

*Pre-print*

## PROJECTS

**A Guide to PAC Bounds**　　　　　*July - August 2023*

*Imperial College London - Undergraduate Research Project*

**Jordan Algebras**　　　　　*June 2023*

*Imperial College London - Second Year Group Research Project*

**Reinforcement Learning Algorithm for HIV Treatment**　　　　　*March 2023*

*Imperial College London - Interdisciplinary Research Computing*

**Aligning Pseudo-Random Number Generators Across Programming Languages**　　　　　*September 2022*

*Imperial College London - Undergraduate Research Project*

**Point Processes for Equipment Failure Simulation**　　　　　*June 2022*

*Imperial College London - First Year Individual Project*

**AI Decision Making Perpetuating Social Imbalances and Injustices**　　　　　*December 2021*

*Imperial College London - Science and Communication Studies*

**Machine Learning and Its Applications in Particle Physics Research**　　　　　*June 2019*

*Reading School - Extended Project Qualification*

## PRESENTATIONS

**Using Region Tests to Evaluate PAC Bounds** *September 2023*

*Imperial College London - Verification of Autonomous Systems Group Seminar*

**Jordan Algebras** *June 2023*

*Imperial College London - Group Research Project*

**Aligning Pseudo-Random Number Generation in Python, R and C++** *October 2022*

*Imperial College London - 3-Minute UROP Thesis Talk*

## FUNDING

**Undergraduate Research Project Funding** *July-August 2023*

*Imperial College London - Department of Mathematics and Department of Computer Science*

## ARTICLES

**The Prime Minister's Mathematical Propositions** *July 2023*

*Imperial College London - Faculty of Natural Sciences Blog Post*

## WORKSHOPS

**Centre for Theoretical Study at Charles University** - Human Aligned AI Summer School *July 2024*

– Four intensive days of talks, workshops, and discussions covering the latest trends in AI alignment research and broader framings of AI alignment research.

**Mathematics for Deep Learning** - Geometric Deep Learning *June 2024*

– A workshop summarising the recent advances in the field of geometric deep learning.

**Global Challenges Project** - X-Risk *May 2023*

– A workshop on investigating approaches taken to AI safety research.

**Imperial Effective Altruism Society** - AI Safety Fundamentals *October - December 2022*

– Comprised of eight group discussion sessions on the literature surrounding the concerns of powerful AI systems and the research on AI safety.

## TECHNICAL SKILLS AND INTERESTS

**Spoken Languages (Intermediate)**: English, Italian
**Programming Languages (Intermediate)**: Python, R, Latex, Markdown
**Programming Languages (Basic)**: C++, HTML
**Libraries (Python)**: Numpy, Scipy, Matplotlib, Pandas, PyTorch, Dash, Selenium, Plotly
**Miscellaneous Qualifications** : Royal Life Saving Society National Pool Lifeguarding Qualification, Bronze Duke of Edinburgh