

# Thomas Walker

Imperial College London  
BSc Mathematics

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🌐 <https://thomaswalker1.github.io/>

🌐 LinkedIn Profile

## EDUCATION

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### Imperial College London - BSc Mathematics

September 2021 - June 2024

- First Year - 85%
  - \* Placed top 5% for overall academic performance.
- Second Year - 86%
  - \* Placed top 5% for overall academic performance.

### Reading School - A-levels

September 2019 - June 2021

- Mathematics: A\*, Further Mathematics: A\*, Physics: A\*, Extended Project Qualification: A\*

## EXPERIENCE

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### Student Researcher

July - September 2023

Imperial College London - Verification of Autonomous Systems Group - 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 - Present

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.

### Mathematics Tutor

October 2021 - July 2022

My Tutor

- Planning and delivering online lessons on a weekly basis, as well as conducting reports on a student's progress to deliver back to their parents and teachers.

## PROJECTS

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### Incorporating Neural Network Verification into the Evaluation of PAC Bounds

July - September 2023

Imperial College London - Undergraduate Research Project

### 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

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### 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

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### Undergraduate Research Project Funding

July-August 2023

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

## ARTICLES

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### The Prime Minister's Mathematical Propositions

July 2023

Imperial College London - Faculty of Natural Sciences Blog Post

## WORKSHOPS

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### 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.

## VOLUNTEERING

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### Treasurer

October 2021 - July 2022

Imperial College London - Linstead Halls

### Dog Fosterer

May 2020 - August 2022

The Responsible Dog Rescue

## TECHNICAL SKILLS AND INTERESTS

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**Spoken Languages (Intermediate):** English, Italian

**Programming Languages (Intermediate):** Python, R, Latex, Markdown

**Programming Languages (Basic):** C++, Python, 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