# Thomas Walker

Imperial College London
BSc Mathematics

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https://thomaswalker1.github.io/
LinkedIn Profile

## Education

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

- First Year - Achieved 85% overall, placing in the top 5% for overall academic performance.
- Second Year - Achieved 86% overall, placing in the 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

**Student Researcher** *July - August 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

**Using Region Testing to Evaluate PAC Bounds** *July - August 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 2022*

*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*

## Articles

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

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

## Workshops

**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 and the research on AI safety.

## Volunteering

**Treasurer** *October 2021 - July 2022*

*Imperial College London - Linstead Halls*

**Dog Fosterer** *May 2020 - August 2022*

*The Responsible Dog Rescue*

## Technical Skills and Interests

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