Matias Barandiaran

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Profile

A highly motivated Computer Science graduate from Lancaster University with over a year of research experience and a strong interest in software development and data engineering. My academic and research journey has been driven by a belief in the power of technology to solve real-world problems. I am now eager to grow within a professional environment that values collaboration, responsible innovation, and the application of cutting-edge technologies to drive meaningful impact.

Education

Lancaster University October 2022 – July 2025
Bachelor of Science in Computer Science *Leipzig, Germany*

- University ranked **#132** worldwide for Computer Science (QS by subject) in 2025.
- First Class Honours (**UK**: 91.2% ≈ **GPA**: 4.00/4.00).
- Valedictorian *won Chancellor's Medal*.

International Baccalaureate March 2019 – December 2021
International Bilingual Diploma *Lima, Peru*

- Maths and Physics highest band (7/7).
- Model United Nations Debate Club.
- Cohort's top 5% (**GPA**: 3.90/4.00).

Work Experience

Technical University of Munich July 2024 – September 2025
Research Assistant (Hiwi) *Hybrid – Munich, Germany*

- Hosted by the Gagneur Lab (Computational Molecular Medicine) in affiliation with Helmholtz Munich.
- Working on rare variant association testing using deep learning and data-driven burden scores (DeepRVAT), utilizing **Python**, **R**, **PyTorch**, and **Snakemake**.
- First-hand exposure to **HPC** cluster management, **Linux**, and **Git** version control.

Martin Luther University of Halle-Wittenberg July 2024 – September 2024
Research Intern *Remote – Halle, Germany*

- Hosted by the Faculty of Medicine.
- Worked on novel graph-level anomaly detection via latent space searching and generative adversarial networks (gladGAN) on molecular datasets, utilizing **Python** and **Pytorch**, and **scikit-learn**.

Lancaster University Leipzig October 2023 – June 2024
Teaching Assistant *On-site – Leipzig, Germany*

- Laboratory assistant and demonstrator for the Digital Systems module.
- Delivered engaging and informative instructional sessions to facilitate student understanding on low-level programming with **MIPS** assembly.

Charles University August 2023 – September 2023
Research Intern *On-site – Prague, Czechia*

- Hosted by the Faculty of Mathematics and Physics.
- Contributed to the paper: *Unsatisfiability Proofs for Horn Solving* (2025) *won ETAPS best paper award*.
- Designed production of *Alethe* verifiable proofs for the GOLEM Constrained Horn Clauses solver, utilizing **C++**.
- First-hand exposure to **Linux**, the software development life cycle, continuous integration, **object-oriented** programming, and software verification.

Freelance August 2019 – September 2021
Math Tutor *Remote – Lima, Peru*

- Student advisor and tutor for IB Mathematics SL and HL.
- Guided senior high school students to achieve outstanding exam performance and substantial growth in their mathematical abilities.

Awards / Honours

Chancellor's Medal
Lancaster University

- The university's most prestigious award, presented annually to graduating students who demonstrate exceptional merit in their field.

Highest Average Grade
Lancaster University

- Achieved the cohort's highest average grade across all three years of the BSc Computer Science program.

Outstanding Dissertation
Lancaster University

- Obtained the highest achievable grade (100%) for the BSc Computer Science dissertation: Growing Reservoirs with Developmental Graph Cellular Automata.
- **Strong Accept** for presentation on (peer-reviewed) International Conference on Artificial Life 2025 in Kyoto, Japan.

EASST Best Paper Award
International Joint Conferences On Theory and Practice of Software (ETAPS)

- For the best ETAPS 2025 paper related to the systematic and rigorous engineering of software and systems.

Leadership Experience

Global Advancement Fund 2024
Organizer

- Co-Initiated and championed the approval process of Lancaster University's Global Advancement Fund (≈€20k) to facilitate international collaboration between campuses worldwide.

Qiskit Fall Fest 2023
Lead Organizer

- Organized and hosted a Quantum Computing (QC) event powered by IBM.
- Gave an introductory talk on QC and held workshops with **Qiskit** material.
- Assembled a series of seminars with special guests like Enrique Solano (Co-CEO of Kipu Quantum).

Computer Science Society
Founder

- Founded the computer science society at my institution.
- Dedicated to fostering a culture of innovation, diversity and problem-solving with a focus on **robotics**.
- Secured university funding for the purchase of robotics supplies (e.g. 3D printer, Arduinos, etc.).

Projects

Industrial Waste Sorting Arm
Lancaster University

- Integrated an industrial robotic arm with object detection and image classification software for the purpose of automated waste sorting, utilizing **Python**, **PyTorch**, **C++**, **C**, and **OpenCV**.
- Project funded by Lancaster University's Global Advancement Fund.

Global Game Jam 2023, 2024
Lancaster University

- Participated in 48-hour game development events using **Java** and **libGDX**.
- Collaborated in a team using **agile development** and **continuous integration** practices.
- Represented the Computer Science Society.

Certifications

University of Oxford
Advanced Applications of Neural Networks and Deep Learning

- Worked with Generative Adversarial Networks, Variational Autoencoders, Deep Reinforcement Learning, Diffusion Models and Graph Neural Networks.
- Overall grade: A+.

University of Oxford
Artificial Intelligence and Machine Learning: Theory and Practice

- Worked with Deep Neural Networks and Convolutional Neural Networks.
- Explored the mathematics and theory behind simple linear models.
- Overall grade: A+.

Delft University
Hardware of a Quantum Computer

- Studied the building blocks of quantum computers.
- Explored solid-state qubits (Transmon, silicon spin, diamond NV center) and topological qubits.
- Learned how quantum gates are implemented across qubit types.

Publications

[1] Matias Barandiaran and James Stovold. Growing reservoirs with developmental graph cellular automata. *arXiv preprint arXiv:2508.08091*, 2025.

[2] Rodrigo Otoni, Martin Blicha, Matias Barandiaran, Patrick Eugster, Jan Kofroň, and Natasha Sharygina. Unsatisfiability proofs for horn solving. In *International Conference on Tools and Algorithms for the Construction and Analysis of Systems*, pages 67–87. Springer, 2025.

Skills and Interests

Languages: Spanish (native), English (C2) *__TOEFL__: 114/120*, German (A1).
Tools: Python, Java, R, PyTorch, Qiskit, Git, C, C++, SQL, Linux, Snakemake, Qiskit, Docker, LXD, QEMU, OS-Ken.
Concepts: Rare Variant Association Testing, Data Pipelines, Computer Vision, Generative Modelling, Supervised Learning, Graph Anomaly Detection, Reinforcement Learning, Reservoir Computing, Network Protocols, Distributed Systems.
Hobbies: Game Development, Scuba Diving, Badminton, Saxophone, Videography.

References available upon request.