

MANTAS BAKŠYS

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EXPERIENCE

AWS Reasoning Group

Applied Scientist Intern

July 2025 - Present
Full-time, London, UK

- Supervised by Dr. Stefan Zetsche, working on RL for program verification.

Project Numina

Researcher

September 2024 - Present
Part-time, Remote

- Using RL techniques to train AI models for Interactive Theorem Proving in Lean 4.
- Development of Lean-Python interfaces for dataset and benchmark creation and curation.
- Released open-source models for autoformalization and proving in Lean 4 and achieved state-of-the-art performance on the miniF2F benchmark in two separate releases (arXiv, HuggingFace).

University of Cambridge, DPMMS

Summer Research Student

July 2023 - September 2023
Cambridge, UK

- Worked in a research group led by Professor Timothy Gowers on automated theorem-proving.
- Focus on motivated proof discovery using the Lean theorem prover.
- Jointly developed an interactive Lean program to guide further research in human-oriented proving.

University of Cambridge, Computer Lab

Summer Research Student

June 2022 - August 2022
Cambridge, UK

- Worked in the ALEXANDRIA group supervised by Dr. Angeliki Koutsoukou-Argyaki.
- Successful formalisation of Master's level material in Additive Combinatorics including the Balog-Szemerédi-Gowers theorem.
- Co-authored a paper accepted to CPP 2023 (Link to Open Access).

Open AI

Research Intern

December 2021 - January 2022
Online

- Worked with Stanislas Polu on training ML models to find formal proofs using the Lean theorem prover.
- Analyzed properties of trained models and investigated new research directions.
- Co-authored a paper accepted to ICLR 2023, which can be found on arXiv.

University of Cambridge, DPMMS

Summer Research Student

June 2021 - August 2021
Cambridge, UK

- Worked with Dr Aled Walker investigating the Multiplication Table problem for bipartite graphs.
- Co-authored a preprint that can be found on arXiv.

EDUCATION

St. Catharine's College, University of Cambridge

PhD, Computer Science

2024-2028 (expected)

St. Catharine's College, University of Cambridge

MMath, Part III Mathematics

Grade: Merit

2023-2024

St. Catharine's College, University of Cambridge

BA (Hons), Mathematics Tripos

Grade: 2.i

2020-2023

Vilnius Jesuit Gymnasium

Lithuanian Brandos Atestatas

Overall average grade 10/10 (highest), top 0.5%

2016-2020

AWARDS, ACHIEVEMENTS & HOBBIES

- Represented Team Lithuania at the International Mathematical Olympiad
- Contributor to Lean’s mathematical library Mathlib

TECHNICAL STRENGTHS

Computer Languages Lean, Isabelle/HOL, LaTeX, C++ , C#, Python, TypeScript, JavaScript

PUBLICATION LIST

- [1] S. Polu, J.M Han, K. Zheng, M. Baksys, I. Babuschkin, and I. Sutskever.
Formal Mathematics Statement Curriculum learning. *arXiv preprint arXiv:2202.01344*, published at *ICLR 2023*, 2022.
- [2] H. Wang, M. Unsal, X. Lin, M. Baksys, J. Liu, M.D Santos, F. Sung, M. Vinyes, et al.
Kimina-Prover Preview: Towards Large Formal Reasoning Models with Reinforcement Learning. *arXiv preprint arXiv:2504.11354*, 2025.
- [3] H. Wang, M. Unsal, X. Lin, M. Baksys, J. Liu, M.D Santos, F. Sung, M. Vinyes, et al.
Kimina-Prover: Applying Test-time RL Search on Large Formal Reasoning Models *Huggingface Blog: https://huggingface.co/blog/AI-MO/kimina-prover*, 2025.
- [4] A. Koutsoukou-Argyraki, M. Bakšys, and C. Edmonds.
A formalisation of the Balog–Szemerédi–Gowers theorem in Isabelle/HOL. In *Proceedings of the 12th ACM SIGPLAN International Conference on Certified Programs and Proofs*, 2023.
- [5] M.D Santos, H. Wang, H. de Saxcé, R. Wang, M. Baksys, M. Unsal, J. Liu, et al.
Kimina Lean Server: Technical Report. *arXiv preprint arXiv:2504.21230*, 2025.
- [6] M. Bakšys.
A generalization of the Cauchy–Davenport theorem. *Archive of Formal Proofs*, 2023.
- [7] M. Bakšys and A. Koutsoukou-Argyraki.
Kneser’s theorem and the Cauchy–Davenport theorem. *Archive of Formal Proofs*, 2022.