Rishikesh Vaishnav (Rish)

Curriculum Vitae

✱ *05/20/1997*
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rish987.github.io

Education

Mar. 2023–Mar. 2026 **Ph.D. in Computer Science**, ENS Paris-Saclay, Gif-sur-Yvette, France

- **Ph.D. Thesis:** *Translating Proofs from Lean to Dedukti*, under supervision of **Frédéric Blanqui**, successfully defended March 2026

2019–2022 **M.Sc. in Computer Science, focus on Machine Learning**, University of California, San Diego, La Jolla, California

- **M.Sc. Thesis:** *Formalizing the Beginnings of Bayesian Probability Theory in the Lean Theorem Prover*, under supervision of **Prof. Sicun Gao**

2015–2018 **B.Sc. in Computer Engineering**, University of California, San Diego, La Jolla, California

Research Interests

Proof Assistants, **Program Verification**, **Robotics**, **Program Synthesis**, **Robotic Control Synthesis**, **Machine Learning**, **Automated Reasoning**

Research Experiences

Mar. 2023–Present **Ph.D. Student**, ENS Paris-Saclay, Laboratoire Méthodes Formelles (LMF), Deducteam, under supervision of Frédéric Blanqui

- Designing and implementing a tool to translate proofs from Lean to/from Dedukti, with the goal of enabling the automated translation of proofs between Lean and other proof assistants.

Jan. 2021–Mar. 2022 **Graduate Student Researcher**, UC San Diego, under supervision of Prof. Sicun Gao

- Investigated existing work towards probability theory in Lean's Mathlib library, and contributed some first formalizations in the direction of Bayesian probability theory.

June 2018–Aug. 2018 **Undergraduate Student Researcher**, UC Scholars Program, UC San Diego, under supervision of Prof. Sicun Gao

- Studied state-of-the-art techniques in the field of reinforcement learning, implementing them and reporting on their behavior under different benchmarks.

Publications

2026 Vaishnav, Rishikesh H. (2026). "Translating Proofs from Lean to Dedukti". PhD thesis. ENS Paris-Saclay. URL: `https://rish987.github.io/files/thesis.pdf`.

2025 Vaishnav, Rishikesh (Nov. 2025). "Lean4Less: Eliminating Definitional Equalities from Lean via an Extensional-to-Intensional Translation". In: *Theoretical Aspects of Computing – ICTAC 2025 22nd International Colloquium*. Vol. Lecture Notes in Computer Science. LNCS-16237. Marrakech, Morocco. URL: `https://inria.hal.science/hal-05310102`.

2024 Vaishnav, Rishikesh (2024). "A Term-Patching Framework for Eliminating Definitional Equalities in Lean (Work-in-Progress)". URL: `https://inria.hal.science/hal-04813916`.

2022 Vaishnav, Rishikesh H. (2022). "Formalising the Beginnings of Bayesian Probability Theory in the Lean Theorem Prover". Master's thesis. University of California, San Diego. URL: `https://escholarship.org/uc/item/8hb1w6js`.

Teaching Experiences

Sep. 2019–Sep. 2021 **Graduate Teaching Assistant**, UC San Diego

- Served as a teaching assistant for several undergraduate courses in machine learning, probability/statistics and computer science. Held office hours, designed and graded assignments and exams.

Industry Experience

Mar. 2022–Mar. 2023 **Software Engineer**, *Yatima Corporation*, Remote

- Worked on an independent typechecker for Lean (and implemented in Lean itself) with the goal of transpilation to Lurk, a lisp-like language with a ZK-Snark backend.

Mar. 2019–Sep. 2019 **Software Engineer**, *Ciena*, San Jose, CA

- Developed C and Python code for an embedded computer networking system.

Jun. 2017–Sep. 2017 **Software Engineering Intern**, *ServiceNow*, San Diego, CA

- Developed database-related software for an ITSM web application.

Activities

Logical Frameworks and Meta Languages: Theory and Practice (LFMTP) 2024, Tallinn, Estonia, July 2024

Hausdorff Institute of Mathematics Trimester Program: Prospects in Formal Mathematics, Bonn, Germany, July 2024

22nd International Colloquium on Theoretical Aspects of Computing (ICTAC), Marrakesh, Morocco, November 2025

Academic References

Frédéric Blanqui, *Research Director at Inria*, Website: `https://blanqui.gitlabpages.inria.fr/`, Email: blanqui@inria.fr
PhD thesis advisor, familiar with my experience in Lean, type theory, and proof translation.

Sicun Gao, *Associate Professor at UC San Diego*, Website: `https://scungao.github.io/`, Email: sicung@ucsd.edu
Master's thesis advisor, familiar with my experience in machine learning/AI and Lean.

Mario Carneiro, *Post-Doc, Chalmers University of Technology*, Website: `https://digama0.github.io/`, Email: marioc@chalmers.se
Researcher that I partly collaborated with during my PhD, familiar with my expertise around Lean's type theory and kernel implementation.