Vasily Ilin

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Education

University of Washington | 2020 - 2026

Applied Mathematics, PhD, $15,000 in awards.
Deputy Director of the Math AI Lab, $60,000 in donations.

Boston University | 2015 - 2020

Computer Science, MS.
Mathematics, BA & MA (Magna Cum Laude). Thesis: "Stochastic Simulation Algorithms and Benchmarks", paper.

Skills

Technical Skills: Python, SQL, Julia, Java, Lean
CS & Math Skills: Prompt optimization, data engineering, image editing, deep learning, diffusion, sampling, formalization

Publications

Score-Based Deterministic Density Sampling | ICLR, 2025 | paper
Deterministic sampling of an unnormalized density using on-the-fly score estimation with a neural network.

RealEdit: Reddit Edits As a Large-scale Empirical Dataset for Image Transformations | CVPR, 2025 | project page
A dataset and diffusion model to perform text-guided image edits. The first global edit model trained on real data.

Transport Based Particle Methods for the Fokker-Planck-Landau Equation | CMS, 2025 | paper
An algorithm for simulation of plasma using a neural network, inspired by score-based generative modeling.

Community and Mentorship Through the Experimental Lean Lab | JMM, 2025 | abstract
We share lessons we've learned in building community and mentoring undergraduate research projects in Lean.

Extending `JumpProcesses.jl` for Fast Point Process Simulation with Time-Varying Intensities | JuliaCon, 2024 | paper
An algorithm to efficiently simulate any point process on the real line with a continuous intensity rate.

Catalyst: Fast Biochemical Modeling with Julia | PLOS Comp Bio, 2023 | paper
Julia library for modeling and high-performance simulation of chemical reaction networks.

Work Experience

AI Intern at Google Cloud | Summer 2025
Optimized prompts for a Slides2Video model with a multi-agentic APO algorithm. Achieved F1 score of 0.9. Collaborated with two teams in Google DeepMind. Gave 6 research talks. Was acknowledged in a memo to 4 Vice Presidents and 3 Directors.

ML Intern at Google Cloud (Python, SQL) | Summer 2024
Trained XGBoost to predict defective TPUs from HBM ECC telemetry, achieved 80% accuracy and improved test efficiency 4x.

ML Intern at YouTube (Python, C++, SQL) | Summer 2023
Trained model to achieve a 2x Egress/Ingress improvement in a CDN. Proposed and implemented a load balancing algorithm.

Data Engineering Intern at Android, Google (Flume Java, SQL) | Summer 2022
Built a distributed pipeline for Quick Share, from logs to dashboards. Sped up dashboards by 30x using approximate aggregation.

Google Summer of Code (Julia) | Summer 2021 | code, blog post
Implemented, tested, benchmarked, and optimized algorithms to simulate jump processes. Sped up simulations by 70%.

Selected Projects

University Course Matching (Serper, Gemini API) | Summer 2025 | code
Found and parsed 100,000 courses from 2,000 universities, matched courses to a proprietary database of 11,000 textbooks.

AI DnD Bot (LiteLLM, PostgreSQL) | Summer 2024 | code
Made a Telegram bot for Dungeons & Dragons, including short- and long-term memory, image generation, and persistence.

Leadership

Math AI Lab (Lean, LLMs) | 2021-present | Github org
Taught a new mathematical formalization class. Started the Math AI Lab and seminar. Mentored 20+ research projects. Contributed to mathlib (1, 2, 3).