

Daniel Gurevich

Email: dgurevich@ucla.edu

Phone: (770) 642-0484

EXPERIENCE

University of California, Los Angeles
Hedrick Assistant Adjunct Professor of Mathematics

Los Angeles, CA
2025 – present

EDUCATION

Princeton University
PhD in Applied & Computational Mathematics
Dissertation: *Data-driven Inference of Symmetry-Equivariant Models of Natural Phenomena*
Co-advised by Clarence Rowley & Charles Fefferman.

Princeton, NJ
2020 – 2025

Princeton University
MA in Applied & Computational Mathematics. GPA: 4.00
Georgia Institute of Technology
B.S. Mathematics, B.S. Physics, B.S. Industrial & Systems Engineering. GPA: 4.00

Princeton, NJ
2020 – 2022
Atlanta, GA
2016 – 2020

RESEARCH EXPERIENCE

Princeton University
Graduate Research Assistant

Princeton, NJ
2020 – 2025

- *SPIDER project:*
 - Formulated a general physics-informed sparse regression framework for automatically identifying partial differential equations satisfied by experimental or simulated data representing either continuous media or systems of discrete particles.
 - Designed formal languages representing different families of symmetry-equivariant physics models and employed tools from programming language theory to implement software for automated synthesis and symbolic manipulation of data-derived models.
- *Learning on the fly project:*
 - Identified a provably optimal online control strategy for a general system with unknown linear dynamics exhibiting noise and showed that this strategy achieves a mean performance only slightly worse than the optimal strategy having advance knowledge of the dynamics.

Georgia Institute of Technology
Undergraduate Research Assistant (advisor: Prof. Roman Grigoriev)

Atlanta, GA
2019 – 2020

- Developed a robust algorithm for identification of partial differential equation models using weak formulation and sparse regression, achieving 10,000x improvement in accuracy under noisy conditions compared to prior work.
- Used numerical analysis to derive theoretical scaling laws and optimize hyperparameters.

Undergraduate Research Assistant (advisor: Prof. Flavio Fenton) 2016 – 2020

- Developed, implemented, and validated a numerical algorithm to robustly detect phase singularities in noisy and/or sparse recordings of cardiac arrhythmias.
- Implemented an algorithm for classifying dynamical instabilities underlying atrial and ventricular fibrillation.

INDUSTRY EXPERIENCE

Claudius Legal Intelligence

Research Scientist

Princeton, NJ

2020 – 2021

- Performed research combining data science and natural language processing to enable AI valuation of personal injury cases in the United States.
- Oversaw rollout of a commercial website enabling affordable access to justice for individuals pursuing personal injury lawsuits.

John Deere

Analytics Intern

Moline, IL

Summer 2020

- Created survival analysis and visualization tool for service parts forecasting using Python `lifelines` library, using non-parametric & parametric statistical methods to fit part reliability functions.

TEACHING EXPERIENCE

University of California, Los Angeles

Instructor of Record

Los Angeles, CA

2025 – present

- *PIC 16B: Python with Applications II*
 - Fall 2025

Princeton University

Graduate Teaching Assistant

Princeton, NJ

2024 – 2025

- *APC 350: Introduction to Differential Equations:*
 - Instructed 71 students in office hours, graded assignments & exams.
- *MAE 433: Automatic Control Systems:*
 - Instructed 82 students in labs & office hours, graded assignments & exams.

Georgia Institute of Technology

Undergraduate Teaching Assistant

Atlanta, GA

Summer 2019

- *ISYE 3044: Simulation Analysis & Design:*
 - Instructed a class of 51 students during and outside of office hours, graded homeworks and exams.

MENTORING EXPERIENCE

Institute for Pure & Applied Mathematics

Research in Industrial Projects for Students Program Mentor

Los Angeles, CA

Jun-Aug 2025

Mentored a team of top undergraduate researchers developing a reinforcement learning framework for guiding meteor swarm interception.

- Individual research mentoring:
 - Kevin Zhou, undergrad, Georgia Institute of Technology, 2025-present
 - Alexander Boresow, undergrad, Georgia Institute of Technology, 2025-present
 - Christopher Linder, undergrad, Georgia Institute of Technology, 2025-present
 - Matteo Ugliotti, graduate student, Georgia Institute of Technology, 2024-present
 - Brandon Choi, undergrad, Georgia Institute of Technology, 2024-present
 - Raoul Lisso, undergrad, Georgia Institute of Technology, 2023-2025
 - Carlos De Oliveira E Silva Filho, undergrad, Georgia Institute of Technology, 2022-2024
 - Yu Shuai, graduate student, Princeton University, 2022-2025
 - Yangkai Wei, graduate student, Princeton University, 2022-2024
 - Gregory Macchio, graduate student, Princeton University, 2021-2025

PEER-REVIEWED PUBLICATIONS

- D. R. Gurevich and A. Gaonkar, “Deductive synthesis of physical models by iterative sparse regression” (in preparation).
- M. R. Golden, D. R. Gurevich, and R. O. Grigoriev, “Modeling and troubleshooting numerical simulations of spatially extended systems by sparse tensor regression” (in preparation).
- D. R. Gurevich, M. R. Golden, P. A. K. Reinbold, and R. O. Grigoriev, “Learning fluid physics from highly turbulent data using sparse physics-informed discovery of empirical relations (SPIDER),” *J. Fluid Mech* **996**, A25 (2024).
- D. R. Gurevich, D. Goswami, C. L. Fefferman, and C. W. Rowley, “Optimal Control with Learning on the Fly: System with Unknown Drift,” L4DC, *PMLR* **168**, 870-880 (2022).
- P. A. Reinbold, D. R. Gurevich, and R. O. Grigoriev, “Using noisy or incomplete data to discover models of spatiotemporal dynamics,” *Physical Review E* **101**, 010203 (2020).
- D. R. Gurevich, P. A. Reinbold, and R. O. Grigoriev, “Robust and optimal sparse regression for nonlinear PDE models,” *Chaos* **29**, 103113 (2019).
- D. R. Gurevich and R. O. Grigoriev, “Robust approach for rotor mapping in cardiac tissue,” *Chaos* **29**, 053101 (2019).
- D. R. Gurevich et al., “Level-set method for robust analysis of optical mapping recordings of fibrillation,” *Computing in Cardiology* **44**, 197-427 (2017).
- J. Barnett, D. R. Gurevich, and R. O. Grigoriev, “Streamwise localization of traveling wave solutions in channel flow,” *Physical Review E* **95**, 033124 (2017).

AWARDS & FELLOWSHIPS

- **NSF Graduate Research Fellowship**, 2020-2025
- **NDSEG Fellowship (declined)**, 2020
- **Hertz Fellowship Finalist**, 2020
- **Love Family Foundation Scholarship**, 2020
- **University System of Georgia Academic Recognition Award**, 2020
- **Letson Undergraduate Research Scholarship**, 2019-2020
- **Roger M. Wartell and Stephen E. Brossette Award**, 2019
- **President’s Undergraduate Research Award**, 2018, 2019
- **A. Joyce Nickelson and John C. Sutherland Undergraduate Research Award**, 2018
- **GT Undergraduate Research Science Award**, 2018
- **GT Faculty Women’s Club Scholarship**, 2017, 2018
- **Petit Undergraduate Research Scholarship**, 2017
- **Georgia Tech Gold Scholar**, 2016-2020

INTERNATIONAL CONFERENCE PRESENTATIONS

- D. R. Gurevich, A. Gaonkar, M. R. Golden, and R. O. Grigoriev, “Machine Learning of Group-Equivariant Interpretable Models,” SIAM Conference on Applications of Dynamical Systems, Denver, CO 2025 (oral).
- D. R. Gurevich, M. R. Golden, and R. O. Grigoriev, “Troubleshooting numerical simulations of PDEs using SPIDER,” 10th International Congress on Industrial and Applied Mathematics, Tokyo, Japan 2023 (poster).
- D. R. Gurevich, D. Goswami, C. L. Fefferman, and C. W. Rowley, “Optimal Control with Learning on the Fly: System with Unknown Drift,” Learning for Dynamics & Control Conference, San Francisco, CA 2022 (poster).
- D. R. Gurevich, P. A. Reinbold, and R. O. Grigoriev, “Learning fluid dynamics using sparse physics-informed discovery of empirical relations (SPIDER),” Meeting of the Division of Fluid Dynamics of the American Physical Society, Phoenix, AZ 2021 (oral presentation).
- D. R. Gurevich, D. Goswami, C. L. Fefferman, and C. W. Rowley, “Control with Least Regret: Unknown Drift,” SIAM Conference on Applications of Dynamical Systems, virtual 2021 (oral presentation).

- D. R. Gurevich and R. O. Grigoriev, “Robust and optimal sparse regression for nonlinear PDE models,” Dynamical Methods in Data-based Exploration of Complex Systems Workshop, Dresden, Germany 2019 (poster).
- D. R. Gurevich and R. O. Grigoriev, “Reconstructing Rotor Dynamics from Sparse Noisy Data,” SIAM Conference on Applications of Dynamical Systems, Snowbird, UT 2019 (oral presentation).
- D. R. Gurevich, C. Herndon, F. H. Fenton, and R. O. Grigoriev, “Topological analysis of experimental recordings of ventricular fibrillation,” Conference of Computational Interdisciplinary Sciences, Atlanta, GA 2019 (poster)
- D. R. Gurevich, C. Herndon, F. H. Fenton, and R. O. Grigoriev, “Topological analysis of experimental recordings of ventricular fibrillation,” Experimental Chaos and Complexity Conference, Madrid, Spain 2018. (Awarded Best Poster overall as well as Best Student Poster out of the 59 posters presented at the conference.)
- D. R. Gurevich, C. Herndon, F. H. Fenton, and R. O. Grigoriev, “Topological analysis of experimental recordings of ventricular fibrillation,” Dynamics Days, Denver, CO 2018. (This was one of 16 oral presentations selected from around 100 submitted abstracts.)
- D. R. Gurevich et al., “Level-set method for robust analysis of optical mapping recordings of fibrillation,” Computing in Cardiology, Rennes, France, September 2017 (oral presentation).
- D. R. Gurevich, J. Barnett, and R. O. Grigoriev, “Streamwise localization of traveling wave solutions in channel flow,” SIAM Conference on Applications of Dynamical Systems, Snowbird, UT 2017 (oral presentation).

SEMINARS

- “Learning fluid physics from highly turbulent data using sparse physics-informed discovery of empirical relations (SPIDER),” Computing Sciences Seminar, Multiphase Flow Science Seminar, National Energy Technology Laboratory, 2025
- “Machine Learning of Group-Equivariant Interpretable Models,” Computing Sciences Seminar, Lawrence Berkeley National Laboratory, 2025

PROGRAMMING SKILLS

Python: Deep learning packages: PyTorch, TensorFlow; data science: NumPy, scipy/scikit-learn, pandas, nltk; plotting: matplotlib, plotly, seaborn; optimization: Gurobi; other: numba, tkinter

Other languages: Java (GUI packages: Swing), MATLAB, Maple, SQL

ACTIVITIES, SERVICE, AND LEADERSHIP

- **Chess:**
 - International Master (since 2015).
 - Board 2 of Princeton Collegiate Chess Team (2021-2023).
 - Georgia Tech Chess Club: President (2019-2020), re-established chess club as an official campus organization.
 - Anchor of *What's the Question?* bimonthly column (2010-2017) in the national magazine *Chess Life for Kids* with over 10,000 readers, explaining complex chess concepts at a 6th-grade level.
 - Individual chess coach for top juniors in high schools and universities.
 - Volunteer instructor in metro Atlanta after-school chess programs.
- **Piano Performance:**
 - Established Georgia Tech Student Pianist Organization (2018).
 - Performed concert piano repertoire by Berg, Chopin, Kapustin, Liszt, Prokofiev, Rachmaninoff, Ravel, Scriabin.