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David Millard

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Education

BS **Rochester Institute of Technology**, Computer Science and Applied Statistics — Sept 2020 – May 2025

- GPA: 3.87/4.0
- **Interests:** Scientific Computing, Generative AI, Applied Machine Learning, Stochastic Processes, Bayesian Statistics
- **Positions:** TA/Grader for Machine Learning, Data Mining, Big Data Analytics, and Computer Vision.

Relevant Experience

Lehigh, Undergraduate Research Assistant — Bethlehem, PA, Aug 2024 – Present

- Leveraged transfer learning from large pretrained image-to-image variational autoencoders to expedite high dimensional Koopman operator learning.
- Exploring state-of-the-art Fourier neural operators within the context of highly transient atmospheric dynamics.

Lehigh, Research Fellowship — Bethlehem, PA, June 2024 – Aug 2024

- Developed ML-based approaches for accelerating the performance of iterative solvers.
- Applied Krylov-based techniques to applications in numerical weather prediction.

Alpine Software, Software Engineer Intern — Mendon, NY, Sept 2022 – May 2023

- Performed essential maintenance on the company codebase, contributing with SQL, Delphi, and C# development.
- Designed data pipelines for scalable preprocessing and efficient I/O operations, integrating with Microsoft Azure databases, using Apache Spark.

Publications

Time Invariant Operator Guided Diffusion — Present
David Millard, Arielle Carr, Stéphane Gaudreault
Manuscript in-progress.

PEARL: Preconditioner Enhancement through Actor-critic Reinforcement Learning — Present
David Millard, Arielle Carr, Stéphane Gaudreault, Ali Baheri
Manuscript submitted to The Franklin Institute.

Deep Learning for Koopman Operator Estimation in Idealized Atmospheric Dynamics — Sept 2024
David Millard, Arielle Carr, Stéphane Gaudreault
Short Paper, IEEE Big Data Conference

Data-Driven Initial Guess Selection for Numerical Weather Prediction Solvers — Aug 2024
David Millard, Arielle Carr, Stéphane Gaudreault
Full Paper, REU Symposium at IEEE Big Data Conference

Technical Skills

Languages: Python, R, C#, Julia, Java, C, SQL, CUDA, Typescript, Matlab, Delphi, Lisp, Assembly

Technologies: PyTorch, JAX, Pandas, .NET, Microsoft SQL Server, GCS, AWS, JMP, Apache Spark