Curriculum Vitae of

Dustin Lee Enyeart

Contact

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🦊	GitLab	https://gitlab.com/users/dustin_lee/projects
🐙	GitHub	https://github.com/dustin-enyeart

Summary

Dustin Enyeart graduated with a PhD in mathematics from Purdue University in December 2024. He has broad interests across applied mathematics, scientific computing, theoretical physics, computational physics, computer science and technical writing. His dissertation is on neural networks and differential equations.

Education

Bachelor's Degree of Science in Mathematics (2013-2017)

University of New Mexico | Albuquerque, NM

3.57 GPA

Took several graduate courses and independent studies

Undergraduate research in commutative algebra and graph theory

Participated in a mathematics summer camp

Recipient of the Lottery Scholarship

Master's Degree of Science in Mathematics (2022)

Purdue University | West Lafayette, IN

4.00 GPA

Took courses in a variety of disciplines, such as nuclear engineering,

material science engineering, electrical engineering and computer science

Doctorate Degree of Philosophy in Mathematics (2017-2024)

Purdue University | West Lafayette, IN

3.84 GPA

Dissertation: "Some Studies in Operator Learning for Solving Differential Equations"

Worked as a teaching assistant

Publications

Some Studies in Operator Learning for Solving Differential Equations

https://hammer.purdue.edu/articles/thesis/Some_Studies_in_Operator_Learning_for_Solving_Differential_Equations/27936021?file=50903178

Loss Terms and Operator Forms of Koopman Autoencoders

https://arxiv.org/abs/2412.04578

Some Best Practices in Operator Learning

https://arxiv.org/abs/2412.06686

Adversarial Autoencoders in Operator Learning

https://arxiv.org/abs/2412.07811

Selected Projects

Operator Learning: Implemented and studied several neural operator architectures to solve differential equations with PyTorch with Lightning. Studied general best practices in operator learning. Compared different loss terms and operator forms for Koopman autoencoders. Introduced novel loss terms for Koopman autoencoders that improved performance. Introduced adversarial additions for Koopman autoencoders and DeepONet that improved performance for small data sets. Trained models on GPU clusters. Scheduled jobs with Slurm. Used Hydra for configurations. Used Neptune AI for logging.

https://gitlab.com/dustin_lee/neural-operators

Xray Sources: Studied the spectra of various simulated xray sources. Simulated an xray tube and a wiggler with C++ and Geant4. Simulated an undulator and a van-der-Waals source with Python. Used Jefimenko's equations to calculate the electromagnetic fields. Used ASE and GPAW to perform density functional calculations for the electronic structure of the van-der-Waals material.

https://gitlab.com/dustin_lee/xray_tube

https://gitlab.com/dustin_lee/wiggler

https://gitlab.com/dustin_lee/undulator

https://gitlab.com/dustin_lee/vdwsource

Bias Detection in Wikipedia: Implemented natural language processing methods, such as the transformer, to detect bias in Wikipedia using Python and PyTorch.

https://gitlab.com/dustin_lee/bias_detection

Technical Skills

Programming Languages

Python

C/C++

Scientific Computing

Finite-Difference Method

Finite-Element Method

Numerical Linear Algebra

Physical Modeling

Computational Electromagnetism

Density Functional Theory

Molecular Dynamics

Artificial Intelligence

Scientific Machine Learning

PyTorch

Torch Lightning

Torch Geometric

Data Science

Probability

Statistics

Data Analysis

Parallel Computing

Threads

MPI

CUDA

Software Development

GNU/Linux

Bash

Git

GDB

CMake

Slurm

Hydra

Technical Writing

LaTeX

Markdown

reStructuredText

Sphinx

Mentoring

Undergraduate Directed Reading (2024)

Participated in a volunteer program that paired graduate students with undergraduate students for a directed reading course. The topic of the course was neural networks.

Languages

English ●●●

Spanish ●●○

German ●○○

References

Guang Lin

Professor | Purdue University

Doctoral Advisor

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Ben McReynolds

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Robert Bean

Engineer | Oakridge National Laboratory

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Marius Dadarlat

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