

Dustin Nguyen

+1-(480)-823-8799 • [✉ \(dnguyen.phys@gmail.com\)](mailto:dnguyen.phys@gmail.com) • [in](#) • [🌐](#) • [🏠](#) • U.S. Citizen • PhD • [Google Scholar](#)

Summary: Computational hydrodynamics astrophysicist now working on developing, deploying, and maintaining deep learning models applied towards aerospace and defense objectives.

Over the course of my PhD I published 9 papers, including into premier artificial intelligence conference workshops (NeurIPS & ICML), alongside astrophysical journals (ApJ, ApJ Letters, MNRAS, MNRAS Letters).

Work Experience

Lockheed Martin

▷ Senior AI Machine Learning Engineer

Littleton, CO

03/2024 - Present

- Research, develop, and deploy deep learning models for objectives of the Autonomous Systems group within Missiles and Fire Control under Lockheed Martin.

Los Alamos National Laboratory

▷ Applied Machine Learning Fellow

Los Alamos, NM

05/2022 - 08/2022

- Investigated how neural networks embedded in non-linear PDEs learn unknown physics from time-series data.

Education

Ph.D. in Physics, The Ohio State University

08/2018 - 12/2023

M.S. in Physics, The Ohio State University

08/2018 - 05/2021

B.S. in Physics and Astrophysics, Arizona State University

08/2014 - 05/2018

Technical Skills

Toolkit: PyTorch, Python, Julia, scikit-learn, AWS, SQL

Research Projects

Model Discovery with Neural Ordinary and Partial Differential Equations

08/2022 - 12/2023

- Independent project lead for the first study of neural coupled ODEs describing a galactic wind model. Showcased two optimization algorithms required for convergence. Defined a custom loss function with feature-engineered variables that additionally penalizes unstable solutions. Resulted in ICML 2023 workshop paper.
- Applied model to X-ray space observations of one of the most well-studied galaxies (M82). Showed that the framework can learn physics even with missing kinematic data. Resulted in NeurIPS 2023 workshop paper.

Three-Dimensional Hydrodynamic Simulations of Feedback from Galaxies (PhD thesis)

08/2019 - 12/2023

- Project lead on computational studies on understanding the physics of driving large-scale galactic superwinds and phenomenological implications of different models. Ran 3D time-dependent hydrodynamic simulations.

Publications (Total 9, Six first-author papers.)

Machine Learning

- "Neural ODEs as a discovery tool..." Nguyen et al. 2023, [NeurIPS 2023 Workshop on M.L. and Physical Sciences](#).
- "Neural Astrophysical Wind Models," Nguyen, 2023, [ICML 2023 Workshop on M.L. for Astrophysics](#).

Astrophysics

- 4 first author papers in MNRAS, MNRAS Letters, and Astrophysical Journal Letters. 3 co-author papers.

Award

- NASA FINESST Fellowship | Student led proposal ~8% acceptance rate, ~\$97K

2022