

Education

University of Hawai‘i at Mānoa	<i>Honolulu, HI</i>
Ph.D. in Computer Science	August 2024 - May 2027
M.Sc. in Computer Science, GPA 3.95	August 2022 - July 2024
Ph.D. student in Dr. Peter Sadowski’s Machine Learning lab. <u>Selected Coursework:</u> Software Quality Assurance, Human-centered AI, Machine Learning, Deep Learning, AI for Dynamic Systems, Random Processes, Complexity Analysis, AI Seminar	
University of Colorado Boulder	<i>Boulder, CO</i>
B.A. in Astrophysics and Minor in Music (Harp performance), GPA 3.86	August 2018 - May 2022
<u>Selected Coursework:</u> <i>Astrophysics:</i> Classical Mechanics I, II, Electricity and Magnetism I, II, Quantum Mechanics I, Astrophysics I, II <i>Computer Science:</i> Algorithms, Principles of Programming Languages, Data Structures, Scientific Programming I, II, III, Computing I	

Technical Skills

Programming Languages	<i>Proficient:</i> Python, C++, bash, \LaTeX . <i>Working knowledge of:</i> SQL, Scala, JavaScript, HTML/CSS
Data Science	<i>Proficient:</i> PyTorch, TensorFlow, HPC, JAX, Pandas, Matplotlib, SLURM. <i>Working knowledge of:</i> MATLAB, Mathematica

Employment and Research

University of Hawai‘i at Mānoa	<i>Honolulu, HI</i>
Graduate Research Assistant	August 2022 - May 2027, full-time
I research novel physics-informed machine learning models that incorporate scientific domain knowledge with Dr. Peter Sadowski. I’m currently exploring autoregressive Fourier Neural Operators and Gaussian processes in Python to perform anomaly detection in stellar lightcurves with PyTorch . I recently presented my work on accelerating Markov Chain Monte Carlo methods with neural networks as a scheduled talk at SPAICE [1] and as a poster at NeurIPS [3].	
Striveworks, Inc	<i>Austin, TX</i>
Data Science Intern	May 2023 - August 2023, full-time
I researched the application of large language models to large bodies of text to complete natural language tasks. I employed various strategies such as LoRA finetuning and in-context learning to improve performance.	
Laboratory for Atmospheric and Space Physics	<i>Boulder, CO</i>
Undergraduate Research Assistant	August 2020 - July 2022, part-time
I implemented K-means and convolutional neural networks in Python with PyTorch to segment polar coronal holes in images of the Sun [5]. I applied data assimilation methods (3D-Var) to model the fluid dynamics of stellar atmospheres.	
Massachusetts’s Institute for Technology’s Haystack Observatory	<i>Westford, MA</i>
Research Experience for Undergraduates	May 2021 - August 2021, full-time
I created a data pipeline to prepare Antarctic seismic data for machine learning. I applied a Gaussian mixture model and convolutional neural network to automatically detect ocean wave events in Antarctica’s Ross Ice Shelf.	
Institute for Astronomy at the University of Hawai‘i at Mānoa	<i>Honolulu, HI</i>
Research Experience for Undergraduates	May 2020 - August 2020, full-time
I analyzed the entire Kepler Space Telescope dataset using Python statistical tools such as Pandas to evaluate the biases in its selection function [4].	
University of Colorado Boulder	<i>Boulder, CO</i>
Physics Learning Assistant	August 2019 - May 2020, part-time
I taught students in an Introductory Experimental Physics and an Introductory Electricity and Magnetism Tutorial course.	

Publications

- [1] **Wolniewicz, L. M.**, Sadowski, P., Corti, C., 2024. “Neural Surrogate HMC: Accelerated Hamiltonian Monte Carlo with a Neural Network Surrogate Likelihood” *JGR Machine Learning and Computation*. In Prep. [\[Link\]](#)
- [2] Glaser, Y., Stopa, J. E., **Wolniewicz, L. M.**, Foster, R., Vandemark, D., Mouche, A., Chapron, B., Sadowski, P., 2024. “WV-Net: A foundation model for SAR WV-mode satellite imagery trained using contrastive self-supervised learning on 10 million images” *JGR Machine Learning and Computation*. In Prep. [\[Link\]](#)
- [3] **Wolniewicz, L. M.**, Sadowski, P., Corti, C., 2023. “NeuralHMC: Accelerated Hamiltonian Monte Carlo with a Neural Network Surrogate Likelihood”[Paper presentation]. Machine Learning for the Physical Sciences. Thirty-seventh Conference on *Neural Information Processing Systems*. [\[Link\]](#)
- [4] **Wolniewicz, L. M.**, Berger, T., Huber, D., 2021. “The Stars Kepler Missed: Investigating the Kepler Target Selection Function Using Gaia DR2” *The Astrophysical Journal*, Volume 161, Number 5. [\[Link\]](#)
- [5] Tiwari, A. J., Hu, A., Tremblay, B., Smith, B., **Wolniewicz, L. M.**, Penn, M., Kirk, M., Guidoni, S., Samanta, T., 2020. “SEARCH: SEgmentation of polar Coronal Holes”[Paper presentation]. Machine Learning for the Physical Sciences. Thirty-fourth Conference on *Neural Information Processing Systems*. [\[Link\]](#)

Awards and Honors

May 2024	Catalyst Award for Science Advancement (CASA) Grant for Outreach with Graduate Women in Science Hawai‘i
April 2022	National Science Foundation Graduate Fellowship