Alan Pearl

⚑ US Citizen   ✉ alannpearl@outlook.com   � AlanPearl   ▣ alannpearl   🌐 https://alanpearl.github.io

Personal Statement

Postdoctoral researcher in Astrophysics, seeking to bring my wide skillset to a career in machine learning development. I have over 8 years of experience in scientific software development, algorithm derivation and implementation, big data analysis, relational database queries, Bayesian inference, machine learning, and data visualization. I am the lead developer of several open-source software projects: ⌂ diffopt, ⌂ galtab, ⌂ JaxTabCorr, and ⌂ mocksurvey.

Experience

Postdoctoral Researcher   **Sep 2023 - Present**
Argonne National Laboratory, Lemont, IL

– Developed generative models of galaxy populations using machine learning, allowing my team to perform cosmological inference without requiring a million-CPU-hour simulation per evaluation

– Parallelized parameter optimization on GPU, utilizing our high-performance computing resources, enabling nearly limitless scalability of our models and up to 100x faster training times

Graduate Student Researcher / Teaching Assistant   **Sep 2017 - Aug 2023**
University of Pittsburgh, Pittsburgh, PA

– Generated galaxy data catalogs through machine learning and developed new spatial clustering statistics that produced some of the most significant evidence to date of galaxy assembly bias

– Clear communication: Led recitations for various courses and advised an undergraduate research project

Education

University of Pittsburgh – Pittsburgh, PA   **2017 - 2023**
Ph.D. Physics – Thesis: Illuminating and Tabulating the Galaxy-Halo Connection   *Summer 2023*
M.S. Physics, GPA: 3.89   *Dec 2018*

Rensselaer Polytechnic Institute – Troy, NY   **2013 - 2017**
B.S. Physics, magna cum laude, GPA: 3.75   *May 2017*

Technical Skills

Primary Language:	Python (*over 8 years of scientific software development*)
Python Packages:	NumPy, Jax, Pandas, mpi4py, Scikit-Learn, TensorFlow, SpaCy, LangChain
Secondary Languages:	C++, C#, Cython, MATLAB, HTML, SQL, Mathematica, IDL
Operating Systems:	Windows (with WSL), Linux (Ubuntu), AWS Courses
Other tools:	Slurm, Git, GitHub CI, VS Code, Docker, DVC, debuggers (gdb, pdb)

First-Author and Advisee Publications

Dec 2024	**Pearl, Alan N.**; Beltz-Mohrmann, Gillian D.; Hearin, Andrew P. 2024, JOSS, 9 (104), 7522.
Mar 2024	**Pearl, Alan N.**; Zentner, Andrew R.; Newman, Jeffrey A.; et al. 2024, ApJ, 963, 116
Jan 2024	Steel, Cecilia; **Pearl, Alan N.**; Kaushal, Yasha; Bezanson, Rachel 2024, RNAAS, 8, 16
Feb 2022	**Pearl, Alan N.**; Bezanson, Rachel; Zentner, Andrew R.; et al. 2022, ApJ, 925, 180P
Oct 2017	**Pearl, Alan N.**; Newberg, Heidi Jo; Carlin, Jeffrey L.; Smith, R. Fiona 2017, ApJ 847, 123P

Professional Reference

Andrew Hearin ✉ ahearin@anl.gov – current supervisor at Argonne National Laboratory