Alan Pearl

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Personal Statement

Postdoctoral researcher in Astrophysics, seeking to bring my wide skillset to a career in data science. I have over 8 years of experience in open-source scientific software development, algorithm derivation and implementation, big data analysis, relational database queries, Bayesian inference, and machine learning. I am the lead developer of several open-source software projects: multigrad, multiswarm, kdescent, galtab, JaxTabCorr, and mocksurvey. I look forward to undertaking new challenges in the field of data science.

As an American, English is my native language. However, I have also attained a proficient level in French thanks to my dedication of practicing every day for the past several years. Now I would like to make the most of this by exploring life in France, while continuing to improve my French and gaining new career skills.

Experience

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

– Contributed to various Jax-based libraries in the dsps ecosystem. Led the effort to parallelize parameter optimization and utilize exascale high-performance computing resources through the development of multigrad, multiswarm, and kdescent.

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

– Developed new statistical tools and constructed state-of-the-art mock galaxy data catalogs with various machine learning techniques, such as random forest regression. Enabled by both community-driven and personal open-source projects such as: galtab, JaxTabCorr, mocksurvey, and halotools.

Education

University of Pittsburgh – Pittsburgh, PA **2017 - 2023**
Ph.D. Physics – Thesis: Illuminating and Tabulating the Galaxy-Halo Connection *Spring 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:	Linux (Ubuntu), Windows (with WSL)
Other tools:	Slurm, Docker, Git, DVC, GitHub CI, VS Code, debuggers (gdb, pdb)
Communication skills:	Advised projects, published papers, presented talks, taught classes, tutored students

First-Author and Advisee Publications

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