Becky Nevin

Researcher and Data Scientist

Boulder, CO
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STATISTICAL AND DATA SKILLS

Data Science and Machine Learning: Scikit-learn, Pandas, Jupyter ecosystem; skilled in supervised and unsupervised machine learning techniques and model validation.

Satellite Imaging and Deep Learning: Strong background in astrophysical imaging, including segmentation, coordinate systems, designing pipelines for image analysis, and computer vision.

Statistics and Scientific Modeling: Causal inference, Bayesian probability, MCMC sampling, uncertainty quantification, and incorporating probabilities into predictive models.

Software Development Tools: Python, Git, Docker, Kubernetes, SQL, DevOps workflow tools (i.e., Github actions), and cloud/high-performance computing.

RESEARCH AND DATA EXPERIENCE

Deepskies Lab, Fermilab National Accelerator Laboratory - *Postdoctoral Fellow*

SEPTEMBER 2022 - PRESENT

- Research Leadership: Led a project to assess uncertainty predictions from Bayesian deep learning methods, including deep ensembles and deep evidential regression (neurIPS 2024). Created DeepUQ, a software package for uncertainty quantification.
- CI/CD Experience: Directed physics module development, increased testing coverage, and identified issues for DeepBench (JOSS paper). Collaborated in the release cycle.
- Educational Contributions: Developed tutorials on statistical and machine learning models (e.g., numpyro, simulation-based inference, and NNs), mentored junior members.
- DevOps Expertise: Engineered and implemented a scalable PostgreSQL data transfer service deployed via Kubernetes integrated with a robust Github testing framework.

Harvard & Smithsonian | Center for Astrophysics, Boston - *Postdoctoral Fellow*

AUGUST 2019 - AUGUST 2022

- Mentored and advised three students on their PhD and undergraduate research projects.
- Led a research program on identifying merging galaxies in images (MergerMonger). This end-to-end pipeline uses wget and SQL to query galaxy images and perform data engineering, image segmentation, and marginalized statistical analysis, resulting in publicly available catalogs and multiple peer-reviewed papers (1, 2).

University of Colorado, Boulder - *PhD in Astrophysics*

AUGUST 2013 - JUNE 2019

- Designed and led several imaging and spectroscopic research projects, which resulted in multiple successful grants (NSF grants, supercomputer grants, and telescope time).
- High Performance Computing: Leveraged HPC resources to run large-scale simulations and data processing tasks, optimizing computational efficiency and performance.