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Kara A. Ponder

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Employment

Research Associate	SLAC National Accelerator Laboratory	August 2020 – Present
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- Postdoctoral Researcher in the Machine Learning Initiative
- Pipeline Scientist for the Rubin Observatory LSST Dark Energy Science Collaboration
- Explored data science and machine learning for science with the upcoming Rubin Observatory.

Data Science Fellow	University of California Berkeley	September 2017 – August 2020
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- Postdoctoral Researcher at the Berkeley Center for Cosmological Physics under Saul Perlmutter.
- Maintained a data reduction pipeline hosted on a high performance computing center.

Research Assistant	University of Pittsburgh	January 2013 – August 2017
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- Modeled systematics with Bayesian/Hierarchical Bayesian frameworks and explored data correlations with regression for supernova cosmology.

Technical Experience

Select Projects

- **Deep Learning with a Transformer** (2021). Created a deep learning model using the Transformer architecture traditionally used for NLP to classify transient objects. Python/Tensorflow
- **Supernovae and Galaxy Correlations** (2020). Determined the statistical significance of a correlation between Type Ia Supernovae in the near infrared and their host galaxies using model regression. Python
- **PLAsTiCC Astronomical Classification on Kaggle** (2018). Validated the simulations through many visual, distribution, and physical tests to minimize data leaks. Python
- **Bayesian Modeling of Systematics** (2016). Implemented a Gaussian Mixture Model in a Bayesian framework to determine biases on cosmological parameters from missing data correlations. Python on HPC center.

Education

Pittsburgh, PA	University of Pittsburgh	August 2012 – August 2017
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- Ph.D. in Physics, August 2017.
- M.S. in Physics, April 2014.
- Relevant Coursework: Computational Methods in C++, Astronomical Techniques (strong focus on statistics).
- Co-President of the Association of Physics and Astronomy Graduate Students

Athens, GA	University of Georgia	August 2009 – May 2012
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- B.S in Physics and Astronomy, May 2012.
- Relevant Coursework: Computational Physics in Fortran.
- Awarded the Linville L. Hendren Memorial Scholarship for Outstanding Proficiency in Physics

Languages and Technologies

- Python (expert); Git (proficient); Unix (proficient); CVS (proficient); SQL (prior experience); C++ (prior experience); C (prior experience); Fortran (prior experience);
- Python Packages: Numpy, Scipy, Matplotlib, Tensorflow, Scikit-learn, Pandas, Django (with PostgreSQL)

Skills

- Data Visualization, Model Fitting, Data Manipulation/Cleaning, Machine Learning, Deep Learning
- Working in Collaborations and Independently, Communication, Creative Thinking