Alexander Andres Lazar

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TECHNICAL SKILLS

Python: *8+ years* — NumPy ○ SciPy ○ Matplotlib ○ Pandas ○ Scikit-learn ○ PyTorch
Tools and Platforms: Git ○ SQL ○ Linux ○ Slurm ○ Vim ○ Jupyter Notebook ○ Mathematica ○ LaTeX
Machine Learning: Regression ○ Classification ○ Predictive Modeling
Statistical Modeling
Experimental Designing
Numerical Optimization
Visualization

PROFESSIONAL EXPERIENCE

Astrophysical Modeling using Cosmological Simulations   IRVINE, CALIFORNIA
Graduate Student Researcher ○ University of California, Irvine   *Aug 2018 – May 2023*

– Specialized in employing various techniques of mathematical model building to large data sets that are procedurally solved using numerical optimization algorithms to understand the formation of the Universe.
  ○ Developed rigorous analysis pipelines and post-processed data catalogs to analyze 100+ TBs of particle data in parallel computing environments.
  ○ Ran various, CPU-intensive, simulations of galaxies and dark matter halos using MPI-based N-body codes via high-performance computational facilities; results contributed to projects within collaboration.
  ○ Lead and published multiple large and small projects in developing accurate, analytical models of galaxy formation using state-of-the-art galaxy simulations.

Astrophysical Data Analysis at NASA Jet Propulsion Lab   PASADENA, CALIFORNIA
Graduate Student Researcher ○ JPL   *May 2020 – May 2023*

– Heavy utilization of Bayesian inference and machine learning techniques to partition out observational events of lensed Supernovae in image catalogs.
  ○ Interacted and consolidated sizable amounts of imaging data from different database architectures.
  ○ Applied Gaussian-process regression and non-stationary fitting functions to modern, well-developed photometry algorithms.
– Constructed a simplified, analytical model that more accurately characterizes the lensing-mass quantities of a dark matter halo population
  ○ Model expanded upon using an impressive simulation data set (100+TBs) to obtain statistically applicable functions.
  ○ Contributed to popular Python-based lensing packages with said analytical model: Lenstronomy, pyHalo, and COLOSSUS

EDUCATION

University of California, Irvine   IRVINE, CALIFORNIA
Ph.D in Physics   *Sep 2018 – May 2023*

University of California, Irvine   IRVINE, CALIFORNIA
Masters in Physics   *Sep 2018 – Jan 2022*

University of Texas, Austin   AUSTIN, TEXAS
B.S. in Physics, B.S. in Astronomy   *Aug 2015 – May 2018*

AWARDS

NASA MUREP Graduate Fellowship

INTERPERSONAL SKILLS

○ Authored ***10 peer-reviewed*** scientific papers: ***7 leading author*** and ***3 contributing author***.
  Link for complete list: 150+ citations

○ Guided junior scientists in understanding and implementation of their own research projects.