Arturo O. **Martinez**

Data Scientist/Analyst · Research Scientist · Astronomer

✉ arturo.o.martinez@protonmail.com | 🔗 arturo-o-martinez

Executive Summary

Highly motivated research scientist with 9+ years of experience analyzing data, 5+ years of experience solving ill-posed problems using optimization algorithms and regularization techniques, and writing modeling and imaging software. Eager to develop new skills, and take skills learned in academia and apply them to any applications outside of astronomy.

Skills

Programming Languages: Julia, Python, SQL, SQLite3

Software/Tools: Git, Optimization algorithms, NumPy, Pandas, SciPy, Matplotlib

Spoken Languages: English (native), Spanish (conversant)

Employment

Bay Area Environmental Research Institute   *Moffett Field, CA, USA*
NASA Research Scientist   *Jul. 2021 – Jul. 2024*

- Revamped and incorporated image restoration Julia and Matlab **machine learning software** for astronomy which removed atmospheric distortions using the Non-Linear Conjugate Gradient optimization method, and applied them to stellar systems of interest.
- **Filtered/cleaned unstructured data** and spearheaded projects that used data to create restored images where analysis showed **improvement of imaging quality by 22%**. Results led to using software as new method for image restoration in astronomy.
- Collaborated with scientists from various institutions and showcased new research findings at multiple science conferences at both technical and non-technical levels.

NASA Science Mission Directorate Bridge Program (MOSAICS)   *Remote*
Early Career Working Group Co-Lead   *Aug. 2022 – Oct. 2023*

- Co-directed a group of academics to provide insights for best practices of academic success for future STEM students.
- In coordination with other groups, **published NASA report** highlighting recommendations to extend assistance to underserved STEM community based on community feedback.
- Published a white paper based on recommendations of early-career professionals in different STEM fields.

Georgia State University   *Atlanta, GA, USA*
Graduate Research Assistant   *Jan. 2017 – Jun. 2021*

- Created and tested primitive 3-D **imaging reconstruction machine learning code** using Julia and Python for astronomy using Quasi-Newton and Nelder-Mead optimization methods, and **maintained software collaboratively in GitLab**.
- Updated imaging code with physics-based models and used code enforcing numerical constraints on astronomy data.
- Analyzed and published findings in a professional scientific journal showcasing world's 3rd detailed 3-D stellar surface image, and **improved the resulting precision by 15%**.

University of Arizona   *Tucson, AZ, USA*
Visiting Research Scientist   *Jun. 2015 – Dec. 2016*

- Obtained data in astronomy of several stars of interest and created Python software that used **linear regression and Bayesian statistics for analysis**.
- Organized data using **Pandas dataframes** and presented graphs and plots using **Matplotlib** in Python to management.
- Showed results which calculated **a 20% median improvement** from past research. Method and results are used as a basis of statistical and astronomical calibration for future research studies.

Education

Georgia State University   *Atlanta, GA, USA*
Doctor of Philosophy – Astronomy   *Aug. 2016 – Aug. 2021*

Georgia State University   *Atlanta, GA, USA*
Master of Science – Physics (with concentration in Astronomy)   *Aug. 2016 – May 2018*

San Diego State University   *San Diego, CA, USA*
Bachelor of Science – Astronomy (with Mathematics Minor)   *Sep. 2011 – May 2015*