

JAMES LILLY

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QUALIFICATION STATEMENT

Highly skilled researcher and data analyst with extensive experience in studying complex astronomical data and developing efficient algorithms, primarily in Python. Proven track record of adapting to fast-paced environments and delivering insightful analyses and solutions in both academic and professional settings through teaching and collaboration with diverse teams.

RESEARCH EXPERIENCE

University of Wyoming

Graduate Research Assistant

Laramie, WY

March 2021 – July 2022

- Analyzed 100 GB of Hubble Space Telescope images for PHANGS-HST project (\$1.2 million grant), resulting in significant data insights
- Developed seeded watershed algorithm in Python to measure physical properties of stellar clusters
- Enhanced data-sorting algorithm efficiency by 50%, optimizing processing time and resource usage
- Created detailed visualizations and topographical maps of 38 galaxies, contributing to multiple research publications
- Delivered weekly updates and comprehensive reports on research progress to stakeholders through scrums

University of Arizona/NASA Space Grant

Undergraduate Research Assistant

Tucson, AZ

August 2018 – May 2020

- Automated the detection of substructures in images of star-forming regions using Python, improving analysis speed
- Explored multi-dimensional parameter spaces to refine molecular cloud maps, enhancing precision
- Compared and validated pre-stellar core properties obtained from different watershed algorithm techniques

PROFESSIONAL EXPERIENCE

Seattle Public Schools

Substitute Teacher

Seattle, WA

September 2022 – Present

- Instruct “Precalculus” and “Math in Society” courses at Nova High School as long-term substitute teacher
- Created and maintain a comprehensive database of student accommodations for 250 students across 50 classes, as requested by the Nova Special Education team
- Deliver engaging, tailored lesson plans to over 100 students daily across grades K-12
- Collaborate with teachers district-wide to ensure seamless continuation of lessons on short notice

Steward, Vatican Observatories

Telescope Operator

Tucson, AZ

August 2018 – March 2020

- Conducted week-long observational shifts for NASA’s Transiting Exoplanet Survey Satellite (TESS)
- Managed and directed observations of celestial objects by operating 21-inch telescope and Steward Observatory dome

National Radio Astronomy Observatory

Undergraduate Research Assistant

Charlottesville, VA

May 2018 – August 2018

- Analyzed GB-sized data cubes of radio images from the Green Bank Telescope using Python, delivering key insights
- Contributed to an Agile software development team, presenting findings through multimedia presentations effectively

EDUCATION

University of Wyoming

Master of Science in Physics (GPA: 4.00)

Laramie, WY

May 2022

University of Arizona, Honors College

Bachelor of Science in Physics and Astrophysics with Honors (GPA: 3.78)

Tucson, AZ

May 2020

TECHNICAL SKILLS

Programming Languages: Python, C, SQL, HTML, Visual Basic, IRAF

Software/Libraries: GitHub, Microsoft Office, Jupyter, Anaconda (Pandas, NumPy, SciPy, Matplotlib)