JAMES LILLY

james.lilly365@outlook.com | jlilly364.github.io | (443) 875-7192 | Seattle, WA

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 — Laramie, WY
Graduate Research Assistant — 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 which were added to the Mikulski Archive for Space Telescopes
- 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 for multiple peer-reviewed publications
- Delivered weekly updates and comprehensive reports on research progress to stakeholders through scrums

University of Arizona/NASA Space Grant — Tucson, AZ
Undergraduate Research Assistant — 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 — Seattle, WA
Substitute Teacher — 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 — Tuscon, AZ
Telescope Operator — 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 — Charlottesville, VA
Undergraduate Research Assistant — 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 — Laramie, WY
Master of Science in Physics (GPA: 4.00) — May 2022

University of Arizona, Honors College — Tucson, AZ
Bachelor of Science in Physics and Astrophysics with Honors (GPA: 3.78) — May 2020

TECHNICAL SKILLS

Programming Languages: Python, C, SQL, HTML, Visual Basic, IRAF
Software/Libraries: GitHub, Microsoft Office, Jupyter, Anaconda (Pandas, NumPy, SciPy, Matplotlib)