RyanCarlson

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Education

B.Sc. Astronomy (with Honors) & Physics

University of Arizona 2015-2019 Tucson, AZ, USA

- Cumulative GPA: 3.6 (Cum Laude)
- **Study Abroad** Australian National University during Fall Semester 2019.

Coursework

- Multivariable Calculus
- Linear Algebra
- Differential Equations
- AP Statistics
- Math Tech. in Physics
- Scientific Computing
- Computational Physics
- Experimental Physics

Computer Programming, Applications, and Technical Skills

Experience with Python (NumPy, SciPy, Pandas, Matplotlib, scikit-learn, TensorFlow, and PyTorch), Unix, SQL, C++, LaTeX, Microsoft Office Suite, Google Suite, social media platforms. Application experience in Jupyter Notebook, Atom, QGIS, and proprietary software. Skilled in data analytics, data visualization, scientific research, technical writing, and advanced mathematics.

Work Experience

Image Analyst

Maxar Technologies Feb. 2021 to Present Denver, CO, USA

- utilize proprietary software to create 3D solutions from multiple aerial or satellite images
- maintaining the level of quality in the delivery to our customers while also ensuring consistency in accordance with the product specification. This includes generating, reviewing, editing, and delivering the software's outputs.
- Contribute to mission projects using proprietary software
- Perform quality control in a 3D environment
- Produce 3D maps of areas of interest based on project requirements

Research Technician

University of Arizona Lunar & Planetary Laboratory May 2019 to Aug. 2020 Tucson, AZ, USA

Used Hubble Space Telescope observations to observe exoplanetary transits of WASP-69b, a gas-giant planet 163 light-years from our Sun. Analyzed Mg II Interstellar Medium Absorption toward WASP-121, a magnitude 10.4 star in the constellation Puppis.

- Developed Python scripts to extract and clean data observed by Hubble Space Telescope. Investigated integrated data to identify instrumental effects and errors. Analyzed and modeled astrophysical parameters using Python.
- Performed data visualizations for exoplanet transit detections and non-detections with Python.
- Analyzed temporal changes in solar spectra to compare with extracted stellar spectra, then documented differences. Manipulated data to create stellar emission models of stellar spectra.
- Verified previous parameter estimates using independently-developed modeling code. Produced technical and scientific reports communicating results to collaborators.

Undergraduate Researcher

University of Arizona Dept. of Astronomy & Astrophysics July 2018 to May 2019 Tucson, AZ, USA

Leveraged data science and analytic techniques to gain new insights from data and to identify patterns and behaviors. Handled the extraction, analysis, interpretation, and visual presentation of spectral data cubes. Optimized data to gain a better understanding of the stellar nebulae NGC602 and N22 to advance the field of astrophysics.

- Researched and developed scientific explanations of observations. Employed statistical analysis and advanced math skills to calculate 3σ upper limits on non-detections. Compared and contrasted results with other data for analysis.
- Broke down complex concepts into language that was easy for non-experts to consume and understand. Presented results to fellow astrophysicists and the public at a public lecture

Volunteer & Extracurricular Experience

Data Carpentry Workshop Assistant
University of Arizona BIO5 Institute 2020 Tucson, AZ, USA
Assisted in teaching researchers how to use the programming language Python to create data visualizations and to perform data analysis. Enabled researchers to become efficient quickly.

Radio Host & Sound Engineer
KAMP Student Radio (University of Arizona) 2018-2019 Tucson, AZ, USA
Coordinated and presented live music events for the university campus and broader Tucson community. Critiqued and engineered music based on technical and qualitative aspects.

President
Alpha Kappa Lambda Fraternity 2017-2018 Tucson, AZ, USA
Raised chapter GPA by 20% through emphasizing academic growth. Served with a diverse executive board to manage events and finances. Updated chapter bylaws based on member feedback.

Physics Tutor
University of Arizona 2017-2019 Tucson, AZ, USA
Worked with students on an ongoing basis. Used learning methods to help students think differently to understand complex concepts. Helped students raise grades, gain confidence, and improve study habits.

Assistant Youth Football Coach
Shakopee Youth Football Association Shakopee, MN 2013-2015 Shakopee, MN, USA
Assisted coaching staff in teaching student athletes in first through eighth grades the proper and safe techniques for football. Worked with players in groups and one-on-one to teach skills and plays.

Leadership, Honors, & Awards
- Vice-Chancellor Travel Grant recipient from Australian National University.
- Galileo Circle Scholarship recipient for top grades and astronomical research experience.
- Received Academic Distinction honors and named to Dean's list for high GPA.
- Eagle Scout, the highest rank in Scouts BSA. Built shed for non-profit as volunteer project.
- Provided training and leadership to employees in work environments to reduce learning curve.
- Helped students adjust to and be successful in college by sharing proven study habits.
- Orientation and Welcome Leader, promoting the University of Arizona to future students.
- Led incoming students through workshops, course placement, culture, and policy.