

# J'Neil Blough-Swingen

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## Experience

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Research Assistant 2016-present  
Arizona State University, School of Earth and Space Exploration  
Tempe, AZ

- Executed suites of gas simulations to analyze the gas structure of galactic outflows
- Supervised two undergraduate honor thesis projects
- Collaborated across institutions by creating a user-friendly SQL database and providing meaningful feedback on research projects

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Academic Facilitator 2017 - 2020  
Arizona State University, Sundial Mentor Program  
Tempe, AZ

- Led undergraduate students in 2 and 4 week long group research projects
- Created and implemented instructional materials for science and programming seminars
- Cultivated a supportive professional network for incoming students

## Projects

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Book Recommendation App  
[github.com/astrojneil/bookRec](https://github.com/astrojneil/bookRec)

- Developed an object-oriented recommender model with user-based collaborative filtering using a K-neighbors algorithm fitting on the Cosine similarity metric
- Converted recommendation data into an editable and expandable SQL database
- Created a Flask app as a user interface for users to store book reviews and receive recommendations

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Global Analysis of Hydrodynamic Simulations  
Arizona State University

- Executed 16 large scale hydrodynamic simulations on high performance computing clusters
- Reduced, filtered and performed statistical analysis on over 1,000GB of simulation datasets, astronomical catalogs, and images
- Performed linear regression on global quantities (i.e. column densities) to predict consistency with astronomical observations
- Interpreted large datasets as comprehensive values and meaningful visualizations

## Skills

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Data Manipulation Data Visualization  
Machine Learning Classification  
Regression Statistics Linear Algebra  
Numerical Analysis Probability  
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Python NumPy Pandas SciPy Git  
Matplotlib sci-kit learn SQL Flask  
Linux Html LaTeX

## Education

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PhD in Astrophysics  
Arizona State University  
May 2021

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BS in Physics  
Comp Sci and Astronomy Minors  
Western Washington University  
June 2016

### Certificates

- Machine Learning [*Coursera*]
- Machine Learning [*TACC Institute*]

## Extras

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### Volunteering

- Girls Who Code Facilitator
- ASU Prison Education Instructor
- Ask an Earth Space Scientist Author
- Phoenix Comic-Con Science Panelist
- Sunhacks Judge

### Research Impact

- 4 publications (24 citations)
- 5 public talks; research and outreach
- 2 XSEDE Computer Resource Proposals (awarded 285k node hours)
- NASA HECC Proposal (awarded 210k node hours)