

Ramsey Karim

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DATA-DRIVEN ASTRONOMER

I am a far-infrared observational astronomer specializing in pillars and other nebular gas structures surrounding massive stars in our Galaxy and **developing software** to facilitate my research. I communicate my work through scientific publications and presentations. I have **8 years experience** of scientific computing in **Python** using a variety of libraries and methods.

TECHNICAL SKILLS

Expert : Python (Astropy, Numpy, Pandas, Scipy), Bash, Linux OSs, Git
Proficient : C, C++, CUDA, HTML, CSS
Learning : Rust, SQL, slurm

EXPERIENCE

Graduate Researcher Aug 2017 – Present
University of Maryland, Astronomy Dept. College Park, Maryland, USA

- Proposed and led 5+ year multi-project study of the interactions of massive stars and cold, dense gas in our Galaxy
- Developed modular and reusable analysis software, primarily in Python
- Collaborated with local and international researchers as part of the [FEEDBACK Project](#)
- Carefully documented both research and software, and summarized results in [academic publications](#)

PROJECTS

scooby *Python, pandas* [Source Code](#)

- Developed Python module for deriving cluster properties from catalogs of known stars
- Implemented memory-efficient Monte Carlo sampling to propagate uncertainties
- Designed API for general research purposes; a student used `scooby` in [a project for their Master's thesis](#)

mantipython *Python, multiprocessing* [Source Code](#)

- Refactored and translated a C++ instrument-specific model-fitting software `manticore` into Python
- Accelerated computationally intensive operations with parallel processing

pacs_calibrate *Python, Bash, IDL* [Source Code](#)

- Built software, complete with CLI, to calibrate publicly available telescope data
- Integrated file and data management using a [companion Bash program](#)

EDUCATION

University of California Berkeley, California, USA
B.A. Physics and Astronomy *Aug 2013 – Aug 2017*

University of Maryland College Park, Maryland, USA
M.S. Astronomy *Aug 2017 – Aug 2019*
Ph.D. Astronomy *Aug 2019 – March 2024 (expected)*

SERVICE

- Served 5 years on Equity, Diversity, and Inclusion Committee, advisory to the Chair of the Astronomy Department. Pioneered a peer mentoring program for incoming graduate students during the remote office and designed to ensure ongoing success of the program.
- Restructured and co-led Astronomy Community Engagement, a student-run group which hosts events for students, faculty, and staff and creates designated meeting spaces for students of marginalized identities. Mentored students as co-leads and designed robust structure/guidelines to ensure continued success of the program in the long term.
- Teaching: 4 semesters as TA for undergraduate classes. 5 years experience preparing lessons and teaching scientific Python and programming to students online ([GRADMAP](#), [PAARC](#), [CRANE](#)).