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# Ian Weaver, Ph.D.

## Data Scientist / Junior Developer

Portfolio: [icweaver.github.io](https://icweaver.github.io)  
[github.com/icweaver](https://github.com/icweaver)  
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### EXPERIENCE

#### Harvard Science Center

*The Center for Astrophysics | Harvard & Smithsonian (CfA)*

Jan 2017 — Present

Cambridge, MA

- Operated and maintained the 0.4 meter Clay Telescope atop the Harvard University Science Center.
- Hosted star parties and other outreach events for the undergraduate and local community.

#### Graduate student researcher

*The Center for Astrophysics | Harvard & Smithsonian (CfA)*

Sep 2016 — May 2022

Cambridge, MA

- Provided spectroscopic time-series observations and follow-up atmospheric analysis for an underrepresented class of exoplanet.
- Accomplished this using Gaussian process (GP) and principal component analysis (PCA) detrending techniques, combined with Bayesian inference frameworks including Markov chain Monte Carlo (MCMC) and nested sampling.
- Utilized high performance computing facilities and schedulers (Torque/PBS, SGE, slurm) via ssh and the command line on different Linux operating systems.
- Taught/mentored several undergraduate courses in Astronomy and received multiple teaching awards.

#### Co-Instructor

*Banneker Institute*

Jun 2017 — Sep 2019

Cambridge, MA

- Collaborated in the design and execution of a novel summer astronomy workshop through the ISEE Professional Development Program geared towards underrepresented students in STEM.
- Taught 20+ class size emphasizing hands-on and inquiry based learning.

### TECHNICAL SKILLS

*Programming and computation:* Python, Julia, Plotly, Bokeh, JavaScript, HTML/CSS, Linux, Bash,  $\text{\LaTeX}$ , Markdown

*Tooling:* CI/CD workflows, Git, GitHub, make, rclone, Google Cloud Platform, ssh, SQL (ADQL), Table Access Protocol (TAP)

*Statistics:* Bayesian inference, Nested sampling, MCMC, Variational inference, Stochastic gradient descent, Simulated annealing

### PROJECTS

#### JuliaAstro [\[link\]](#)

2020 – Present

*Contributor and member of the Julia astronomy organization*

- Designed the Keplerian orbit capabilities for the transit modeling package, Transits.jl [\[link\]](#). The package uses automatic unit and integration testing via GitHub Actions, supports Python interoperability, and produces competitive benchmark performance.
- Implemented several dust extinction models for the interstellar medium observations package DustExtinction.jl [\[link\]](#). Provides first-class support for measurements containing units and estimated uncertainties.

#### Team member, Graduate course final project [\[link\]](#)

Fall 2019

*Python implementation for new algorithm estimating MCMC uncertainty*

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#### Team member, Graduate course final project [\[link\]](#)

Fall 2018

*Python package for differential equation solving, powered by automatic differentiation*

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### EDUCATION

**Doctor of Philosophy (Ph.D.) in Astronomy**, Graduate School of Arts and Sciences, *Harvard University*

May 2022

**Master of Arts (AM) in Astronomy**, Graduate School of Arts and Sciences, *Harvard University*

May 2020

**Bachelor of Arts in Astronomy and Astrophysics**, Division of Physical and Biological Sciences, *UC Santa Cruz*

May 2016

*Relevant graduate coursework:* Advanced Scientific Computing: Stochastic Methods for Data Analysis, Inference and Optimization, Systems Development for Computational Science, Noise and Data Analysis in Astrophysics

### ACTIVITIES AND OUTREACH

Graduate School of Arts and Sciences Crew Team

2016 — 2022

Co-Director of science outreach program Open Labs at Harvard (OLAH) [\[link\]](#)

2018 — 2020

Graduate Student Council Representative

2016 — 2018

Eagle Scout, Troop 255

2012