

# Emily Quinn Finney

## Data/Software Development Experience

- 2017 **Participant** New York, NY  
*Recurse Center*
- Accepted to a three-month self-directed [program](#) for software developers.
  - Built an asynchronous breadth-first-search [web crawler](#) in Python using the `asyncio` and `Beautiful Soup` packages.
  - Implemented a content-based [recommender system](#) using data obtained from Charity Navigator.
  - Wrote a [technical blog](#) to solidify my understanding of these projects.
- 2015-2017 **Graduate Research Associate** Davis, CA  
*University of California, Davis*
- Trained high-dimensional models of galaxy cluster structure using MCMC and gradient descent algorithms.
  - Built a data pipeline for analyses using tools from the SciPy stack.
  - Refactored image smoothing code, leading to 100x speedup.
  - Wrote a peer-reviewed journal article detailing results.
- 2013 **Undergraduate Senior Thesis** Claremont, CA  
*Scripps College*
- Implemented Bayesian methods to improve models of galaxy cluster mergers.
  - Constrained galaxy cluster collision parameters by 70-85%.
  - Visualized data and communicated analysis and results in a [paper](#).
  - Selected to present research at Scripps College Capstone Day.
- 2012, 2013 **Undergraduate Research Internships** Davis, CA; La Serena, Chile  
*University of California, Davis; Cerro Tololo Inter-American Observatory*
- Classified spectral data and fit lines to redshifts to improve detection of high-mass galaxy clusters.
  - Cleaned gigabytes of astronomical data using bash scripting.
  - Conducted hypothesis testing on a set of galaxy ellipticity data.

## Teaching Experience

- 2017 **Tutorial Speaker, Teen Track** Davis, CA  
*SciPy 2017 Conference*
- Led 22 students ages 12-18 in an exploration of the SciPy stack.
  - Created a set of interactive [Jupyter notebooks](#) to facilitate students' learning.
- 2017 **Elementary Math/Science Teacher** Davis, CA  
*Peregrine School*
- Organized activities and communicated material to a class of ~20 students.
  - Designed and implemented project-based lesson plans.

## Education

- 2014–2017 **Master's of Science, Physics** Davis, CA  
*University of California, Davis*
- 2010–2014 **Bachelor's of Arts, Physics** Claremont, CA  
*Scripps College*

## Other Skills and Interests

- Professional** Machine learning, tidy data, image analysis, data-driven education.
- Personal** Hiking, child development, spiders, theology, singing.

## Software

**Python**  
NumPy  
SciPy  
Pandas  
matplotlib  
**Unix/Linux**  
bash scripting  
Git  
**Software Design**  
OOP  
Testing frameworks  
C data types  
**R**  
tidyverse enthusiast  
**Other Languages**  
Java  
MATLAB  
SQL  
L<sup>A</sup>T<sub>E</sub>X

## Practical Statistics

**Bayesian Methods**  
Bayes' Theorem  
MCMC  
**Statistical Inference**  
Random variables  
Hypothesis testing  
Regression  
Experimental design  
**Machine Learning**  
Gradient descent  
Clustering algorithms  
**Mathematics**  
Linear algebra  
Multivariate calculus

## Photo



## Contact

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