

# Emily Quinn Finney

## Data/Software Development Experience

- 2017 **Participant** New York, NY  
*Recurse Center*
- Built a content-based recommender system using data from Charity Navigator.
  - Implemented the Fast Explicit Diffusion algorithm for image compression.
  - Wrote a web crawler to create a corpus for a Markov-generated Twitter Bot.
  - Developed understanding of software engineering fundamentals.
- 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.
  - Extracted wavelength information and other properties from imaging data.
  - Wrote a peer-reviewed journal article detailing results.
  - Provided extensive mentoring in astrophysics research practices.
- 2013 **Undergraduate Senior Thesis** Claremont, CA  
*Scripps College*
- Implemented Bayesian methods to improve models of galaxy cluster mergers.
  - Inferred galaxy cluster collision parameters by analyzing radio data.
  - Visualized data and communicated findings in a paper.
- 2012, 2013 **Undergraduate Research Internships** Davis, CA; La Serena, Chile  
*University of California, Davis; Cerro Tololo Inter-American Observatory*
- Cleaned gigabytes of astronomical data using bash scripting.
  - Classified spectral data and fit lines to redshifts.
  - Conducted hypothesis testing on a set of galaxy ellipticity data.

## Teaching Experience

- 2017 **Elementary Math/Science Teacher** Davis, CA  
*The Peregrine School*
- Managed a classroom of 20 students ages 8-12.
  - Designed and implemented project-based lesson plans.
- 2014-2016 **Physics Teaching Assistant** Davis, CA  
*University of California, Davis*
- Taught physics discussion/labs for 40-60 students each academic quarter.
  - Responsible for weekly office hours, grading, and proctoring exams.
- 2012-2014 **Physics and Computer Science Tutor/Grader** Claremont, CA  
*Scripps College; Harvey Mudd College*
- One-on-one tutoring in physics and computer science concepts.

## 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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