Ruth Dolly Johnson

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Education

University of California, Los Angeles   **Los Angeles, CA**
PhD Computer Science   *2017-present*

University of California, Los Angeles   **Los Angeles, CA**
B.S. Mathematics of Computation, Bioinformatics Minor   *2013-2017*
GPA: 3.4/4.0

Technical skills and Coursework

- **Programming Languages:** C, C++, Python, Flask, Matlab, JavaScript (ReactJS, ExtJS), R, Shell scripting, Linux

- **Relevant Courses:** data structures, operating systems, algorithms, linear algebra, intro to probability, mathematical modeling, applied numerical methods, real/complex analysis, bioinformatics algorithms, computational genetics

Experience

Bogdan Lab   **Los Angeles, CA**
Undergraduate Researcher   *March 2016 – current*

- Created data visualization tool, PAINTOR-CANVIS, which produces publication-ready figures of fine-mapping studies
- Conducted fine-mapping studies on a collection of traits in order to prioritize causal variants

Sandia National Laboratory   **Albuquerque, NM**
R&D Engineering Intern   *June 2016 – August 2016*

- Implemented satellite maneuver pipeline which uses DBSCAN algorithm to identify anomalies in satellite orbits; additionally used one-class SVM algorithm.
- Created a Python library for gathering satellite TLE data from online database
- Designed a web UI for portions of satellite ground-station enterprise software using ReactJS and ExtJS

Center for Tropical Research   **Los Angeles**
Undergraduate Researcher   *September 2015 – June 2016*

- Utilized and updated software pipeline to filter reads, eliminate PCR duplicates, and identify loci through denovo-mapping for various tropical species
- Fine-tuned hyper-parameters in the sequence assembly algorithm to improve the reproducibility and quality of our results

Daily Bruin   **Los Angeles**
Web Developer   *September 2015–current*

- Created flat-pages for news articles and uploaded daily content to Daily Bruin website
- Designed larger, quarterly projects to display multi-feature stories
- Worked with tools and frameworks such as: Bootstrap, Foundation, Handlebars, scroll.js, and Git

Teaching Experience

o **Math 88S: Mathematics & Movies**

Designed and taught my own undergraduate course at UCLA through the Undergraduate Student Initiated Education program. Focused on exploring areas of mathematics within the context of movies to expose students to the variety of topics in mathematics. With the assistance of a faculty mentor, I researched various areas of mathematics, such as topology, cryptography, game theory, and more, and developed hour long lectures. Additionally, I created and graded assignments that assessed students' understanding.
Teaching Evaluation: 4.94/5.0

o **Grader for Introductory and Intermediate Programming**

Responsible for creating test cases, evaluating the accuracy of student's projects, and making corrections for introductory and intermediate C++ courses (PIC10A/B).

Software and Notable Projects

o **PAINTOR CANVIS** *Fine mapping visualization*

A fine-mapping tool that visually summarizes an integrative fine-mapping experiment. The tool provides visual representation of the local correlation structure (LD), the functional annotations used, as well as association statistics and posterior probabilities for each SNP.
`https://github.com/bogdanlab/PAINTOR/tree/master/CANVIS`

o **Github** `https://github.com/ruthjohnson95`

Publications

1. **Improved methods for multi-trait fine mapping of pleiotropic risk loci**
Gleb Kichaev; Megan Roytman; Ruth Johnson; Eleazar Eskin; Sara; Lindström; Peter Kraft; Bogdan Pasaniuc; *Bioinformatics 2016.*

Poster Presentations

1. **Leveraging Functional Annotations in Fine-mapping of Causal Variants for Complex Traits**
Ruth Johnson; Gleb Kichaev; Kathryn Burch; Bogdan Pasaniuc; UCLA Undergraduate Research Poster Day, May 2017. Los Angeles, CA, USA. Poster Presentation.
2. **Visualizing correlated causal variants**
Ruth Johnson; Gleb Kichaev; Bogdan Pasaniuc; Annual meeting of the American Society of Human Genetics, October 2016. Vancouver, CN. Poster Presentation.
3. **SOHBRIT (Space Object Hyper-spectral Bidirectional Reflectance Distribution Function Imaging Telescope)**
Ruth Johnson; Connor Hitt; Nick Blazier; Sandia Summer Research Symposium, August 2016. Albuquerque, NM. Poster Presentation.

Honors and Awards

o **NSF Graduate Research Fellowships Program - Honorable Mention** *(2017)*

o **Dean's Prize for Excellence** *(2017)*

Awarded to top senior presenters out of 800+ posters at Undergraduate Research Poster Day

o **Undergraduate Bioinformatics Research Award** *(2017)*

Given to students for exemplary performance in a computational biology research project

- **Chancellor's Service Award** *(2017)*

  Selective award honoring graduating undergraduate students who have made significant contributions to UCLA and/or the surrounding Los Angeles community through a sustained record of outstanding leadership and service

- **Eugene V. Cota-Robles Fellowship** *(2017)*

  Four year PhD fellowship focused on increasing diversity in science and graduate education.

- **EECU Educational Grant** *(2017, 2013)*

  Grant awarded to students pursuing higher education and have made significant contributions both academically and in their local community. Committee chooses 50 recipients out of almost 400 applicants

- **Undergraduate Research Scholars Program** *(2016)*

  Research funding awarded to juniors and seniors who show exceptional progress in conducting independent research. Awarded to approximately 40 students annually out of hundreds of applicants

- **Undergraduate Research Travel Grant** *(2016)*

- **Overall Panhellenic Scholarship***(2016)*

  Scholarship awarded to one female member of the UCLA Panhellenic community who has demonstrated superior work in their academics and community.

- **Dean's List** *(2015)*

  Distinction given to students who have a GPA of 3.75 or higher

Organizations and Activities

- Association for Computing Machinery - Women, *Vice President*
- Women in Engineering Stay-over Program, *Co-chair*
- LA Hacks Organizing Committee
- Undergraduate Science Journal
- Bruin Gymnastics Academy, *Coach*