Ruth Dolly Johnson

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Education

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

University of California, Los Angeles   **Los Angeles, CA**
B.S. Mathematics of Computation, Minor in Bioinformatics   *Sept 2013-June 2017*
GPA: 3.422/4.0

Academic Honors

- NSF Graduate Research Fellowships Program - Honorable Mention (2017)
- Eugene V. Cota-Robles Fellowship, UCLA (2017)
- Dean's Prize Science Award Honoring Outstanding Undergraduate Researchers, UCLA (2017)
- Undergraduate Bioinformatics Research Award, UCLA (2017)
- Chancellor's Service Award, UCLA (2017)
- Undergraduate Research Scholars Program, UCLA (2016)
- Undergraduate Research Travel Grant, UCLA (2016)

Technical skills and Coursework

- **Programming Languages:** C/C++, Python, Flask, Matlab, JavaScript (ReactJS, ExtJS), R, Shell scripting
- **Relevant Courses:** machine learning, data structures, operating systems, algorithms, linear algebra, applied probability, mathematical modeling, applied numerical methods, real/complex analysis, computational genetics

Research Experiences

Computational Genetics Lab at UCLA   **Los Angeles, CA**
Graduate Student Researcher   *July 2017 – current*
- Conducted fine-mapping analyses on 34 traits and created data a visualization tool that produces publication-ready figures of fine-mapping studies
- Under supervision of Prof. Bogdan Pasaniuc

Sandia National Laboratory   **Albuquerque, NM**
R&D Engineering Intern   *June 2016 – August 2016*
- Implemented satellite detection maneuver pipeline that uses DBSCAN algorithm to identify anomalies in satellite orbits
- Designed components of a web UI for 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
- Assessed various sequence assembly methods to improve the reproducibility and quality of data

Teaching Experience

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. Created and taught 10 one-hour lectures.
Teaching Evaluation: 4.94/5.0

California Teach

Took seminars in pedagogy theory with specific applications to mathematics in the classroom. Practiced teaching methods during weekly fieldwork in middle school math classrooms.

Publications

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

Oral Presentations

1. **CANVIS: Correlation Annotation VISualization**
   Ruth Johnson, Gleb Kichaev, Bogdan Pasaniuc; UCLA RECOMB-Genetics Satellite Meeting, July 2017. Los Angeles, CA, USA.

Poster Presentations

1. **Integrative fine-mapping of 34 complex phenotypes**
   Ruth Johnson, Gleb Kichaev, Kathryn Burch, Bogdan Pasaniuc; Annual meeting of the American Society of Human Genetics, Oct 2017. Orlando, FL, USA.

2. **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.
   *Dean's Prize Science Award Honoring Outstanding Undergraduate Researcher

3. **Visualizing correlated causal variants**
   Ruth Johnson, Gleb Kichaev, Bogdan Pasaniuc; Annual meeting of the American Society of Human Genetics, October 2016. Vancouver, CN.

4. **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., USA

Software and Notable Projects

o **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`