

# Gregory W. Gundersen

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Citizenship: United States

I am a computer science PhD student with a love for scientific thinking and software engineering. My academic research is broadly in the fields of machine learning and statistical modeling with applications in healthcare. I am expert in Python and Java and proficient in C and C++.

## Education

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|--------------------|---------------------------|--|
| Sep 2016 – Present | Princeton University      | Ph.D. candidate (Computer Science)<br>Advisor: Barbara E. Engelhardt |
| May 2011           | Yale University           | M.Arch.  |
| May 2009           | Oklahoma State University | B.Arch.  |

## Professional Experience

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|---|--|
| <b>Princeton University</b><br>Sep 2016 – Present | <b>Graduate Research Assistant</b><br>Developing a method that uses multi-view representation learning (neural networks and cross-covariance analysis) to capture high-dimensional relationships between genetic variation and biomedical imaging data.  |
| <b>Princeton University</b><br>Sep 2017 – Present | <b>Assistant in Instruction</b><br><i>Introduction to Programming Systems</i> : Teaching program design and development, machine organization, assembly language programming, and software tools in C, x86-64, and Linux.  |
| <b>Mount Sinai</b><br>Oct 2014 – Sep 2016         | <b>Research Software Engineer</b><br>Built multiple tools (see Publications) for processing, analyzing, and visualizing high-dimensional biomedical data in Python, Java, and JavaScript. Helped build lab's scientific computing cluster.   |
| <b>Integral Ad Science</b><br>Jul 2013 – Oct 2014 | <b>Software Engineer</b><br>Developed ad tracking technology that handled 1.3 billion daily requests with complete cross-browser support and no third-party libraries. Refactored ad viewability detection code to increase modularity and testability. Wrote over 650 unit tests, increasing coverage by 450%. Redesigned code delivery system, resulting in 40% increase in requests per second. |
| <b>Worldnow</b><br>Jul 2012 – Jul 2013            | <b>Web Production Manager</b><br>Managed weekly code deployment for over 200 websites.   |
| <b>Yale University</b><br>May 2011 – Jul 2012     | <b>Research Assistant</b><br>Quantified thermodynamics of synaptic SNARE protein unzipping. Results published in <i>Science</i> (see Publications).  |

## Volunteering

- 2016 – Present      **Volunteer**, Prison Teaching Initiative  
Developing an accredited computer science course to be offered at New Jersey state prisons.
- 2014 – 2016        **Education Co-chair**, Coalition for Queens  
Helped plan, organize, and teach an intensive, 9-month program to train students from underserved populations in software development.

## Scholarships & Awards

- 2017    Foundational Prize, Fragile Families Challenge  
2015    Volunteer of the Year, Coalition for Queens (Co-honoree, see volunteering)  
2011    Everett Victor Meeks Fellowship, Yale University  
2008    Wentz Leadership Scholarship, Oklahoma State University  
2007    Study Abroad Office Scholarship, Oklahoma State University  
2003    Freshman Award for Excellence Scholarship, Oklahoma State University

## Publications

1. Fernandez, N., Gundersen, G., Rahman, A., Grimes, M., Rikova, K., Hornbeck, P., Ma'ayan, A. (2017) Clustergrammer, a web-based heatmap visualization and analysis tool for high-dimensional biological data. *Scientific Data*.
2. Gundersen, G., Jagodnik, K., Woodland, H., Fernandez N., Sani, K., Dohlman, A., Man-Ung, P., Monteiro, C., Schlessinger, A., Ma'ayan, A. (2016) GEN3VA: aggregation and analysis of gene expression signatures from related studies. *BMC Bioinformatics*, p. 461.
3. Wang, Z. and 48 authors (Gundersen, G., author no. 5). (2016) Extraction and Analysis of Signatures from the Gene Expression Omnibus by the Crowd. *Nature Communications*, p. 12846.
4. Kuleshov, M., Jones, M., Rouillard, A., Fernandez, N., Duan, Q., Wang, Z., Koplev, S., Jenkins, S., Jagodnik, K., Lachmann, A., McDermott, M., Monteiro, C., Gundersen, G., Ma'ayan, A. (2016) Enrichr: a comprehensive gene set enrichment analysis web server 2016 update. *Nucleic Acids Research*, pp. W90-W97.
5. Rouillard, A., Gundersen, G., Fernandez, N., Wang, N., Monteiro, C., McDermott, M., Ma'ayan, A. (2016) The harmonizome: a collection of processed datasets gathered to serve and mine knowledge about genes and proteins. *Database (Oxford)*.
6. Gundersen, G., Jones, M., Rouillard, A., Kou, Y., Monteiro, C., Feldmann, A., Hu, K., Ma'ayan, A. (2015) GEO2Enrichr: browser extension and server app to extract gene sets from GEO and analyze them for biological functions. *Bioinformatics*, pp. 3060–3062.
7. Gao, Y., Zorman, S., Gundersen, G., Xi, Z., Ma, L., Sirinakis, G., Rothman, J., Zhang, Y. (2012) Single Reconstituted Neuronal SNARE Complexes Zipper in Three Distinct Stages. *Science*, pp. 1340–1343.
8. Zhang, Y., Sirinakis, G., Gundersen, G., Xi, Z., Gao, Y. (2012) DNA translocation of ATP-dependent chromatin remodeling factors revealed by high-resolution optical tweezers. *Methods Enzymol*, pp. 3–28.

## Talks

- Nov 2017      Fragile Families Challenge Scientific Workshop      Princeton, NJ  
Feb 2015      American Association of Cancer Research Conference      San Francisco, CA