

# RYAN THEISEN

theisen@berkeley.edu ryantheisen.com (480)-323-5944

---

## EDUCATION

**University of California, Berkeley**, Berkeley, CA  
*Ph.D. in Statistics*, 2018-Present.

**Arizona State University**, Tempe, AZ  
*M.A. in Mathematics*, 2017-2018. Thesis: Coverage Results for Two Models of Interaction, Advised by Sebastien Motsch  
*B.S. in Mathematics and Economics*, 2013-2017. Phi Beta Kappa, Summa Cum Laude, Outstanding Graduate in both Mathematics and Economics

## EXPERIENCE

**Graduate Student Researcher**, University of California, Berkeley  
Fall 2018-Present

- I work with Professor Michael Mahoney on theoretical machine learning problems. Recently, this has focused on studying statistical learning through the lens of statistical mechanics, though I also work on other problems related to optimization and high-dimensional statistics. I also collaborate closely with a number of post-doctoral students, as well as Professor Jason Klusowski at Princeton.

**Deep Learning Research Intern**, Salesforce Research, Palo Alto  
Summer 2019, Summer 2020

- I worked with several Salesforce deep learning researchers on projects including obtaining improved norm-based generalization bounds for deep neural networks, and using normalizing flows to estimate the Bayes error of high-dimensional machine learning datasets.

**Machine Learning Team Lead**, Luminosity Lab, Arizona State University  
Fall 2016-Spring 2018

- I worked with a team of top ASU graduate and undergraduate students on a wide variety of research problems, including developing a haptic guidance system for visually impaired individuals.

**Senior Data Analyst**, Amazon.com, Seattle/Phoenix  
Summer 2016-Fall 2017

- I designed and implemented an algorithm to optimally staff remote, part-time customer service associates that decreased cost and greatly improved the ability to scale up or down the customer service network on short notice.

## PAPERS

[1] Yang, Y., Hodgkinson, L., **Theisen, R.**, Zou, J., Gonzalez J. E., Ramchandran, K., Mahoney, M.W. *Taxonomizing Local Versus Global Structure in Neural Network Loss Landscapes*. Neural Information Processing Systems (2021).

- [2] **Theisen, R.**, Wang, H., Varshney L. R., Xiong, C., Socher, R. *Evaluating State-of-the-Art Classification Models Against Bayes Optimality*. Neural Information Processing Systems (2021).
- [3] **Theisen, R.**, Klusowski, J. M., Mahoney, M. W. *Good Classifiers are Abundant in the Interpolating Regime*. 24th International Conference on Artificial Intelligence and Statistics (2021).
- [4] Cao F., Motsch, S., Reamy, A., **Theisen, R.** *Asymptotic Flocking for the Three-Zone Model*. Mathematical Biosciences and Engineering (2020).
- [5] **Theisen, R.**, Klusowski, J. M., Wang, H., Keskar, N., Xiong, C., Socher, R. *Global Capacity Measures for Deep ReLU Networks via Path Sampling*. ArXiv preprint 1910.10245 (2019).
- [6] Weber, D., **Theisen, R.**, Motsch, S. *Deterministic Versus Stochastic Consensus Dynamics on Graphs*. Journal of Statistical Physics (2019).

## TEACHING

### **University of California, Berkeley**

Graduate Student Instructor, Stat 157: Deep Learning

Graduate Student Instructor, Stat 154: Modern Statistical Prediction and Machine Learning

Graduate Student Instructor, Stat 89A: Linear Algebra for Data Science

### **Arizona State University**

Teaching Assistant, ECN 312: Intermediate Microeconomics

Teaching Assistant, ECN 212: Principles of Microeconomics

## SERVICE

**Volunteer**, Kino Border Initiative, Nogales, Mexico  
2012-Present

- In high school, I founded a club that led student groups to the Kino Border Initiative in Nogales, Mexico to work with recently-deported migrants. Since then, I have continued to be involved with the group, and recently have helped implement an improved data intake system for collecting demographic information on migrants, which we subsequently clean, store, and output into dashboards which are used by immigration researchers and advocates.

## AWARDS AND HONORS

**Dean's Medal, Mathematics, ASU, 2017** Awarded as outstanding graduating senior in School of Mathematical and Statistical Sciences.

**Dean's Medal, Economics, ASU, 2017** Awarded as outstanding graduating senior in Department of Economics.

**Moeur Award, ASU, 2017** Granted University-wide academic distinction at graduation.

**J.P. Morgan Chase Scholar, ASU, 2016** Awarded prestigious fellowship for top economics undergraduates.

**Fulbright Summer Scholarship, University of Bristol, UK, 2014** UK Summer Institute for Young American Student Leaders.

SKILLS AND  
INTERESTS

**Programming:** Python, R, Julia, SQL,  $\text{\LaTeX}$ .

**Languages:** English, Spanish (elementary proficiency).

**Research Interests:** Theoretical Machine Learning, Deep Learning, Statistics, Optimization.

**Personal Interests:** Photography, Green Bay Packers, Arsenal FC, Rock Climbing, Hiking.