

Addison Hu

Education

- August 2018 – **Carnegie Mellon University**, *Pittsburgh, PA*.
present - PhD, Statistics & Machine Learning (in progress)
- August 2013 – **Yale University**, *New Haven, CT*.
May 2017 - BSc, Statistics; Distinction in Major; magna cum laude (GPA: 3.9)
- Research topics: computationally efficient methods for optimizing over large-scale data sets; minimax estimation of precision matrices; latent variable graphical models; screening rules.

Research & Teaching Experience

- August 2016– **Research Assistant**, *Yale Dept of Statistics*, New Haven, CT.
May 2017 - Implemented approximations to second-order optimization algorithms in distributed settings
- Studied risk bounds for estimation of bandable precision matrices.
- January 2016 – **Teaching Fellow**, *Yale Depts of Computer Science; Statistics*, New Haven, CT.
May 2017 - Served in grading and supplemental teaching roles, covering material including inference, model selection, optimization, dimensionality reduction, dictionary learning, matrix factorization, etc., with applications in R, Python, and Spark.
- August 2015 – **Research Assistant**, *Yale Institute for Network Science*, New Haven, CT.
May 2016 - Wrote graph filtering and local clustering algorithms based on novel research (C++)
- Data cleanup and analysis in R and Python

Publications

- December 2017 **Addison J. Hu and Sahand N. Negahban**, *Minimax Estimation of Bandable Precision Matrices*, *Advances in Neural Information Processing Systems*.
- **Condensed abstract:** Bandable precision matrices arise naturally in a number of time-series contexts and correspond to the adjacency matrix representation of the Gauss-Markov graph. Minimax results under the spectral norm have previously been established for covariance matrices, both sparse and banded, and for sparse precision matrices. We establish minimax bounds for estimating banded precision matrices under the spectral norm.
- Journal version at <https://arxiv.org/abs/1710.07006>

Projects

December 2016 **Latent Variable Inference with Factor Graphs.**

- In this project, we consider a parameter estimation problem where the factor model is bipartite, conditioned on a small set of global factors influencing one of the parts. We pose the search for optimal parameters as an optimization problem and provide update rules for gradient descent.
- Term project for STAT667, a graduate-level course on probabilistic graphical models.
- Link: <http://huisaddison.com/projects/latent-var.pdf>

January 2017 **newton-sketch.**

- Implementation of *Newton Sketch: A Linear-time Optimization Algorithm with Linear-Quadratic Convergence* in Spark and NumPy.
- In the Spark implementation, we adapt the algorithm to the distributed setting.
- Independent work. Link: <https://github.com/huisaddison/newton-sketch>

Professional Experience

- July 2017 – **Data Scientist**, *Facebook*, Seattle, WA.
- August 2018 – Worked on Search Core Relevance.

Volunteer Experience

- September 2017 – **Tutor**, *Youth Tutoring Program*, Seattle, WA.
- June 2018 – Tutoring & mentoring for Seattle-area students from low- and mixed-income housing.
- August 2013 – **Math Coach**, *MathCounts Outreach*, New Haven, CT.
- May 2014 – Afterschool mathematics coaching to students in the New Haven public school system.

Technical Skills

- Proficient R, Python, \LaTeX , SQL
- Basic C, Git, Spark (Scala)

Personal Interests

Swimming, cycling, cooking