

# Raj Agrawal

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## Education

- 2017–Present **Massachusetts Institute of Technology**,  
*Doctor of Philosophy*, Electrical Engineering and Computer Science.  
GPA – 5.0/5.0
- 2013–2017 **University of California, Berkeley**,  
*Bachelor of Arts*, Statistics and Applied Mathematics (Highest Honors).

## Publications

- 2020 **Agrawal, R.** and N. Karoui. “Improving Prediction for Moderate Dimensional Linear Regression by a Data-Driven Choice of Loss Function”. In: *Under preparation*.
- Agrawal, R.**, U. Roy, and C. Uhler. “Covariance Matrix Estimation under Total Positivity for Portfolio Selection”. In: *Submitted to the Journal of Financial Econometrics*.
- Horel, T., T. Campbell, L. Masoero, **Agrawal, R.**, A. Papachristos, and D. Roithmayr. “The Contagiousness of Police Violence”. In: *Under Preparation*.
- Squires, C., Y. Wang, **Agrawal, R.**, and C. Uhler. “Causal Inference Algorithm with Unknown Intervention Targets”. In: *To be submitted to the International Conference on Artificial Intelligence and Statistics*.
- 2019 **Agrawal, R.**, T. Campbell, J. Huggins, and T. Broderick. “Data-dependent compression of random features for large-scale kernel approximation”. In: *International Conference on Artificial Intelligence and Statistics*.
- Agrawal, R.**, J. Huggins, B. Trippe, and T. Broderick. “The Kernel Interaction Trick: Fast Bayesian Discovery of Pairwise Interactions in High Dimensions”. In: *International Conference on Machine Learning*.
- Agrawal, R.**, C. Squires, K. Yang, K. Shanmugam, and C. Uhler. “ABCD-Strategy: Budgeted Experimental Design for Targeted Causal Structure Discovery”. In: *International Conference on Artificial Intelligence and Statistics*.
- Trippe, B., J. Huggins, **Agrawal, R.**, and T. Broderick. “LR-GLM: High-Dimensional Bayesian Inference Using Low-Rank Data Approximations”. In: *International Conference on Machine Learning*.
- 2018 **Agrawal, R.**, T. Broderick, and C. Uhler. “Minimal I-MAP MCMC for Scalable Structure Discovery in Causal DAG Models”. In: *International Conference on Machine Learning*.

## Patents

- August 2019 **Systems and Methods for Document Processing.**
- June 2017 **Passively Detecting Sobriety using Machine Learning and Mobile Devices.**

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## Experience

- May 2019 **Principal Scientist**, ARBILEX.  
–Present
  - Arbilex is a legal technology startup focusing on predictive analytics for international law, specifically investment arbitration
  - Part of the core founding team, leading the predictive analytics team
  - Created a model that has recently been used to help select arbitrators in several multi-billion-dollar international disputes
- June **Data Scientist**, FARALLON ASSET MANAGEMENT.  
2017–August
  - Farallon is a hedge fund that uses a mix of fundamental and quantitative investment strategies
  - Developed quantitative investment strategies based on a two-terabyte dataset, and presented my final results to the CEO (Andrew Spokes) and several other managing directors
- August **Co-Founder**, HOMESLICE.  
2016–January
  - HomeSlice makes homeownership affordable by removing the barriers of fractional homeownership
  - HomeSlice won UC Berkeley's 2017 *Big Ideas Competition*
  - Left to pursue my Ph.D.
- May **Undergraduate Student Instructor**, UC BERKELEY.  
2016–August
  - Machine Learning (Stat 154), Prof. Nouredine El Karoui
  - Measure-Theoretic Probability (Math C218A), Prof. David Aldous
    - Intended primarily for Ph.D. students
  - Concepts of Probability (Stat 134), Prof. Helmut Pitters
- May **Data Scientist**, STATE FARM.  
2016–August
  - Helped develop a (patented) model to predict how intoxicated someone is based on their walking behavior from mobile accelerometer data
- Sept **Data Scientist**, RIVIERA PARTNERS.  
2015–May
  - Riviera Partners helps recruiters find better candidates through predictive analytics
  - Developed a model that recruiters use to target candidates likely to switch jobs

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## Talks

- June 2019 **Thirty-sixth International Conference on Machine Learning.**  
May 2019 **NetSci2019 Statistical Inference for Network Models.**  
Feb 2019 **Microsoft Research Trustworthy and Robust AI Initiative.**  
July 2018 **Thirty-fifth International Conference on Machine Learning.**  
March 2018 **Laboratory for Information and Decision Systems Tea Talk.**

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## Achievements

- Sept 2017 **MIT Presidential Fellowship.**  
May 2017 **Percy Lionel Davis Award for Excellence in Mathematics.**  
March 2017 **Two Sigma Financial Modeling Challenge.**
  - Our team ranked 14 / 2070 teams
- Feb 2017 **Citadel Datathon.**
  - Our team won the 2nd place \$5,000 prize
- May 2016 **Phi Beta Kappa (junior elect).**

## Miscellaneous Activities

Sept 2019 – **Launch Lab X**, *Harvard Innovation Labs*.

May 2020 ArbiLex was one of 26 / 500 teams to be selected into this 9-month incubator, which includes mentoring from founders of past successful startups.