

Lucas Janson

Assistant Professor of Statistics

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Biosketch

Lucas Janson is an Assistant Professor in the Department of Statistics at Harvard University, where he works on high-dimensional inference, autonomous robotic motion planning, and statistical machine learning. Prior to Harvard, he was a PhD student in Statistics at Stanford University advised by Professor Emmanuel Candès.

Education

Stanford University (Stanford, CA), Ph.D. in Statistics, 2017. Advisor: Prof. E. Candès.

Stanford University (Stanford, CA), M.S. in Statistics, 2011.

Stanford University (Stanford, CA), B.S. in Mathematics (with Honors) and Physics, 2011.

Employment

Assistant Professor, Harvard University Department of Statistics, Cambridge, MA (2017–present).

Quantitative Analyst, Goldman Sachs: Quantitative Investment Strategies, New York, NY (2011–2012)

Selected Awards

- Jerome H. Friedman Applied Statistics Dissertation Award (2017)
- Joint Statistical Meetings Student Travel Award (2016)
- Qualcomm Innovation Fellowship (2015; 5.5% acceptance rate).
- Statistics Department Teaching Assistant Award (2015).
- NIH Biostatistics Training Grant (2013).
- Statistics Department VPUE Summer Grant (2010).
- Woods Undergraduate Interdisciplinary Research Grant (MUIR Program) (2010).

Teaching and Training

Courses Taught at Harvard

- Stat 195: Statistical Machine Learning, Fall '18 – Undergraduate Level.
- Stat 211: Statistical Inference I, Fall '17, '18 – Graduate Level.
- Stat 305: Statistical Consulting, Fall '18 – Graduate Level.
- Stat 314: Timely Topics in Statistics, Fall '18 – Graduate Level.
- Stat 315: Modern High-Dimensional Inference, Spring '18 – Graduate Level.
- Stat 303: The Art and Practice of Teaching Statistics, Fall '17 and Spring '18 – Graduate Level.

Courses Taught at Stanford

- STATS 302: Qualifying Exams Workshop, Summer '16 – Graduate Level.
- STATS 390: Consulting Workshop, Summer '14, '16 – Graduate Level.

Undergraduate Student Supervision

- Wentong Zhang, Multiple Knockoffs for Powerful Variable Selection (2017-2018).

Doctoral Student Supervision

- Wenshuo Wang, Generalized Algorithms for Generating Knockoffs (2018-present).
- Lu Zhang, Defining and Inferring Nonparametric Effect Sizes (2018-present).
- Dongming Huang, Relaxing the Assumptions of Model-X Knockoffs (2017-present).
- Molei Liu, Computational Methods for High-Dimensional Testing (2017-present).

University Service Activities

- Ph.D. Admissions Committee (2018).
- Paper Selection Committee for Dempster Award (2018).
- Statistics Colloquium Organizer (2018)

Professional Service Activities

Outreach

- Evaluation Chair, SAILORS: Stanford Artificial Intelligence Laboratory Outreach Summer (2016).
- Consultant, Stanford Statistics Free Consulting Service, over 100 consultees helped (2012-2016).
- Member, Statistics for Social Good Working Group at Stanford University (2013-2016).
- Judge, Seton Middle School Science Fair (2014-2016).

Reviewer

- Journal of the Royal Statistical Society: Series B
- Journal of the American Statistical Association
- Annals of Statistics
- Biometrika
- Bernoulli
- Biometrics
- Journal of Computational and Graphical Statistics
- Scandinavian Journal of Statistics
- Statistica Sinica
- Conference on Neural Information Processing Systems (NIPS)
- Information and Inference
- Journal of Climate
- International Journal of Robotics Research
- American Control Conference
- IEEE/RSJ International Conference on Intelligent Robots and Systems.
- IEEE Conference on Decision and Control.
- IEEE International Conference on Robotics and Automation.
- IEEE Robotics and Automation Letters.
- IEEE Transactions on Aerospace and Electronic Systems.
- IEEE Transactions on Automation Science and Engineering.

Publications

* denotes alphabetized author order

Journal Articles

- [J12] E. Candès*, Y. Fan*, **L. Janson***, and J. Lv*. Panning for Gold: Model-X Knockoffs for High-dimensional Controlled Variable Selection. *Journal of the Royal Statistical Society: Series B*, 80(3):551–577, 2018.
- [J11] Y. Chow, M. Ghavamzadeh, **L. Janson**, and M. Pavone. Risk-Constrained Reinforcement Learning with Percentile Risk Criteria. *Journal of Machine Learning Research*, 18(167):1–51, 2018.
- [J10] **L. Janson**, B. Ichter, and M. Pavone. Deterministic Sampling-Based Motion Planning: Optimality, Complexity, and Performance. *International Journal of Robotics Research*, 37(1):46–61, 2018.
- [J9] S. Tamang, A. Milstein, H. Sørensen, L. Pedersen, L. Mackey, J. Betterton, **L. Janson**, and N. Shah. Predicting Patient “Cost Blooms” in Denmark: a Longitudinal Population-Based Study. *BMJ Open*, 7(1), 2017.

- [J8] **L. Janson**, R. Foygel Barber, and E. Candès. EigenPrism: Inference for High-Dimensional Signal-to-Noise Ratios. *Journal of the Royal Statistical Society, Series B*, 79(4):1037–1065, 2017.
- [J7] **L. Janson***, and W. Su*. Familywise Error Rate Control Via Knockoffs. *Electronic Journal of Statistics*, 10(1):960–975, 2016.
- [J6] **L. Janson**, W. Fithian, and T. Hastie. Effective Degrees of Freedom: A Flawed Metaphor. *Biometrika*, 102(2):479–485, 2015.
- [J5] G. Poultsides, T. Tran, E. Zambrano, **L. Janson**, D. Mohler, M. Well, R. Avedian, B. Visser, J. Lee, K. Ganjoo, E. Harris, J. Norton. Sarcoma Reconstruction With and Without Vascular Reconstruction: A Matched Case-Control Study. *Annals of Surgery*, 262(4):632–640, 2015.
- [J4] S. Gholami, **L. Janson**, D. Worhunsky, T. Tran, M. Squires III, L. Jin, G. Spolverato, K. Votanopoulos, C. Schmidt, S. Weber, M. Bloomston, C. Cho, E. Levine, R. Fields, T. Pawlik, S. Maithel, B. Efron, J. Norton, and G. Poultsides. Number of Lymph Nodes Removed and Survival after Gastric Cancer Resection: An Analysis from the US Gastric Cancer Collaborative. *Journal of the American College of Surgeons*, 221(2):291–299, 2015.
- [J3] **L. Janson**, E. Schmerling, A. Clark, and M. Pavone. Fast Marching Tree: a Fast Marching Sampling-Based Method for Optimal Motion Planning in Many Dimensions. *International Journal of Robotics Research*, 34(7):883–921, 2015.
- [J2] **L. Janson** and B. Rajaratnam. A Methodology for Robust Multiproxy Paleoclimate Reconstructions and Modeling of Temperature Conditional Quantiles. *Journal of the American Statistical Association*, 109(505):63–77, 2014.
- [J1] **L. Janson***, M. Klein*, H. Lewis*, A. Lucas*, A. Marantan*, and K. Luna. Undergraduate Experiment in Superconductor Point-Contact Spectroscopy with a Nb/Au Junction. *American Journal of Physics*, 80(2):133–140, 2012.

Refereed Conference Proceedings

- [C7] **L. Janson**, T. Hu, and M. Pavone. Safe Motion Planning in Unknown Environments: Optimality Benchmarks and Tractable Policies. In *Robotics: Science and Systems*, Pittsburgh, Pennsylvania, June 2018.
- [C6] E. Schmerling, **L. Janson**, and M. Pavone. Optimal Sampling-Based Motion Planning under Differential Constraints: the Drift Case with Linear Affine Dynamics. In *Conference on Decision and Control*, Osaka, Japan, December 2015.
- [C5] **L. Janson**, B. Ichter, and M. Pavone. Deterministic Sampling-Based Motion Planning: Optimality, Complexity, and Performance. In *International Symposium on Robotics Research*, Sestri Levante, Italy, September 2015.
- [C4] **L. Janson***, E. Schmerling*, and M. Pavone. Monte Carlo Motion Planning for Robot Trajectory Optimization Under Uncertainty. In *International Symposium on Robotics Research*, Sestri Levante, Italy, September 2015.
- [C3] J. Starek, J. Gomez, E. Schmerling, **L. Janson**, L. Moreno, and M. Pavone. An Asymptotically-Optimal Sampling-Based Algorithm for Bi-directional Motion Planning. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Hamburg, Germany, September 2015.

- [C2] E. Schmerling, **L. Janson**, and M. Pavone. Optimal sampling-based motion planning under differential constraints: the driftless case. In *IEEE Conference on Robotics and Automation*, Seattle, Washington, May 2015.
- [C1] **L. Janson** and M. Pavone. Fast Marching Trees: a fast marching sampling-based method for optimal motion planning in many dimensions. In *International Symposium on Robotics Research*, Singapore, December 2013.

Refereed Workshop Proceedings

- [W1] **L. Janson** and M. Pavone. Fast Marching Trees: a fast marching sampling-based method for optimal motion planning in many dimensions. In *Robotics: Science and Systems Workshop: Robotic Exploration, Monitoring, and Information Gathering*, Berlin, Germany, June 2013.

Discussion Paper Comments

- [D1] **L. Janson**. Discussion on ‘Random Projection Ensemble Classification’. *Journal of the Royal Statistical Society: Series B*, 79(4):1013–1014, 2017.

Ph.D. Thesis

- [T1] **L. Janson**. A Model-Free Approach to High-Dimensional Inference. PhD thesis, Stanford University, Department of Statistics, 2017.