Curriculum Vitae for James Sharpnack

Contact Details:

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Education:

The Ohio State University	Mathematics & Physics	2007	B.S.
Carnegie Mellon University	Machine Learning & Statistics	2013	Ph.D.
	Graph Structured Normal Means Inference		

Appointments:

2015 - present	Assistant Professor, Statistics Department, University of California at Davis.
2013 - 2015	Postdoctoral Researcher, Mathematics Department, University of California at San Diego.

Grants and Awards:

NSF DMS 1712996 "Point-to-Point Process Models for Spatio-temporal Networks" Award amount: $125,000. 2017—2020

Best Student Paper Award, Asilomar Conference on Signals, Systems, and Computers, 2013

Teaching:

Math 11: Introductory Probability and Statistics, Spr. 2015 (UC San Diego)

Stats 131A: Introduction to Probability Theory, Spr. 2016 (UC Davis)

Stats 141B: Data & Web Technologies for Data Analysis, Win. 2017, Win. 2018, Fall 2018

Stats 208: Statistical Machine Learning, Spr. 2016, Spr. 2017, Spr. 2018, Spr. 2019

Stats 220: Data Technologies, Win. 2020

Stats 290: Department Seminar Series, Fall 2016

Stats 251: Advanced Machine Learning, Win. 2019

Service Committees:

Ph.D. Admissions, Graduate Group in Applied Maths, 2019–2020

MS Admissions, Statistics Dept., 2018–2019, 2019–2020

MS Advising, Statistics Dept., 2018–2019, 2019–2020

Ed Policy and Curriculum Committee, Statistics Dept., 2018–2019

Peter Hall Conference Organizing Committee, Statistics Dept., 2018–2019

Faculty Search Committee, Statistics Dept., 2017—2018

Publicity and Event Planning, Statistics Dept., 2016—2017

Education Policy and Curriculum Committee, Statistics Dept., 2016—2017

Data Science White Paper Committee (ad-hoc), Statistics Dept., 2016—2017

Faculty Search Committee, Statistics Dept., 2015—2016

Student Advising:

Liwei Wu (Ph.D. Statistics) — **graduated 2020**, co-advised with Cho-Jui Hsieh

Xiaoyue Li (Ph.D. Statistics)

Dmitry Shemetov (Ph.D. Mathematics)

Shitong Wei (Ph.D. Statistics)

Qin Ding (Ph.D. Statistics) — co-advised with Cho-Jui Hsieh

Lifeng Wei (Ph.D. Statistics) — co-advised with Cho-Jui Hsieh

Stephen Sheng (Ph.D. Mathematics)

Xiaoliu Wu (Ph.D. Statistics)

Xiawei Wang (Ph.D. Statistics) — co-advised with Thomas Lee

Ran Sun (Ph.D. Civil and Environmental Engineering) — co-advised with Yueyue Fan

Thesis Committees:

Shu-chin Lin, Ph.D. in Statistics, UC Davis, 2020. Thesis: "Domain Selection and Hypothesis Testing for Functional Linear Models." Advised by Jane-Ling Wang.

Yichuan Wang, Ph.D. in Statistics, UC Davis, 2020. Thesis: "A divide and conquer approach to estimating Tikhonov regularization parameter via leave-one-out cross-validation for function-on-function regression." Advised by Wolfgang Polonik.

Liwei Wu, Ph.D. in Statistics, UC Davis, 2020. Thesis: "Advances in Collaborative Filtering and Ranking." Co-advised by James Sharpnack and Cho-Jui Hsieh.

Puyudi Yang, Ph.D. in Statistics, UC Davis, 2019. Thesis: "Towards Adversarial Robustness of Deep Neural Networks." Advised by Cho-Jui Hsieh and Jane-Ling Wang.

Veeranjaneyulu Sadhanala, Ph.D. in Machine Learning, Carnegie Mellon University, 2019. Thesis: "Nonparametric Methods with Total Variation Type Regularization." Advised by Ryan Tibshirani.

Dillon Fitch-Polse, Ph.D. in Transportation Technology and Policy, UC Davis, 2018. Thesis: "The Road Environment and Urban Bicycling: Psychophysiological and Behavioral Responses." Advised by Susan Handy.

Kirill Paramonov, Ph.D. in Mathematics, UC Davis, 2018. Thesis: "Essays in Combinatorics: Crystals on Shifted Primed Tableaux, Bigraded Fibonacci Numbers and Data Mining on Social Graphs." Advised by Anne Shilling.

Robert Bassett, Ph.D. in Mathematics, UC Davis, 2018. Thesis: "Stochastic and Convex Optimization in Statistical Estimation." Advised by Roger Wets.

Justin Wang, Ph.D. in Statistics, UC Davis, 2018. Thesis: "Statistical Machine Learning Approaches in Photographic and Social Science Applications." Advised by Thomas Lee.

Kervi Ramos, M.S. in Civil and Environmental Engineering, UC Davis, 2017. Thesis: "Parametrization of Bed-Load Advection and Dispersion Coefficients using the Method of Moments." Advised by Levent Kavvas.

Affiliations:

Data Science Initiative Faculty Affiliate, 2017—

Graduate Group in Applied Mathematics Member, 2016—

Graduate Group in Epidemiology Member, 2018—

Outreach Activities:

Outreach Presentation, "Can we see election hacking with Data Science?", Pioneer High School, May 2018

Panelist, iidata Student Convention, UC Davis, 2016

Professional Activities:

Conference Organization

Conference Organizer, UC Davis Statistics 40th Anniversary Conference, 2020, Davis, CA. (Postponed due to Covid-19)

Session Organizer, International Workshop on Applied Probability (IWAP) 2020, Thessaloniki, Greece. (Postponed due to Covid-19)

Machine Learning Track Organizer, Symposium on Data Science and Statistics (SDSS) 2020, Pittsburgh, PA.

Conference Organizer, UC Davis Peter Hall Conference, 2019, Davis, CA.

Area Chair

International Conference on Machine Learning, 2020, Area Chair

Grant reviewer, NSF DMS Panelist 2018

Paper reviewer

Conference on Learning Theory (COLT)

Annals of Statistics

Electronic Journal of Statistics

Neural Information Processing Systems (NIPS) — 2019 highest scoring 400 reviewers award

Journal of the Royal Statistical Society, B

IEEE Transactions on Signal and Information Processing over Networks

IEEE Transactions on Knowledge and Data Engineering

Artificial Intelligence and Statistics (AIStats)

International Conference on Machine Learning (ICML)

IEEE Transactions on Signal Processing

IEEE Transactions on Information Theory

Journal of Machine Learning Research

Conference on Learning Theory (COLT)

Applied and Computational Harmonic Analysis

Applied Mathematics and Optimization

Peer Reviewed Publications:

1. D. T. Fitch, J. Sharpnack, and S. L. Handy. Psychological stress of bicycling with traffic: examining heart rate variability of bicyclists in natural urban environments. *Transportation Research Part F: Traffic Psychology and Behaviour*, 70:81 – 97, 2020

2. O. H. Madrid Padilla, J. Sharpnack, Y. Chen, and D. M. Witten. Adaptive nonparametric regression with the k-nearest neighbour fused lasso. *Biometrika*, 2020

3. L. Wu, S. Li, C.-J. Hsieh, and J. L. Sharpnack. Stochastic shared embeddings: Data-driven regularization of embedding layers. In *Advances in Neural Information Processing Systems*, pages 24–34, 2019

4. R. Bassett and J. Sharpnack. Fused density estimation: Theory and methods. *Journal of the Royal Statistical Society Series B*, 81(5):839–860, November 2019

5. K. Paramonov, D. Shemetov, and J. Sharpnack. Estimating graphlet statistics via lifting. In *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining*, pages 587–595. ACM, 2019

6. J. Sharpnack. Learning patterns for detection with multiscale scan statistics. In *Proceedings of Machine Learning Research (31st Annual Conference on Learning Theory)*, volume 75, 2018

7. L. Wu, C.-J. Hsieh, and J. Sharpnack. Sql-rank: A listwise approach to collaborative ranking. In *Proceedings of Machine Learning Research (35th International Conference on Machine Learning)*, volume 80, 2018

8. M. F. Sharpnack, N. Ranbaduge, A. Srivastava, F. Cerciello, S. G. Codreanu, D. C. Liebler, C. Mascaux, W. O. Miles, R. Morris, J. E. McDermott, J. Sharpnack, et al. Proteogenomic analysis of surgically resected lung adenocarcinoma. *Journal of Thoracic Oncology*, 2018

9. V. Sadhanala, Y.-X. Wang, J. L. Sharpnack, and R. J. Tibshirani. Higher-order total variation classes on grids: Minimax theory and trend filtering methods. In *Advances in Neural Information Processing Systems*, pages 5802–5812, 2017

10. K. Lin, J. L. Sharpnack, A. Rinaldo, and R. J. Tibshirani. A sharp error analysis for the fused lasso, with application to approximate changepoint screening. In *Advances in Neural Information Processing Systems*, pages 6887–6896, 2017

11. L. Wu, C.-J. Hsieh, and J. Sharpnack. Large-scale collaborative ranking in near-linear time. In *Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, pages 515–524. ACM, 2017

12. O. H. M. Padilla, J. G. Scott, J. Sharpnack, and R. J. Tibshirani. The dfs fused lasso: Linear-time denoising over general graphs. *The Journal of Machine Learning Research*, 18(1):6410–6445, 2017

13. Y.-X. Wang, J. Sharpnack, A. J. Smola, and R. J. Tibshirani. Trend filtering on graphs. *The Journal of Machine Learning Research*, 17(1):3651–3691, 2016

14. J. Sharpnack, A. Krishnamurthy, and A. Singh. Detecting activations over graphs using spanning tree wavelet bases. *International Conference on Artificial Intelligence and Statistics, JMLR W&CPJournal of*, 31:536–544, 2013

15. J. Sharpnack, A. Rinaldo, and A. Singh. Sparsistency of the edge lasso over graphs. *International Conference on Artificial Intelligence and Statistics, JMLR W&CP*, 22:1028–1036, 2012

16. J. Sharpnack, A. Rinaldo, and A. Singh. Changepoint detection over graphs with the spectral scan statistic. *International Conference on Artificial Intelligence and Statistics, JMLR W&CP*, 31:545–553, 2012

17. J. Sharpnack and A. Singh. Identifying graph-structured activation patterns in networks. In *Advances in Neural Information Processing Systems*, pages 2137–2145, 2010

18. J. Sharpnack, E. Arias-Castro, et al. Exact asymptotics for the scan statistic and fast alternatives. *Electronic Journal of Statistics*, 10(2):2641–2684, 2016

19. J. Sharpnack, A. Rinaldo, and A. Singh. Detecting anomalous activity on networks with the graph fourier scan statistic. *Signal Processing, IEEE Transactions on*, 64(2):364–379, 2016

20. A. Krishnamuthy, J. Sharpnack, and A. Singh. Recovering graph-structured activations using adaptive compressive measurements. In *Signals, Systems and Computers, 2013 Asilomar Conference on*, pages 765–769. IEEE, 2013

21. J. L. Sharpnack, A. Krishnamurthy, and A. Singh. Near-optimal anomaly detection in graphs using lovász extended scan statistic. In *Advances in Neural Information Processing Systems*, pages 1959–1967, 2013

22. M. Kolar and J. Sharpnack. Variance function estimation in high-dimensions. *International Conference of Machine Learning*, 12:1447–1454, 2012

Lightly Reviewed Publications:

1. X. Li and J. Sharpnack. Compression of spatio-temporal networks via point-to-point process models. In *Proceedings of the 13th International Workshop on Mining and Learning with Graphs (MLG)*, 2017

2. J. Sharpnack and A. Singh. Near-optimal and computationally efficient detectors for weak and sparse graph-structured patterns. In *Global Conference on Signal and Information Processing (GlobalSIP), 2013 IEEE*, pages 443–446. IEEE, 2013

3. J. Sharpnack. A path algorithm for localizing anomalous activity in graphs. In *Global Conference on Signal and Information Processing (GlobalSIP), 2013 IEEE*, pages 341–344. IEEE, 2013

Invited Talks, Conference Presentations, and Seminars:

Statistical Learning and Data Science (SLDS), UC Irvine, 2020 (Cancelled due to Covid-19)

Booth-Esc Machine Learning Workshop, University of Chicago-Booth, 2020 (Cancelled due to Covid-19)

Mathematics of Data and Decisions at Davis (MADDD), UC Davis, 2019

GeoVet Conference, Senior Presentation, UC Davis, 2019

Fall Sectional Meeting of AMS, Special Session on Data Science, UC Riverside, 2019

Symposium on Data Science and Statistics, Invited Session: Machine Learning Problems in the Tech Industry, Seattle, WA, 2019.

Peter Hall Conference, UC Davis, 2019

Statistical Machine Learning Seminar, Machine Learning Department, Carnegie Mellon University, 2018.

Joint Meeting on Statistics (JSM), Invited Session: Nonparametrics on Graphs, Vancouver, BC, 2018.

Conference on Learning Theory (COLT), Main Conference Session, Stockholm, Sweden, 2018.

Information Theory and Applications (ITA) Workshop, San Diego, CA, 2018.

University of Washington, Statistics Department Seminar, Seattle, WA, 2017.

UC Davis, Institute of Transportation Studies Seminar, Davis, CA, 2017.

Joint Meeting on Statistics (JSM), Invited Session: Scan Statistics in Networks and Graphs, Baltimore, MD, 2017.

European Meeting of Statisticians (EMS), Topic Contributed Session: Multiplicity control for structured systems, Helsinki, Finland, 2017.

Information Theory and Applications (ITA) Workshop, San Diego, CA, 2017.

World Congress on Statistics and Probability, Invited session: Statistical computing and complex data, Toronto, ON, 2016.

UC Davis, Network Working Group, Davis, CA, 2016.

UC Davis, Graduate Group in Applied Mathematics Seminar, Davis, CA, 2016.

Information Theory and Applications (ITA) Workshop, San Diego, CA, 2016.

International Workshop on Applied Probability, Invited Talk, Toronto, ON, 2016.

Carnegie Mellon University, Statistics Department Seminar, Pittsburgh, PA, 2015.

UC Davis, Statistics Department Seminar, Davis, CA, 2015.

Indiana University, Bloomington, Statistics Department Seminar, Bloomington, IN, 2015.

Waterloo University, Statistics and Actuarial Science, Department Seminar, Waterloo, ON, 2015.

Boston University, Mathematics and Statistics Department Seminar, Boston, MA, 2015.

McGill University, Mathematics and Statistics Department Seminar, Montreal, QC, 2014.

SPAWAR Systems Center Pacific (SSC Pacific), Machine Learning Series Seminar, San Diego, CA, 2015.

International Conference on Artificial Intelligence and Statistics (AIStats), Main Conference Session, Scottsdale, AZ, 2013.

Carnegie Mellon University, Machine Learning Lunch, Pittsburgh, PA, 2010.

Neural Information Processing Systems (NIPS), Main Conference Session, Vancouver, BC, 2010.