Stanislav Minsker

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updated in August 2018

Professional experience

August 2015 – present: Assistant Professor, Department of Mathematics, University of Southern California.

June 2014 – August 2015: Quantitative Analytics Associate (research and development), Wells Fargo Securities.

August 2012 – August 2014: Visiting Assistant Professor, Department of Mathematics, Duke University.

Education

2007 - 2012 **Ph.D. in Mathematics**, *Georgia Institute of Technology*, Atlanta, Georgia.
Thesis title: *Non-asymptotic bounds for prediction problems and density estimation.* Advisor: Dr. V. I. Koltchinskii.

2002-2007 **B.S. in Mathematics**, *Novosibirsk State University*, Novosibirsk, Russia, *With Honors*.
Thesis title: *Invariance principle for the sequence of time series.* Advisor: Dr. I.S. Borisov.

Professional interests

Statistical Learning Theory: estimation under structural constraints, scalable algorithms, robust estimation, active learning, manifold learning.

Nonparametric statistics: functional data analysis, nonparametric Bayesian analysis.

Probability theory: concentration inequalities, limit theorems for empirical processes.

Mathematical finance.

Peer Reviewed Publications

Unless the publication is marked with (*), contributions of authors are equal and the order is alphabetical. For publications marked with (*), the order of authors reflects the original publication. Student authors are highlighted with **bold** font.

[17] S. Minsker, joint with **X. Wei.** *Moment inequalities for matrix-valued U-statistics of order 2 (2018).* Preprint ArXiv:1801.05921.

[16] S. Minsker, joint with **X. Wei.** *Robust modifications of U-statistics and applications to covariance estimation problems (2018).* Preprint ArXiv:https://arxiv.org/abs/1801.05565.

[15] S. Minsker, joint with **X. Wei.** *Estimation of the covariance structure of heavy-tailed distributions (2017).* Accepted for publication/spotlights at NIPS-2017. ArXiv:1708.00502.

[14] S. Minsker. *Sub-Gaussian estimators of the mean of a random matrix with heavy-tailed entries (2016).* To appear in the Annals of Statistics. ArXiv:1605.07129.

[13] S. Minsker, joint with N. Strawn. *Distributed statistical estimation and rates of convergence in normal approximation (2017).* Under revision. ArXiv:1704.02658.

[12] S. Minsker, joint with L. Goldstein and **X. Wei.** *Structured signal recovery from non-linear and heavy-tailed measurements (2018).* IEEE Transactions on Information Theory,Vol. 64, Iss. 8, pages 5513 - 5530. ArXiv:1609.01025.

[11] S. Minsker. *On some extensions of Bernstein's inequality for self-adjoint-operators. (2017)* Statistics & Probability Letters, 127. p. 111-119. ArXiv:1112.5448.

[10] S. Minsker, joint with M. Maggioni and N. Strawn. *Multiscale dictionary learning: non-asymptotic bounds and robustness (2016).* Journal of Machine Learning Research, 17(2):1-51. ArXiv:1401.5833.

[9] S. Minsker. *Geometric median and robust estimation in Banach spaces (2015).* Bernoulli, 21(4), 2308-2335. ArXiv:1308.1334.

[8*] S. Minsker, Y. Zhao and G. Cheng. *Active clinical trials for personalized medicine (2015).* Journal of the American Statistical Association, vol. 111, number 514, p. 875-887. ArXiv:1404.2971.

[7*] S. Minsker, S. Srivastava, L. Lin, and D. Dunson. *Robust and scalable Bayes via a median of subset posterior measures. (2017).* To appear in the Journal of Machine Learning Research. ArXiv:1403.2660.

[6] S. Minsker, joint with V. Koltchinskii. L_1 *- penalization in functional linear regression with Subgaussian design (2014).* Journal de l'École Polytechnique – Mathématiques, 1 (2014), p. 269-330. *.pdf.

[5] S. Minsker, joint with M. Maggioni and N. Strawn. *Multiscale dictionary and manifold learning: non-asymptotic bounds for the Geometric Multi-Resolution Analysis. (2014).* In Proceedings of the International Traveling Workshop on Interactions between Sparse Models and Technology (iTwist 2014).

[4*] S. Minsker, S. Srivastava, L. Lin, and D. Dunson. *Scalable and robust Bayesian inference via the median posterior. (2014).* Proceedings of the International Conference on Machine Learning (ICML 2014).

[3] S. Minsker. *Learning extreme values and associated level sets of a regression function via selective sampling. (2013)* In Proceedings of the Conference on Learning Theory (COLT 2013), p. 105-121.

[2] S. Minsker. *Plug-in approach to Active Learning (2012).* Journal of Machine Learning Research 13, p. 67-90.

[1] S. Minsker, joint with V. Koltchinskii. *Sparse recovery in convex hulls of infinite dictionaries. (2010)* In Proceedings of the Conference on Learning Theory (COLT 2010), p. 420-432.

External Funding

February 2018 (awarded) - August 2018 — ICM Travel grant from the American Mathematical Society. Amount: $3,300.

Sep 2017 - Sep 2020 — NSF DMS-1712956, *"Bridging the Gap Between Theory and Applications: Robust and Scalable Statistical Estimation"*, Division of Mathematical Sciences. PI: Stanislav Minsker. Amount: $99,987.

Dec 2016 (awarded) - July 2017 Borchard Foundation, conference grant: *"A French/American Collaborative Colloquium on Probability and Statistics: Concentration Inequalities, High Dimensional Statistics, and Stein's Method"*, Co-PIs: J. Bartroff, L. Goldstein, S. Minsker. Amount: $30,000.

Dec 2016 (awarded) - Aug 2018 American Institute of Mathematics, conference grant: *"Stein's Method and Applications in High-dimensional Statistics"*, Co-PIs: J. Bartroff, L. Goldstein, S. Minsker, G. Reinert. Amount: $30,000 (approximately).

Honors and Awards

Fall 2010 Algorithms and Randomness Center Fellowship, Georgia Institute of Technology.

Past and Upcoming Conferences and Presentations

December 2018 CMStatistics Conference, Pisa, Italia **(Invited talk)**.

August 2018 TTI-Chicago Summer Workshop: Computational Efficiency & High-Dimensional Robust Statistics.

August 2018 International Congress of Mathematicians, Rio de Janeiro, Brazil **(Short oral communication).**

August 2018 Stein's method and applications in high-dimensional statistics, American Institute of Mathematics, San Jose, California **(Serve as one of the organizers + talk).**

June 2018 Stochastic Processes and Applications, Gothenburg, Sweden **(Invited talk).**

May 2018 Workshop on the Recent Developments in Statistical Theory and Methods Based on Distributed Computing, BIRS, Oaxaca, Mexico **(Invited talk)**.

March 2018 Workshop on Statistical Inference for Structured High-dimensional Models, Oberwolfach, Germany **(Invited to attend/give a talk).**

March 2018 Workshop on Structural Inference in Statistics: Adaptation and Efficiency, Berlin, Germany **(Invited talk).**

February 2018 Graduate student seminar at the CSU Channel Islands **(Invited expository talk).**

December 2017 Conference on Neural Information Processing Systems (NIPS 2017), Long Beach, CA **(Poster presentation).**

December 2017 Meeting in Mathematical Statistics. Lumini, France **(Invited to attend/abstract selected for presentation).**

December 2017 Probability and Statistics seminar, University of Nice, France **(Invited talk).**

August 2017 Joint Statistical Meetings (JSM 2017), Baltimore, MD **(Invited talk).**

July 2017 Colloquium on Concentration Inequalities, High Dimensional Statistics, and Stein's Method. Missillac, France **(Served as one of the organizers + talk).**

July 2017 University of Grenoble, Statistics seminar, Grenoble, France **(Invited talk).**

June 2017 SOCAMS 2017, UC Irvine **(Abstract selected for presentation).**

May 2017 High Dimensional Probability Conference (HDP 8), BIRS, Oaxaca, Mexico (talk).

March 2017 Georgia Institute of Technology, Stochastics Seminar **(Invited talk).**

February 2017 UCLA, Department of Statistics Seminar **(Invited talk).**

February 2017 SAMSI, Workshop on the Interface of Statistics and Optimization **(Invited talk).**

February 2017 Claremont Center for the Mathematical Sciences, Colloquium Series **(Invited talk).**

November 2016 USC Marshall School of Business, **(Invited talk).**

September 2016 SAMSI, Workshop on Distributed and Parallel Data Analysis **(Invited talk).**

September 2016 IMA Workshop "Transdisciplinary Foundations of Data Science" **(Poster session).**

July 2016 ICERM Workshop on Stochastic Numerical Algorithms **(Invited talk).**

June 2016 Workshop on generic chaining, Harvard University.

May 2016 UCLA, department of Biostatistics **(Invited talk).**

April 2016 University of Texas at Austin **(Invited talk).**

February 2016 Texas A&M University **(Invited talk).**

November 2015 Johns Hopkins University **(Invited talk).**

May 2014 The National Consortium for Data Science (NCDS) Data Innovation Showcase.

March 2014 SAMSI-CRM Workshop on Geometric Aspects of High-dimensional Inference.

February 2014 University of Maryland, College Park, Statistics Seminar **(Invited talk).**

October 2013 Purdue University, Machine Learning Seminar **(Invited talk).**

October 2013 Purdue University, Mathematical Statistics Seminar **(Invited talk).**

October 2013 University of Central Florida **(Invited Colloquium Talk).**

September 2013 Duke University iiD (Information Initiative at Duke) seminar.

July 2013 Duke University Workshop on Sensing and Analysis of High-Dimensional Data.

June 2013 2013 Conference on Learning Theory, Princeton University **(Abstract selected for presentation)**.

May 2012 High-dimensional data analysis Workshop, Oberwolfach, Germany **(Abstract selected for presentation)**.

August 2011 Limit Theorems in Probability Theory and Their Applications, Novosibirsk, Russia.

April 2011 ARC 4 (Algorithms and Randomness Center) workshop.

December 2010 2010 Meeting on Mathematical Statistics, Lumini, France.

April 2010 SIAM Student Seminar, Georgia Institute of Technology.

Teaching

Fall 2017 Instructor for the graduate-level course "Mathematical Foundations of Statistical Learning Theory" (Math 547), USC.

Fall 2017 Instructor for the undergraduate-level course "Mathematical Statistics" (Math 408), USC.

Spring 2017 Instructor for the graduate-level course "Introduction to Time Series" (Math 545), USC.

Fall 2016 Instructor for the graduate-level course "Introduction to Mathematical Statistics" (Math 541b), USC.

Spring 2016 Instructor for the graduate-level course "Introduction to Time Series", (Math 545), USC.

Fall 2015 Instructor for the graduate-level course "Topics in Statistics - Mathematical Foundations of Statistical Learning Theory" (Math 547), USC.

Fall 2013 Instructor for the mini-course "Introduction to Statistical Learning Theory", Duke University.

Summer 2011 Instructor for "Introduction to Probability and Statistics" course, Georgia Inst. of Technology.

Summer 2009 Instructor for "Introductory Statistics and Applications" course, Georgia Inst. of Technology.

Students

Lang Wang, since November 2017 — Ph.D., Mathematics, USC (in progress).

Xiaohan Wei, since March 2016 — Ph.D., Electrical Engineering, USC (in progress).

Jianwei Xiao, graduated in Fall 2016 — Master's, Applied Mathematics. Currently is a Programming Analyst at Sears Holding.

Ranran Chen, since October 2017 — Master's, Applied Mathematics.

Service on the Qualifying Exams and Ph.D. Thesis Committees

2018 Chao Deng, USC Computational Biology and Bioinformatics (thesis committee; advisor: Andrew D. Smith)

2018 Jie Ruan (oral exam)

2018 Bowen Gang, USC Math (oral exam)

2017 Emre Demirkaya, USC Math (oral exam)

2017 Narae Lee, USC Math (oral exam)

2016 Jian Wang, USC Math (oral exam)

2016 Michael Hankin, USC Math (oral exam)

Professional Service

Organizer of the Probability and Statistics seminar, Spring 2016 - present, USC.

Co-organizer of SOCAMS (Southern California Applied Mathematics Symposium) conference: 2016 – organizing committee member, 2018 – scientific committee member.

Co-organizer of the Statistical and Applied Mathematical Sciences Institute (SAMSI) working group: "Statistical Inference for Large Matrices under Complexity Constraints" (Fall – Spring 2013).

Reviewer for the Journal of Machine Learning Research, the Annals of Statistics, Electronic Journal of Statistics, Machine Learning (Springer), Bernoulli Journal, Statistics and Probability Letters (Elsevier), and other journals.

Technical skills

Development in C++, Matlab.
Practical knowledge of risk-neutral pricing theory and financial markets.