LESTER MACKEY

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EDUCATION

University of California, Berkeley, Ph.D., May 2012
Computer Science, GPA: 4.0/4.0
Designated Emphasis in Communication, Computation, and Statistics

University of California, Berkeley, M.A., December 2011
Statistics, GPA: 4.0/4.0

Princeton University, B.S.E., summa cum laude, June 2007
Computer Science, GPA: 3.98/4.0
Certificate in Applied and Computational Mathematics

EXPERIENCE

Researcher, Microsoft Research New England, 9/2016 – Present
Assistant Professor of Statistics and (by courtesy) of Computer Science, Stanford University, 9/2013 – 9/2016
Simons Math+X Postdoctoral Fellow, Stanford University, 9/2012 – 8/2013
Research Intern, Google Inc., Summer 2011
Graduate Student Researcher, University of California, Berkeley, Summer 2009, 2010
Recommender System Architect, Umamibud (later Discovereads, acquired by Goodreads, acquired by Amazon), Summer 2008
Research Intern, AT&T Labs, Summer 2007
Research Intern, Princeton University, Summer 2006
Software Design Engineer Intern, Microsoft Small Business Accounting team, Summer 2005
Research Intern, Intel Strategic CAD Labs, Integrated Design and Verification team, Summer 2004

AWARDS & HONORS

Frederick E. Terman Fellowship, 2013
San Francisco Business Times 40 under 40 Emerging Leaders, 2013
First Place in the $50K ALS Prediction Prize4Life Challenge for predicting Lou Gehrig's disease progression, 2012
Eli Jury Award (Outstanding contribution to Systems, Communications, and Control), U.C. Berkeley, 2012
Outstanding Graduate Student Instructor Award, U.C. Berkeley, 2011
Best Student Paper Award, ICML for "On the Consistency of Ranking Algorithms," 2010
Second Place in the $1 million Netflix Prize competition for collaborative filtering, 2009
National Science Foundation Graduate Research Fellowship, 2009
National Defense Science and Engineering Graduate Fellowship, 2009
SIGPLAN CACM Research Highlights Nomination for "Fault-tolerant Typed Assembly Language," 2008
Best Paper Award, ACM SIGPLAN PLDI for "Fault-tolerant Typed Assembly Language," 2007
James Hayes-Edgar Palmer Prize in Engineering, Princeton U., 2007
Philip Y. Goldman '86 Senior Prize in Computer Science, Princeton U., 2007
Sigma Xi Scientific Research Society, 2007
U.C. Berkeley Chancellor's Fellowship, 2007
AT&T Labs Fellowship, 2007
Tau Beta Pi Engineering Honor Society, 2007
M. Taylor Pyne Honor Prize (Highest general distinction awarded to an undergraduate at Princeton U.), 2007
Computing Research Association Outstanding Undergraduate Award Winner, 2007
Accenture Award in Computer Science, 2006
Phi Beta Kappa Honor Society, 2006
Barry M. Goldwater Scholarship, 2006
Shapiro Prize for Academic Excellence, Princeton U., 2004, 2005
Microsoft Scholar, 2004, 2005, 2006
Top 20 of ACM International Collegiate Programming Contest Regional Semifinals, 2005
Princeton U. Freshman First Honor Prize (Awarded to one student for exceptional academic achievement in freshman year), 2004
Quin Morton '36 Writing Seminar Essay Prize (One of ten best essays produced by freshmen at Princeton U.), 2004

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Creativity Foundation Legacy Award Winner, 2003-2004
Intel Science Talent Search National Winner, 2003
Valedictorian, Half Hollow Hills High School West, 2003

WORK IN SUBMISSION

Random Feature Stein Discrepancies. Jonathan H. Huggins and Lester Mackey.

DeepMiner: Discovering Interpretable Representations for Mammogram Classification and Explanation. Jimmy Wu, Bolei Zhou, Diondra Peck, Scott Hsieh, Vandana Dialani, Lester Mackey, and Genevieve Patterson.

A Multifactorial Model of T Cell Expansion and Durable Clinical Benefit in Response to a PD-L1 Inhibitor. Mark DM Leiserson, Vasilis Syrgkanis, Amy Gilson, Miroslav Dudik, Dean F Bajorin, Jonathan Rosenberg, Samuel Funt, Alexandra Snyder, and Lester Mackey.

Measuring Sample Quality with Diffusions. Jackson Gorham, Andrew B. Duncan, Sebastian J. Vollmer, and Lester Mackey.

PEER-REVIEWED PUBLICATIONS

Stein Points. Wilson Ye Chen, Lester Mackey, Jackson Gorham, Francois-Xavier Briol, and Chris J. Oates. *International Conference on Machine Learning (ICML)*. July 2018.

Orthogonal Machine Learning: Power and Limitations. Lester Mackey, Vasilis Syrgkanis, and Ilias Zadik. *International Conference on Machine Learning (ICML)*. July 2018.

Accurate Inference for Adaptive Linear Models. Yash Deshpande, Lester Mackey, Vasilis Syrgkanis, and Matt Taddy. *International Conference on Machine Learning (ICML)*. July 2018.

Measuring Sample Quality with Kernels. Jackson Gorham and Lester Mackey. *International Conference on Machine Learning (ICML)*. August 2017.

Improving Gibbs Sampler Scan Quality with DoGS. Ioannis Mitliagkas and Lester Mackey. *International Conference on Machine Learning (ICML)*. August 2017.

Empirical Bayesian Analysis of Simultaneous Changepoints in Multiple Data Sequences. Zhou Fan and Lester Mackey. *Annals of Applied Statistics*. To appear.

Predicting Patient Cost Blooms in Denmark: A Longitudinal Population-based Study. Suzanne Tamang, Lars Pedersen, Henrik Toft Sørensen, Arnold Milstein, Lester Mackey, Jean-Raymond Betterton, Lucas Janson, and Nigam Shah. *BMJ Open*. January 2017.

Predicting inpatient clinical order patterns with probabilistic topic models vs. conventional order sets. Jonathan H. Chen, Mary K. Goldstein, Steven M. Asch, Lester Mackey, and Russ B. Altman. *Journal of the American Medical Informatics Association*. September 2016.

Efron-Stein Inequalities for Random Matrices. Daniel Paulin, Lester Mackey, and Joel A. Tropp. *Annals of Probability*. September 2016.

Multivariate Stein Factors for a Class of Strongly Log-concave Distributions. Lester Mackey and Jackson Gorham. *Electronic Communications in Probability*. September 2016.

Jet-Images -- Deep Learning Edition. Luke de Oliveira, Michael Kagan, Lester Mackey, Benjamin Nachman, and Ariel Schwartzman. *Journal of High Energy Physics*. July 2016.

Fuzzy Jets. Lester Mackey, Benjamin Nachman, Ariel Schwartzman, and Conrad Stansbury. *Journal of High Energy Physics*. June 2016.

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Measuring Sample Quality with Stein's Method. Jackson Gorham and Lester Mackey. *Advances in Neural Information Processing Systems (NIPS)*. December 2015.

Weighted Classification Cascades for Optimizing Discovery Significance in the HiggsML Challenge. Lester Mackey, Jordan Bryan, and Man Yue Mo. *Proceedings of the NIPS Workshop on High Energy Physics, Machine Learning, and the HiggsML Data Challenge.* August 2015.

Distributed Matrix Completion and Robust Factorization. Lester Mackey, Ameet Talwalkar, and Michael I. Jordan. *Journal of Machine Learning Research*. April 2015.

Crowdsourced analysis of clinical trial data to predict amyotrophic lateral sclerosis progression. Robert Küffner, Neta Zach, Raquel Nore, Johann Hawe, David Schoenfeld, Liuxia Wang, Guang Li, Lilly Fang, Lester Mackey, Orla Hardiman, Merit Cudkowicz, Alexander Sherman, Gokhan Ertaylan, Moritz Grosse-Wentrup, Torsten Hothorn, Jules van Ligtenberg, Jakob H. Macke, Timm Meyer, Bernhard Schölkopf, Linh Tran, Rubio Vaughan, Gustavo Stolovitzky, and Melanie L. Leitner. *Nature Biotechnology*. November 2014.

Combinatorial Clustering and the Beta Negative Binomial Process. Tamara Broderick, Lester Mackey, John Paisley, and Michael I. Jordan. *IEEE Transactions on Pattern Analysis and Machine Intelligence*. April 2014.

Matrix Concentration Inequalities via the Method of Exchangeable Pairs. Lester Mackey, Michael I. Jordan, Richard Y. Chen, Brendan Farrell, and Joel A. Tropp. *Annals of Probability*, 42(3), 906-945. March 2014.

Corrupted Sensing: Novel Guarantees for Separating Structured Signals. Rina Foygel and Lester Mackey. *IEEE Transactions on Information Theory*, 60(2), 1223-1247. February 2014.

Distributed Low-rank Subspace Segmentation. Ameet Talwalkar, Lester Mackey, Yadong Mu, Shih-Fu Chang, and Michael I. Jordan. *IEEE International Conference on Computer Vision (ICCV)*. December 2013.

The Asymptotics of Ranking Algorithms. John C. Duchi, Lester Mackey, and Michael I. Jordan. *Annals of Statistics*, 41(5), 2292-2323. November 2013.

Joint Link Prediction and Attribute Inference using a Social-Attribute Network. Neil Zhenqiang Gong, Ameet Talwalkar, Lester Mackey, Ling Huang, Eui Chul Richard Shin, Emil Stefanov, Elaine (Runting) Shi, and Dawn Song. *ACM Transactions on Intelligent Systems and Technology (ACM TIST)*. March 2013.

Divide-and-Conquer Matrix Factorization. Lester Mackey, Ameet Talwalkar, and Michael I. Jordan. *Advances in Neural Information Processing Systems (NIPS)*. December 2011.

Visually Relating Gene Expression and in vivo DNA Binding Data. Min-Yu Huang, Lester Mackey, Soile Keranen, Gunther Weber, Michael Jordan, David Knowles, Mark Biggin, and Bernd Hamann. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. November 2011.

Mixed Membership Matrix Factorization. Lester Mackey, David Weiss, and Michael I. Jordan. *International Conference on Machine Learning (ICML)*. June 2010.

On the Consistency of Ranking Algorithms. John Duchi, Lester Mackey, and Michael I. Jordan. *International Conference on Machine Learning (ICML)*. June 2010. ICML 2010 Best Student Paper Award.

Deflation Methods for Sparse PCA. Lester Mackey. *Advances in Neural Information Processing Systems (NIPS)*. December 2008.

Fault-tolerant Typed Assembly Language. Frances Perry, Lester Mackey, George A. Reis, Jay Ligatti, David I. August, and David Walker. *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*. June 2007. Joint winner of the PLDI 2007 Best Paper Award.

Static Typing for a Faulty Lambda Calculus. David Walker, Lester Mackey, Jay Ligatti, George Reis, and David August. *ACM SIGPLAN International Conference on Functional Programming (ICFP)*. September 2006.

Participatory Design with Proxies: Developing a Desktop-PDA System to Support People with Aphasia. Jordan Boyd-Graber, Sonya Nikolova, Karyn Moffatt, Kenrick Kin, Joshua Lee, Lester Mackey, Marilyn Tremaine, and Maria Klawe. *SIGCHI Conference on Human Factors in Computing Systems (CHI)*. April 2006.

UNPUBLISHED REPORTS

Deriving Matrix Concentration Inequalities from Kernel Couplings. Daniel Paulin, Lester Mackey, and Joel A. Tropp. May 2013.

Feature-Weighted Linear Stacking. Joe Sill, Gabor Takacs, Lester Mackey, and David Lin. November 2009.

INVITED TALKS

Measuring Sample Quality with Kernels

- Bayes, Machine Learning, and Deep Learning Invited Session, International Society for Bayesian Analysis (ISBA) World Meeting, June 2018.
- Harvard / MIT Econometrics Workshop, MIT, Mar. 2018.
- SAMSI Workshop on Trends and Advances in Monte Carlo Sampling Algorithms, Duke University, Dec. 2017.
- SAMSI Workshop on Quasi-Monte Carlo and High-Dimensional Sampling Methods, Duke University, Aug. 2017.
- Borchard Colloquium on Concentration Inequalities, High Dimensional Statistics, and Stein's Method, Missilac, France, July 2017.
- New England Machine Learning Day, Cambridge, MA, May 2017.
- Machine Learning Seminar, MIT, Mar. 2017.

Statistics for Social Good

- AI Now Symposium on the Social and Economic Impact of Artificial Intelligence Technologies, MIT, July 2017.
- Data Science @ Stanford Seminar, Stanford, June 2016.

Measuring Sample Quality with Stein's Method

- Gatsby Unit Seminar, University College London, Oct. 2016.
- Seminar, University of Liege, Sep. 2016.
- Quetelet Seminar, Ghent University, Sep. 2016.
- International Conference on Monte Carlo and Quasi-Monte Carlo Methods, Stanford, CA, Aug. 2016.
- Statistics Seminar, Columbia University, Feb. 2016.
- Quasi-Monte Carlo Invited Session, IMS-ISBA Joint Meeting (MCMSki V), Jan. 2016.
- Wharton Statistics Seminar, University of Pennsylvania, Dec. 2015.
- Neyman Seminar, UC Berkeley, Sep. 2015.
- IMS-Microsoft Research Workshop: Foundations of Data Science, Cambridge, MA, June 2015.
- Stochastics and Statistics Seminar, MIT, May 2015.
- Statistics Seminar, Stanford University, May 2015.

Matrix Completion and Matrix Concentration

- IDSS Special Seminar, Massachusetts Institute of Technology, Feb. 2016.
- Statistics Seminar, Harvard University, Nov. 2014.
- Blackwell-Tapia Conference, Los Angeles, CA, Nov. 2014.
- Information Systems Laboratory Colloquium, Stanford University, April 2013.
- Statistics Seminar, Yale University, April 2013.
- Statistics Seminar, Columbia University, April 2013.
- Computer Science Seminar, University of Southern California, May 2012.
- Statistics Seminar, Stanford University, Jan. 2012.

Divide-and-Conquer Matrix Factorization

- CS Department Colloquium, Princeton University, Dec. 2015.
- Workshop on Big Data: Theoretical and Practical Challenges, Paris, France, May 2013.
- Kaggle, San Francisco, CA, Feb. 2013.
- Statistical Science Seminar Series, Duke University, Jan. 2012.

- CMS Seminar, Caltech, Jan. 2012.
- SF Bay Area Machine Learning Meetup, San Francisco, CA, Nov. 2011.

Predicting ALS Progression with Bayesian Additive Regression Trees
- Big Data in Biomedicine Conference, Stanford University, May 2015.
- Guest Lecture, Stats 202, Stanford University, Nov. 2013.
- Statistics Seminar, Stanford University, April 2013.
- RECOMB Conference on Regulatory and Systems Genomics, Redwood City, CA, Nov. 2012.

Weighted Classification Cascades for Optimizing Discovery Significance
- NIPS Workshop on High-energy particle physics, machine learning, and the HiggsML data challenge (HEPML), December 2014.

Ranking, Aggregation, and You
- Statistics Seminar, University of Chicago, Oct. 2014.
- MacMillan-CSAP Workshop on Quantitative Research Methods, Yale University, Sep. 2014.
- Wharton Statistics Seminar, University of Pennsylvania, Sep. 2014.
- Statistics Seminar, Carnegie Mellon University, Sep. 2014.
- Western Section Meeting, American Mathematical Society, Nov. 2013.
- Statistics Seminar, Stanford University, Sep. 2013.
- Stanford Statistics-Machine Learning Reading Group, Stanford University, Nov. 2012.

Build a Better Netflix, Win a Million Dollars?
- SPARC Camp, Berkeley, CA, Aug. 2014.
- USA Science and Engineering Festival, Washington, DC, Apr. 2012.

Dividing, Conquering, and Mixing Matrix Factorizations
- Technicolor, Palo Alto, CA, June 2013.

Stein's Method for Matrix Concentration
- Institut National de Recherche en Informatique et en Automatique (INRIA), Dec. 2012.
- Berkeley Probability Seminar, University of California, Berkeley, Jan. 2012.

The Story of the Netflix Prize: An Ensembler's Tale
- National Academies' Seminar, Washington, DC, Nov. 2011.

Mixed Membership Matrix Factorization
- Joint Statistical Meetings, Miami Beach, FL, July 2011.

False Event Identification and Beyond: A Machine Learning Approach
- Comprehensive Test Ban Treaty Organization Technical Meeting on Data Mining, Vienna, Austria, Nov. 2009.

The Dinosaur Planet Approach to the Netflix Prize
- LIDS Seminar series, Massachusetts Institute of Technology, Nov. 2008.
- Guest Lecture, Stat 157, University of California, Berkeley, Sept. 2008.
- Process Driven Trading Group, Morgan Stanley, April 2008.

PRESENTATIONS

A Multifactorial Model of T Cell Expansion and Durable Clinical Benefit in Response to a PD-L1 Inhibitor. American Association for Cancer Research (AACR) Annual Meeting, Chicago, IL, Apr. 2018.

Post hoc analysis using PRO-ACT database to evaluate Repository Corticotropin Injection (H.P. Acthar® Gel) as potential treatment for ALS. American Academy of Neurology 70th Annual Meeting, Los Angeles, CA, Apr. 2018.

Divide and Conquer Subspace Segmentation. Neural Information Processing Systems Workshop on Big Learning, Lake Tahoe, NV, Dec. 2012.

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Improved Automated Seismic Event Extraction Using Machine Learning. American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 2009.

Machine Learning for Improved Automated Seismic Event Extraction. International Scientific Studies Conference, Vienna, Austria, June 2009.

TEACHING EXPERIENCE

Introduction to Statistical Learning, Stanford University, Winter 2015, 2016
Data Mining and Analysis, Stanford University, Fall 2015
Theory of Statistics, Stanford University, Fall 2013, 2014, 2015
Methods for Applied Statistics: Unsupervised Learning, Stanford University, Spring 2014
Self-paced Center, U.C. Berkeley, Fall 2011
Statistical Learning Theory, U.C. Berkeley, Fall 2010
Practical Machine Learning, U.C. Berkeley, Fall 2009

SERVICE

Organizer, Microsoft Research Colloquium, 2017-2018
Organizer, Stanford Statistics for Social Good, 2013-2016
Organizer, Stanford Statistics Seminar, 2014, 2016
PhD Admissions Committee, Stanford Statistics Department, 2012-13, 2013-14, 2015-16
Stanford Statistics Data Science Committee, 2014-15
Organizer, Stanford Statistics Summer Undergraduate Research Program, 2014, 2015
Stanford Data Science Initiative Working Group, 2014
Computer Science Graduate Student Association Activities Committee, U.C. Berkeley, 2010, 2011
PhD Admissions Committee, U.C. Berkeley Computer Science Division, 2010, 2011

Chair, ASC-IMS Session on Convex Modeling for High-Dimensional Data Analysis, 2014
Organizer, NIPS Workshop on Sparse Representation and Low-rank Approximation, 2011

Area Chair for International Conference on Machine Learning (ICML)
Area Chair for Neural Information and Processing Systems (NIPS)
Reviewer for Annals of Statistics
Reviewer for Conference on Artificial Intelligence (AAAI)
Reviewer for International Conference on Artificial Intelligence and Statistics (AISTATS)
Reviewer for Bernoulli
Reviewer for Biometrika
Reviewer for Conference on Learning Theory (COLT)
Reviewer for Electronic Journal of Statistics
Reviewer for Foundations and Trends in Machine Learning (FnTML)
Reviewer for International Conference on Machine Learning (ICML)
Reviewer for IEEE Transactions on Information Theory
Reviewer for International Joint Conferences on Artificial Intelligence (IJCAI)
Reviewer for Journal of Machine Learning Research (JMLR)
Reviewer for Machine Learning Journal
Reviewer for Neural Information and Processing Systems (NIPS)
Reviewer for NIPS Workshop on Computational Social Science and the Wisdom of Crowds
Reviewer for Neurocomputing