

Publications

- [1] Max H Farrell, Tengyuan Liang, and Sanjog Misra. Deep neural networks for estimation and inference. *arXiv preprint arXiv:1809.09953, Econometrica, forthcoming*, August 2020.
- [2] Tengyuan Liang, Alexander Rakhlin, and Xiyu Zhai. On the multiple descent of minimum-norm interpolants and restricted lower isometry of kernels. In Jacob Abernethy and Shivani Agarwal, editors, *Proceedings of Thirty Third Conference on Learning Theory*, volume 125 of *Proceedings of Machine Learning Research*, pages 2683–2711. PMLR, July 2020.
- [3] Tengyuan Liang and Alexander Rakhlin. Just interpolate: Kernel “Ridgeless” regression can generalize. *The Annals of Statistics*, 48(3):1329–1347, June 2020.
- [4] Tengyuan Liang and Hai Tran-Bach. Mehler’s formula, branching process, and compositional kernels of deep neural networks. *arXiv preprint arXiv:2004.04767*, April 2020.
- [5] Tengyuan Liang and Pragya Sur. A precise high-dimensional asymptotic theory for boosting and min-l1-norm interpolated classifiers. *arXiv preprint arXiv:2002.01586*, February 2020.
- [6] Xialiang Dou and Tengyuan Liang. Training neural networks as learning data-adaptive kernels: Provable representation and approximation benefits. *Journal of the American Statistical Association*, 0(0):1–14, 2020.
- [7] T. Tony Cai, Tengyuan Liang, and Alexander Rakhlin. Weighted message passing and minimum energy flow for heterogeneous stochastic block models with side information. *Journal of Machine Learning Research*, 21(11):1–34, 2020.
- [8] Tengyuan Liang. Estimating certain integral probability metric (IPM) is as hard as estimating under the IPM. *arXiv preprint arXiv:1911.00730*, November 2019.
- [9] Tengyuan Liang, Tomaso Poggio, Alexander Rakhlin, and James Stokes. Fisher-rao metric, geometry, and complexity of neural networks. In Kamalika Chaudhuri and Masashi Sugiyama, editors, *The 22nd International Conference on Artificial Intelligence and Statistics*, volume 89 of *Proceedings of Machine Learning Research*, pages 888–896. PMLR, April 2019.
- [10] Tengyuan Liang and James Stokes. Interaction matters: A note on non-asymptotic local convergence of generative adversarial networks. In Kamalika Chaudhuri and Masashi Sugiyama, editors, *The 22nd International Conference on Artificial Intelligence and Statistics*, volume 89 of *Proceedings of Machine Learning Research*, pages 907–915. PMLR, April 2019.
- [11] Tengyuan Liang and Weijie J. Su. Statistical inference for the population landscape via moment-adjusted stochastic gradients. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, 81(2):431–456, 2019.
- [12] Tengyuan Liang. On how well generative adversarial networks learn densities: Nonparametric and parametric results. *arXiv preprint arXiv:1811.03179*, November 2018.

- [13] Belinda Tzen, Tengyuan Liang, and Maxim Raginsky. Local optimality and generalization guarantees for the langevin algorithm via empirical metastability. In Sébastien Bubeck, Vianney Perchet, and Philippe Rigollet, editors, *Proceedings of the 31st Conference on Learning Theory*, volume 75 of *Proceedings of Machine Learning Research*, pages 857–875. PMLR, July 2018.
- [14] Satyen Kale, Zohar Karnin, Tengyuan Liang, and Dávid Pál. Adaptive feature selection: Computationally efficient online sparse linear regression under RIP. In Doina Precup and Yee Whye Teh, editors, *Proceedings of the 34th International Conference on Machine Learning*, volume 70 of *Proceedings of Machine Learning Research*, pages 1780–1788, International Convention Centre, Sydney, Australia, August 2017. PMLR.
- [15] T. Tony Cai, Tengyuan Liang, and Alexander Rakhlin. Computational and statistical boundaries for submatrix localization in a large noisy matrix. *The Annals of Statistics*, 45(4):1403–1430, August 2017.
- [16] T. Cai, T. Liang, and A. Rakhlin. On detection and structural reconstruction of small-world random networks. *IEEE Transactions on Network Science and Engineering*, 4(3):165–176, July 2017.
- [17] T. Tony Cai, Tengyuan Liang, and Alexander Rakhlin. Geometric inference for general high-dimensional linear inverse problems. *The Annals of Statistics*, 44(4):1536–1563, August 2016.
- [18] Alexandre Belloni, Tengyuan Liang, Hariharan Narayanan, and Alexander Rakhlin. Escaping the local minima via simulated annealing: Optimization of approximately convex functions. In Peter Grünwald, Elad Hazan, and Satyen Kale, editors, *Proceedings of the 28th Conference on Learning Theory*, volume 40 of *Proceedings of Machine Learning Research*, pages 240–265, Paris, France, July 2015. PMLR.
- [19] Tengyuan Liang, Alexander Rakhlin, and Karthik Sridharan. Learning with square loss: Localization through offset rademacher complexity. In Peter Grünwald, Elad Hazan, and Satyen Kale, editors, *Proceedings of the 28th Conference on Learning Theory*, volume 40 of *Proceedings of Machine Learning Research*, pages 1260–1285, Paris, France, July 2015. PMLR.
- [20] T. Tony Cai, Tengyuan Liang, and Harrison H. Zhou. Law of log determinant of sample covariance matrix and optimal estimation of differential entropy for high-dimensional Gaussian distributions. *Journal of Multivariate Analysis*, 137:161–172, 2015.