

Minh Tang

Department of Statistics
North Carolina State University
2311 Stinson Dr, Raleigh, NC 27607
✉ mtang8@ncsu.edu
📄 minh-tang.github.io

Education

- 2010 **Ph.D in Computer Science**,
Indiana University Bloomington.
- 2004 **M.S. in Computer Science**,
University of Wisconsin Milwaukee.
- 2001 **B.S. in Computer Science**,
Assumption University, Thailand.

Work Experience

- 07/19 – now **Assistant Professor**,
Department of Statistics, North Carolina State University.
- 01/17 – 06/19 **Associate Research Professor**,
Department of Applied Mathematics and Statistics, Johns Hopkins University.
- 07/14 – 12/16 **Assistant Research Professor**,
Department of Applied Mathematics and Statistics, Johns Hopkins University.
- 10/10 – 06/14 **Postdoctoral Fellow**,
Department of Applied Mathematics and Statistics, Johns Hopkins University.

Research Interests

statistical pattern recognition, dimensionality reduction, statistical inference on graphs

Submitted Grants and Research Award

- 03/17 – 08/21 co-PI on DARPA Data-Driven Discovery of Models (PI: Carey Priebe)
- 08/18 – 08/19 PI on Microsoft Research Award: Efficiency and Optimality in Graph Inference

Journal Publications

- 2020+ K. Levin and F. Roosta and **M. Tang** and M. Mahoney and C. E. Priebe. Limit theorems for out-of-sample extensions of the adjacency and Laplacian spectral embeddings. *Journal of Machine Learning Research*, accepted for publication. arXiv preprint at <http://arxiv.org/abs/1910.00423>.
- 2020+ A. Athreya and **M. Tang** and Y. Park and C. E. Priebe. On estimation and inference in latent structure random graphs. *Statistical Science*, accepted for publication. arXiv preprint at <http://arxiv.org/abs/1806.01401>
- 2020 G.-K. Li and **M. Tang** and N. Charon and C. E. Priebe. Central limit theorems for classical multidimensional scaling. *Electronic Journal of Statistics*, Vol. 14, pages 2362–2394.
- 2019 J. Cape and **M. Tang** and C. E. Priebe. On spectral embedding performance and elucidating network structure. *Journal of Network Science*, Vol. 7, pp. 269–291.
- 2019 J. Cape and **M. Tang** and C. E. Priebe. The two-to-infinity norm and singular subspace geometry with applications to high-dimensional statistics. *Annals of Statistics*, Vol. 47, pp. 2405–2439. This paper was among 4 papers selected for presentation at the 2019 JSM Annals of Statistics Special Invited Sessions

- 2019 J. Cape and **M. Tang** and C. E. Priebe. Signal-plus-noise matrix models: eigenvector deviations and fluctuations. *Biometrika*, Vol. 106, pp. 243–250
- 2019 C. E. Priebe and Y. Park and J. T. Vogelstein and J. M. Conroy and V. Lyzinski and **M. Tang** and A. Athreya and J. Cape and E. Bridgeford. On a “two truths” phenomenon in spectral graph clustering. *PNAS*, Vol. 116, pp. 5995–6000
- 2018 **M. Tang** and C. E. Priebe. Limit theorems for eigenvectors of the normalized Laplacian for random graphs. *Annals of Statistics*, Vol. 46, pp. 2360–2415
- 2018 A. Athreya and D. E. Fishkind and K. Levin and V. Lyzinski and Y. Park and Y. Qin and D. L. Sussman and **M. Tang** and J. T. Vogelstein and C. E. Priebe, Statistical inference on random dot product graphs: a survey, *Journal of Machine Learning Research*, Vol. 18.
- 2017 J. Cape, **M. Tang** and C. E. Priebe. The Kato-Temple inequality and eigenvalue concentration. *Electronic Journal of Statistics*, Vol. 11, pp. 3954–3978.
- 2017 V. Lyzinski, **M. Tang**, A. Athreya, Y. Park and C. E. Priebe. Community detection and classification in hierarchical stochastic blockmodels. *IEEE Transactions on Network Science and Engineering*, Vol. 4, pp. 13–26.
- 2017 **M. Tang**, A. Athreya, D. L. Sussman, V. Lyzinski, Y. Park and C. E. Priebe. A semiparametric two-sample hypothesis testing problem for random graphs. *Journal of Computational and Graphical Statistics*, Vol. 26, pp. 344–354.
- 2017 **M. Tang**, A. Athreya, D. L. Sussman, V. Lyzinski, and C. E. Priebe. A nonparametric two-sample hypothesis testing problem for random dot product graphs. *Bernoulli*, Vol. 23, pp. 1599–1630.
- 2016 S. Suwan, D. S. Lee, R. Tang, D. L. Sussman, **M. Tang** and C. E. Priebe. Empirical Bayes estimation for the stochastic blockmodel. *Electronic Journal of Statistics*, Vol. 10, pp. 761–782.
- 2016 A. Athreya, V. Lyzinski, D. J. Marchette, C. E. Priebe, D. L. Sussman and **M. Tang**. A central limit theorem for scaled eigenvectors of random dot product graphs. *Sankhya Series A*, Vol. 78, pp. 1–18.
- 2015 C. E. Priebe, D. L. Sussman, **M. Tang** and J. T. Vogelstein. Statistical inference on errorfully observed graphs. *Journal of Computational and Graphical Statistics*, Vol. 24, pp. 930–953.
- 2014 V. Lyzinski, D. L. Sussman, **M. Tang**, A. Athreya and C. E. Priebe. Perfect clustering for stochastic blockmodel graphs via adjacency spectral embedding. *Electronic Journal of Statistics*, Vol. 8, pp. 2905–2922.
- 2014 C. Shen, M. Sun, **M. Tang** and C. E. Priebe. Generalized canonical correlation analysis for classification in high dimensions. *Journal of Multivariate Analysis*, Vol. 130, pp. 310–322.
- 2014 D. L. Sussman, **M. Tang** and C. E. Priebe. Consistent latent position estimation and vertex classification for random dot product graphs. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 36, pp. 48–57.
- 2014 H. Wang, **M. Tang**, Y. Park, and C. E. Priebe. Locality statistics for anomaly detection in time-series of graphs. *IEEE Transactions on Signal Processing*, Vol. 62, pp. 703–717.
- 2013 D. E. Fishkind, D. L. Sussman, **M. Tang**, J. T. Vogelstein, and C. E. Priebe. Consistent adjacency-spectral partitioning for the stochastic block model when the model parameters are unknown. *SIAM Journal on Matrix Analysis and Applications*, Vol. 34, pp. 23–39.
- 2013 N. H. Lee, J. Yoder, **M. Tang** and C. E. Priebe. On latent position inference from doubly stochastic messaging activities. *Multiscale Modeling and Simulation*, Vol. 11, pp. 683–718.
- 2013 M. Sun, C. E. Priebe and **M. Tang**. Generalized canonical correlation analysis for disparate data fusion. *Pattern Recognition Letters*, Vol. 34, pp. 194–200.
- 2013 **M. Tang**, Y. Park, N. H. Lee and C. E. Priebe. Attribute fusion in a latent process model for time series of graphs. *IEEE Transactions on Signal Processing*, Vol. 61, pp. 1721–1732.
- 2013 **M. Tang** and D. L. Sussman and C. E. Priebe. Universally consistent vertex classification for latent positions graphs. *Annals of Statistics*, Vol. 41, pp. 1406–1430.

- 2012 D. L. Sussman, **M. Tang**, D. E. Fishkind and C. E. Priebe. A consistent adjacency spectral embedding for stochastic blockmodel graphs. *Journal of the American Statistical Association*, Vol. 107, pp. 1119–1128.

Preprints

- 2020 M. Trosset and M. Gao and **M. Tang** and C. E. Priebe. Learning 1-Dimensional Submanifolds for Subsequent Inference on Random Dot Product Graphs. Submitted for publication. arXiv preprint at <http://arxiv.org/abs/2004.07348>.
- 2020 J. Agteberg and **M. Tang** and C. E. Priebe. On Two Distinct Sources of Nonidentifiability in Latent Position Random Graph Models. Submitted for publication. arXiv preprint at <http://arxiv.org/abs.20003.14250>.
- 2018 **M. Tang**. The eigenvalues of stochastic blockmodel graphs. Submitted for publication. arXiv preprint at <http://arxiv.org/abs/1803.11551>.
- 2018 P. Rubin-Delanchy and J. Cape and **M. Tang** and C. E. Priebe. A statistical interpretation of spectral embedding: the generalised random dot product graph. Submitted for publication. arXiv preprint at <http://arxiv.org/abs/1709.05506>.
- 2017 **M. Tang** and J. Cape and C. E. Priebe. Asymptotically efficient estimators for stochastic blockmodels: the naive MLE, the rank-constrained MLE, and the spectral. Submitted for publication. arXiv preprint at <http://arxiv.org/abs/1710.10936>.
- 2017 J. T. Vogelstein and **M. Tang** and E. Bridgeford and D. Zheng and R. Burns and M. Maggioni. Linear optimal low rank projection for high-dimensional multi-class data. arXiv preprint at <http://arxiv.org/abs/1709.01233>
- 2017 R. Tang and **M. Tang** and J. T. Vogelstein and C. E. Priebe. Robust estimation from multiple graphs under gross error contamination. Submitted for publication. arXiv preprint at <http://arxiv.org/abs/1707.03487>.
- 2017 K. Levin and A. Athreya and **M. Tang** and C. E. Priebe and V. Lyzinski. A central limit theorem for an omnibus embedding of random dot product graphs. Submitted for publication. arXiv preprint at <http://arxiv.org/abs/1705.08832>.
- 2017 P. Rubin-Delanchy and C. E. Priebe and **M. Tang**. Consistency of adjacency spectral embedding for the mixed membership stochastic blockmodel. Submitted for publication. arXiv preprint at <http://arxiv.org/abs/1705.04518>.
- 2017 C. E. Priebe and Y. Park and **M. Tang** and A. Athreya and V. Lyzinski and J. T. Vogelstein and Y. Qin and B. Cocanougher and K. Eichler and M. Zlatić and A. Cardona. arXiv preprint at <http://arxiv.org/abs/1704.03297>.
- 2016 A. Athreya, **M. Tang**, V. Lyzinski, Y. Park, B. Lewis, M. Kane, and C. E. Priebe. Numerical tolerance for spectral decompositions of random dot product graphs. Submitted for publication. arXiv preprint at <http://arxiv.org/abs/1608.00451>.
- 2013 **M. Tang**, Y. Park and C. E. Priebe. Out-of-sample extension for latent position graphs. arXiv preprint at <http://arxiv.org/abs/1305.4893>.

Invited Talks

- 04/2020 Department of Mathematics, University of Maryland
- 12/2019 CMStatistics, London, UK.
- 11/2018 Department of Biostatistics, Yale University.
- 09/2017 Department of Mathematics and Statistics, Boston University.
- 08/2017 Joint Statistical Meetings, Baltimore, MD, USA.
- 11/2015 Department of Statistics, Indiana University Bloomington.
- 02/2015 School of Industrial and Systems Engineering, Georgia Institute of Technology.
- 02/2015 Department of Statistics, Virginia Tech.

08/2014 Joint Statistical Meetings, Boston, MA, USA.
05/2012 Interface Symposia, Houston, TX, USA.

Teaching

NCSU Mathematical Statistics I (Spring 2020)
NCSU Introduction to Data Science (Fall 2019)
JHU Generalized linear mixed models & longitudinal data analysis (Spring 2017 – Spring 2019)
JHU Professor Joel Dean Award for Excellence in Teaching (Spring 2016)
JHU Topics in statistical pattern recognition (Spring 2016)
JHU Applied statistics and data analysis (Fall 2013 – Fall 2018)
JHU Statistical learning and high-dimensional data analysis (Spring 2011)

Mentoring

NCSU PhD thesis advisor of Alex Chen (2019 – present)
NCSU PhD thesis advisor of Xinjie Du (2019 – present)
NCSU PhD thesis advisor of Yukun Song (2019 – present)
NCSU PhD thesis advisor of Yiran Wang (2019 – present); co-advisor with Soumendra Lahiri
NCSU PhD thesis advisor of Yichi Zhang (2019 – present)
NCSU PhD thesis advisor of Runbing Zheng (2019 – present)
JHU MS thesis advisor of Jipeng Zhang (graduated December 2019)
JHU PhD thesis advisor of Gongkai Li (defended May 2019); co-advisor with Carey E. Priebe
JHU MS thesis advisor of Erin Hunt (graduated May 2019).
JHU PhD thesis advisor of Joshua Cape (defended March 2019); co-advisor with Carey E. Priebe
JHU MS thesis advisor of Fanwen Zhu (graduated July 2018).
JHU PhD dissertation committee member for Cencheng Shen (2015; second reader), Heng Wang (2015), Jordan Yoder (2016), Runze Tang (2017; second reader), Shangsi Wang (2018), Mingyue Gao (2019; second reader)

Professional Services

Refereed papers for *Annals of Statistics*, *Annals of Applied Statistics*, *Statistical Science*, *Journal of Computational and Graphical Statistics*, *IEEE Transactions on Signal Processing*, *IEEE Transactions on Network Science*, *Electronic Journal of Statistics*, *Journal of Machine Learning Research*, *IEEE Transactions on Knowledge and Data Engineering*, *Bernoulli*, *Biometrics*.