CURRICULUM VITAE

PERSONAL INFORMATION

Name:	Xin Bing	**English first name**:	Mike
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Phone:	(607)-697-3443		
Current position:	Assistant Professor in the Dept. of Statistical Sciences at the University of Toronto		

EDUCATION

Cornell University 09/2016 – 06/2021
Ph.D. in Statistics with minor in Mathematics
Advisors: Florentina Bunea and Marten Wegkamp

University of Washington – Seattle 09/2014 – 06/2016
M.S. in Statistics

Shandong University 09/2013 – 06/2016
M.F.E. in Financial Mathematics

Shandong University 09/2009 – 06/2013
B.S. in Mathematics and Statistics

EMPLOYMENT

Assistant Professor: at the Univeristy of Toronto, Department of Statistical Sciences. 06/2022 – present

Research Associate: at the University of Cambridge, Department of Pure Mathematics and Mathematical Statistics, hosted by Richard J. Samworth. 10/2021 – 01/2022

Computational Systems Immunology Research Associate: jointly between the University of Pittsburgh, School of Medicine (with Jishnu Das), and Cornell University, Department of Statistics and Data Science. 01/2020 – 08/2020

Teaching Assistant: Cornell University, Department of Statistics and Data Science. 09/2016 – 06/2021

RESEARCH OF INTEREST

High-dimensional statistics, low-rank matrix estimation, mixture models, multivariate analysis, model-based clustering, latent factor model, topic models, minimax estimation, high-dimensional inference, statistical and computational trade-offs, applications of the Wasserstein distance in statistics, applications to genetics, neuroscience, immunology and other areas.

HONORS AND AWARDS

- 2021 Hsien and Daisy Yen Wu Scholarships
- 2021 IMS Lawrence D. Brown Ph.D. Student Award
- Honor graduate of Shandong University in 2013
- Excellent student scholarship grantee for meticulous academic performance from 2010 to 2012

JOURNAL PUBLICATIONS

1. Xin Bing and Marten Wegkamp.
   Interpolating Discriminant Functions in High-Dimensional Gaussian Latent Mixtures.
   Biometrika, 111(1): 291-308. March, 2024. Link to the paper.

2. Xin Bing, Wei Cheng, Huijie Feng and Yang Ning.
   Inference in High-dimensional Multivariate Response Regression with Hidden Variables.
   Journal of the American Statistical Association (Theory & Method). Sep, 2023. Link to the paper.

3. Xin Bing and Marten Wegkamp.
   Optimal Discriminant Analysis in High-Dimensional Latent Factor Models.
   Ann. Statist. 51(3): 1232-1257. June, 2023. Link to the paper.

4. Xin Bing, Florentina Bunea and Marten Wegkamp.
   Detecting approximate replicate components of a high-dimensional random vector with latent structure.
   Bernoulli, 29(2): 1368–1391. May, 2023. Link to the paper.

5. Dian Jin, Xin Bing and Yuqian Zhang.
   Unique sparse decomposition of low rank matrices.
   IEEE Transactions on Information Theory, 69(4): 2452–2484, April 2023. Link to the paper.

6. Xin Bing, Florentina Bunea, Seth Strimas-Mackey and Marten Wegkamp.
   Likelihood estimation of sparse topic distributions in topic models and its applications to Wasserstein document distance calculations.
   Ann. Statist., 50(6): 3307–3333, December 2022. Link to the paper.

7. Xin Bing, Florentina Bunea and Marten Wegkamp.
   Inference in interpretable latent factor regression models.
   Bernoulli, 28(2): 997 – 1020, May 2022. Link to the paper.

8. Xin Bing, Yang Ning and Yaosheng Xu.
   Adaptive estimation of multivariate regression with hidden variables.
   Ann. Statist., 50(2): 640–672, 2022. Link to the paper.

9. Xin Bing, Florentina Bunea, Seth Strimas-Mackey and Marten Wegkamp.
   Prediction in latent factor regression: Adaptive PCR and beyond.
   The Journal of Machine Learning Research, 22(177): 1–50, 2021. Link to the paper.

10. Xin Bing, Florentina Bunea and Marten Wegkamp.
    Optimal estimation of sparse topic models.
    The Journal of Machine Learning Research, 21(177): 1–45, 2020. Link to the paper.

11. Xin Bing, Florentina Bunea and Marten Wegkamp.
    A fast algorithm with minimax optimal guarantees for topic models with an unknown number of topics.
    Bernoulli, 26(3): 1765–1796, 2020. Link to the paper.

12. Xin Bing, Florentina Bunea, Yang Ning and Marten Wegkamp.
    Adaptive estimation in structured factor models with applications to overlapping clustering.
    Ann. Statist., 48(4): 2055–2081, 2020. Link to the paper.

13. Xin Bing and Marten Wegkamp.
    Adaptive estimation of the rank of the coefficient matrix in high-dimensional multivariate response regression models.
    Ann. Statist., 47(6): 3157–3184, 2019. Link to the paper.

CONFERENCE PUBLICATION

1. Dian Jin, Xin Bing and Yuqian Zhang.
   Unique sparse decomposition of low rank matrices.
   Neural Information Processing Systems, 2021. Link to the paper.

COLLABORATIVE PUBLICATIONS AND DISCUSSIONS

1. Javad Rahimikollu, Hanxi Xiao, Anna E. Rosengart, Tracy Tabib, Paul Zdinak, Kun He, Xin Bing, Florentina Bunea, Marten Wegkamp, Amanda C. Poholek, Alok V Joglekar, Robert A Lafyatis, Jishnu Das.
   SLIDE: Significant Latent Factor Interaction Discovery and Exploration across biological domains.
   Nature Methods. Feb, 2024. Link to the paper.

2. Xin Bing, Tyler Lovelace, Florentina Bunea, Marten Wegkamp, Harinder Singh, Panayiotis Benos, Jishnu Das.
   Essential Regression – a generalizable framework for inferring causal latent factors from multi-omic human datasets.
   Patterns (Cell press), 3(5): 100473, 2022. Link to the paper.

3. Xin Bing, Florentina Bunea, Martin Royer and Jishnu Das.
   Latent model-based clustering for biological discovery.
   iScience 14 (2019), 125–135. Link to the paper.

4. Xin Bing and Marten Wegkamp.
   Discussion of random-projection ensemble classification by Timothy I. Cannings and Richard J. Samworth.
   J. R. Statist. Soc. B 79 (2017), no. 4, 1006–1007.

PAPERS UNDER REVIEW

1. Xin Bing, Bingqing Li and Marten Wegkamp. Linear Discriminant Regularized Regression. arXiv link..

2. Xin Bing and Shangkai Zhu. Double denoising k-means clustering.

3. Xin Bing, Dian Jin and Yuqian Zhang. Optimal vintage factor analysis with deflation varimax. arXiv link.

4. Xin Bing, Florentina Bunea and Jonathan Niles-Weed. The Sketched Wasserstein Distance for mixture distributions. arXiv link.

WORK IN PROGRESS

1. High-dimensional Hypothesis Testing on Multivariate Gaussianity. Joint work with Derek Latremouille. (Preprint available upon request)

2. Softmax mixtures: identifiability, method of moments and EM estimation. Joint work with Florentina Bunea, Jonathan-Niles Weed and Marten Wegkamp. (Preprint available upon request)

3. Optimal Clustering in Gaussian Latent Space. Joint work with Bingqing Li. (Preprint available upon request)

4. Towards Theoretical Understanding of Learning Large-scale Dependent Data via Random Features. Joint work with Chao Wang and Xin He.

GRANTS

- Graduate Student Exchange Scholarship from the Canadian Statistical Sciences Institute (CANSSI). ($15K)   2024 – 2025.

- NSERC Discovery Grant Individual. ($30K per year)   2023 – 2028.
- NSERC Discovery Launch Supplement. ($12.5K in total)   April 1, 2023 – March 31, 2024.

INVITED TALKS AND PRESENTATIONS

- The 7th International Conference on Econometrics and Statistics: 17-19, July 2024. Beijing Normal University, Beijing, China. [Invited talk]

- The 2nd Joint Conference on Statistics and Data Science in China: 12-14 July, 2024. Haigeng Convention Center, Kunming, Yunnan, China. [Invited talk]

- 2024 Hangzhou International Conference on Frontiers of Data Science: 8-10 July, 2024. Center for Data Science of Zhejiang University, Hangzhou, Zhejiang, China. [Invited talk]

- Oberwolfach Workshop: Statistics and Learning Theory in the Era of Artificial Intelligence. 23–28 June, 2024. Oberwolfach Research Institute for Mathematics, Germany. [Invited talk]

- The 2024 WNAR/IMS/Graybill meeting: 9-12 June, 2024. Colorado State University, Fort Collins, Colorado, U.S.A.. [Invited talk]

- The Sixth ICSA-Canada Chapter Symposium: 7-9 June, 2024. Niagara Falls, Canada. [Invited talk]

- 16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CM-Statistics 2023). HTW Berlin, University of Applied Sciences. Berlin, Germany. 16-18 December, 2023. [Invited talk and organizer of an invited session]

- Seminar in the Department of Mathematics and Statistics at the McMaster University. 31 Oct, 2023. [Departmental seminar talk]

- International Chinese Statistical Association (ICSA): 2023 applied statistics symposium. 11–14 Jun, 2023. Ann Arbor, Michigan. [Invited talk]

- Seminar in the School of Mathematical Sceinces at Shanghai Jiao Tong University. 05 June, 2023. [Departmental seminar talk]

- Seminar in the Department of Mathematics at Shandong University. 22 May, 2023. [Departmental seminar talk]

- Seminar in the Department of Statistics and Management at Shanghai University of Finance and Economics. 28 April, 2023. [Departmental seminar talk]

- Seminar in the Department of Mathematics and Statistics at Auburn University. 19 April, 2023. [Departmental seminar talk]

- Seminar in the Department of Statistics and Actuarial Science at the University of Waterloo. 08 March, 2023. [Departmental seminar talk]

- 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CM-Statistics 2022). King's College London, UK. 17–19 December 2022. [Invited talk]

- International Chinese Statistical Association (ICSA): 2022 applied statistics symposium. 19–22 Jun, 2022. Gainsville, Florida. [Invited talk]

- Oberwolfach Workshop: Re-thinking High-dimensional Mathematical Statistics. 15–21 May, 2022. Oberwolfach Research Institute for Mathematics, Germany. [Postponed due to pandemic]

- Seminar in the Department of Statistics and Management at Shanghai University of Finance and Economics. 28 April, 2022. [Departmental seminar talk]

- Seminar in the Institute of Data Analysis and Modeling in economics and statistics, UCLouvain. Nov 26, 2021. [Departmental seminar talk]

- Joint Statistical Meetings / IMS Annual Meeting. Seattle, Washington, USA, August 7–12, 2021. [Special talk: IMS Lawrence D. Brown Ph.D. Student Award]

- International Chinese Statistical Association (ICSA): 2020 applied statistics symposium. Houston, TX. [Postponed due to pandemic]

- Workshop at Institute for Advanced Study (IAS, Princeton University): Missing Data Challenges in Computation, Statistics, and Applications. March 16–18, 2020. [Postponed due to pandemic]

- International Chinese Statistical Association (ICSA): 2019 applied statistics symposium. 09 – 12 Jun, 2019. Raleigh, NC. [Invited talk]

- International Center for Mathematical Science (ICMS) workshop: Computational strategies for large-scale statistical data analysis. Date: 02–07 July 2018. Edinburgh, UK. [Invited talk]

- Oberwolfach Workshop: Matrix Estimation Meets Statistical Network Analysis: Extracting low-dimensional structures in high dimension. 17–23 Jun 2018. Oberwolfach Research Institute for Mathematics, Germany. [Contributed talk]

- Cornell Day of Statistics 2017 (2018). Date: 08 Sep 2017 (07 Sep 2018). Cornell University. [Poster session]

- A Cornell Collaboration: Machine Learning in Medicine Symposium. 27–28 Sep 2018. Cornell University. [Poster session]

- Student seminar talk in the School of Operations Research and Information Engineering, Cornell University.

- Student seminar talk in the Department of Statistics and Data Science, Cornell University.

TEACHING

Teaching at the University of Toronto

- STA314H: Statistical Methods for Machine Learning I   Falls in 2022, 2023.

Supervised courses at Cornell University

- STSCI 5080: Probability Models and Inference

- BTRY 3520: Statistical Computing

- ILRS 3110: Probability Models and Inference for the Social Sciences

- MATH 4720: Statistics

- STSCI 4740: Machine Learning and Data Mining

- BTRY/STSCI 4090: Theory of Statistics

SERVICE TO THE ACADEMIC COMMUNITY

Referee for the Electronic Journal of Statistics, the Annals of Statistics, Biometrika, Statistica Sinica, Journal of the Royal Statistical Society - Series B, Journal of American Statistical Association, Journal of Computational and Graphical Statistics, Journal of Machine Learning Research, the SIAM Journal on Imaging Sciences, the Journal of Econometrics