FENG LIANG

Curriculum Vitae

Department of Statistics
University of Illinois Urbana-Champaign
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EDUCATION

1997	B.S.	Mathematics	Peking University
2002	Ph.D.	Statistics	Yale University

Dissertation: *Exact Minimax Procedures for Predictive Density Estimation and Data Compression*
Adviser: Andrew R. Barron

ACADEMIC APPOINTMENTS

2021 - present	Professor (Tenured), Department of Statistics, University of Illinois Urbana-Champaign
2011 - 2021	Associate Professor (Tenured), Department of Statistics, University of Illinois Urbana-Champaign
2006 - 2011	Assistant Professor (Tenure Track), Department of Statistics, University of Illinois Urbana-Champaign
2002 - 2008	Assistant Professor (Tenure Track), Institute of Statistics and Decision Sciences, Duke University

OTHER ACADEMIC AND PROFESSIONAL POSITIONS

2024 - present	Interim Director of the Actuarial Science and Risk Management (ASRM) Program, College of Liberal Arts & Sciences, UIUC
2024 - present	Interim Director of the Predictive Analytics & Risk Management (PARM) Program, College of Liberal Arts & Sciences, UIUC
2015 - present	Faculty Affiliate, Illinois Informatics Institute, UIUC
2013 - present	Faculty Affiliate, Computational Science and Engineering Program, UIUC
2007 - present	Researcher, Information Trust Institute, UIUC
2003 - 2004	Faculty Fellow, Data Mining and Machine Learning, Statistical and Applied Mathematical Sciences Institute (SAMSI)

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Statistical Association (ASA)
Institute of Mathematical Statistics (IMS)
International Society for Bayesian Analysis (ISBA)

PROFESSIONAL CONSULTANTSHIP

2019 - 2020	Gartner, Inc. (Stamford, CT)
2016 - 2019	CEB, Inc. (Arlington, VA)
2017 - 2017	Zimmerman Law Offices (Chicago, IL)

GRANTS

- (PI) *Improving and Assessing the Quality of Uncertainty Quantification in Deep Learning* Sandia National Laboratories (US Department of Energy), 2021 - 2023.

- (PI) *Learning Dependence Structures with Bayesian Regularization*
  NSF Division of Mathematical Sciences (DMS) 1916472, 2019 - 2022.
- (Co-PI) *Bayesian Estimation of Restricted Latent Class Models*
  NSF Division of Social and Economic Sciences (SES) 1758631, 2018 - 2020.
- (PI) *Bayesian Learning with Structured Sparsity*
  NSF Division of Mathematical Sciences (DMS) 1209152, 2012 - 2015.
- (PI) *Bayesian Methods for Multitask Learning*
  UIUC Research Board 12112, 2011 - 2013.
- (PI) *Probabilistic Models and Geometry for High Dimensional Data*
  NSF Division of Mathematical Sciences (DMS) 0732276, 2007 - 2011.
- (Co-PI) *A Virtual Center to Promote Collaboration between US- and China-based Researchers in Statistical Science*
  NSF Division of Mathematical Sciences (DMS) 0630950, 2006 - 2009.
- (PI) *Bayesian Inference with Overcomplete Wavelet Dictionary*,
  Duke Arts and Sciences Research Council, 2006 - 2007.
- (Co-PI) *High Dimensional Model Averaging and Model Selection*
  NSF Division of Mathematical Sciences (DMS) 0406115, 2004 - 2007.

PATENTS

- U.S. Patent 6,990,486: "Systems and methods for discovering fully dependent patterns." Sheng Ma, Joseph L. Hellerstein, and Feng Liang. January 24, 2006.

PUBLICATIONS

1. Y. Chen, S. He, Y. Yang, and F. Liang. Learning Topic Models: Identifiability and Finite-Sample Analysis. *Journal of the American Statistical Association.* 118: 2860–2875.
2. W. Yin, D. Zhao, and F. Liang. Bayesian Penalized Buckley-James Method for High-Dimensional Bivariate Censored Regression Models (2022). *Lifetime Data Analysis.* 28(2), 282-318.doi.org/10.1007/s10985-022-09549-5
3. J. Wang, F. Liang, Y. Ji, and Y. Zhu (2022). A Scalable Algorithm for Bayesian Variable Selection (SAB) with Application to miRNA-mRNA Regulation in Cancer. To appear in *High Dimensional Data Science*. Springer Publishing.
4. L. Gan, N. Narisetty, and F. Liang. (2022). Bayesian regularization for Gaussian conditional random field. *Statistica Sinica*. 32, 131-152. doi:10.5705/ss.202020.0118
5. J. Wang, Y. Ouyang, Y. Ji, and F. Liang (2021). An ensemble EM algorithm for Bayesian variable selection. *Bayesian Analysis*. 17(3), 879-900.
6. T. Xu and F. Liang (2021). Machine learning for hydrologic sciences: An introductory overview. *WIREs Water*. doi.org/10.1002/wat2.1533
7. X. Yang, L. Gan, N. Narisetty, and F. Liang (2021). GemBag: Group estimation of multiple Bayesian graphical models. *Journal of Machine Learning Research.* 22(54):1-48.
8. J. Hu, N. Cui, and F. Liang. (2021) Complementary dimension reduction. *Statistical Analysis and Data Mining.* 14:31-40.
9. Y. Chen, S. A. Culpepper, and F. Liang. (2020) A sparse latent class model for cognitive diagnosis. *Psychometrika*. 85(1), 121-153.
10. L. Gan, X. Yang, N. Narisetty, and F. Liang. (2019). Bayesian joint estimation of multiple graphical models. In *Proc. of the 33rd International Conference on Neural Information Processing Systems (NIPS'19).* (Acceptance rate: 1428/6743 = 21.2%)

11. J. Lee, M. Boubekri, and F. Liang. (2019). Impact of building design parameters on daylighting metrics using an analysis, prediction, and optimization approach based on statistical learning. *Sustainability*. 11(5), 1474; doi: 10.3390/su11051474
12. L. Gan, N. Narisetty, and F. Liang. (2019). Bayesian regularization for Gaussian graphical models with unequal shrinkage. *Journal of the American Statistical Association*, 114: 1218-1231. doi.org/10.1080/01621459.2018.1482755.
13. T. Xu, A. J. Valocchi, M. Ye, and F. Liang. (2017) Quantifying model structural error: efficient Bayesian calibration of a regional groundwater flow model with a data-driven error model and fast surrogates. *Water Resources Research*. 53(5): 4084-4105.
14. Z. Jin, F. Liang, J. Yang, and W. Mei. (2017) hnRNP I regulates neonatal immune adaptation and prevents colitis and colorectal cancer. *PLoS Genet* 13(3): e1006672. doi.org/10.1371/journal.pgen.1006672
15. T. Xu, A. J. Valocchi, M. Ye, F. Liang, and Y. Lin. (2017) Bayesian calibration of groundwater models with input data uncertainty. *Water Resources Research*. 53(4): 3223-3245.
16. J. Ridgway, P. Alquier, N. Chopin, F. Liang. (2014). PAC-Bayesian AUC classification and scoring. In *Proc. of the 27th International Conference on Neural Information Processing Systems (NIPS'14)*, 658–666. (Acceptance rate: 414/1678 = 24.7%)
17. Y. Yang, F. Liang, S. Yan, Z. Wang, T. Huang. (2014). On a theory of nonparametric pairwise similarity for clustering: connecting clustering to classification. In *Proc. of the 27th International Conference on Neural Information Processing Systems (NIPS'14)*, 145–153. (Acceptance rate: 414/1678 = 24.7%)
18. H. Wang, C. Zhai, F. Liang, A. Dong, Y. Chang. (2014). User modeling in search logs via a nonparametric Bayesian approach. In *Proc. of International Conference on Web Search and Data Mining (WSDM'14)*, 203212. (Acceptance rate: 64/355 = 18.0%)
19. Y. Yang, F. Liang, T. Huang. (2014). Discriminative exemplar clustering. In *Proc. of IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2014)*, 6771–6775.
20. Q. Wu, F. Liang, S. Mukherjee. (2013). Kernel sliced inverse regression: regularization and consistency. *Abstract and Applied Analysis*, dx.doi.org/10.1155/2013/540725
21. Z. Li, S. Chang, F. Liang, T. Huang, L. Cao, J. Smith (2013). Learning locally adaptive decision functions for person verification. In *Proc. of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR'13)*, Portland, OR. (Acceptance rate: 472/1798 = 26.3%)
22. F. Liang and R. J. Brunner. (2013). New probabilistic galaxy classification in large photometric surveys. In *Proc. of Astronomical Data Analysis Software and Systems (ADASS) XXII*, eds. Friedel, D., Freemon, M., & Plante, R., ASP Conference Series, 2013.
23. J. Gao, F. Liang, W. Fan, C. Wang, Y. Sun, J. Han. (2013). A garaph-based consensus maximization approach for combining multiple supervised and unsupervised models. *IEEE Transactions on Knowledge and Data Engineering*, 25(1): 15–28.
24. P.S. Huang, J. Yang, M. Hasegawa-Johnson, F. Liang, and T.S. Huang. (2012). Pooling robust shift-invariant sparse representation of acoustic signals. In *Proc. of the 13th Annual Conference of the International Speech Communication Association (INTERSPEECH'12)*, 2518–2521.
25. D. Yu, J. Lim, F. Liang, K. Kim, B.S. Kim, and W. Jang. (2012). Permutation test for incomplete paired data with application to cDNA microarray data. *Computational Statistics and Data Analysis*, 56(3): 510–521.
26. F. Liang. (2012). Comment on "Universality of Bayesian Prediction" by A. Sancetta. *Bayesian Analysis*, 7: 45–46.
27. E.I. George, F. Liang, X. Xu. (2012). From minimax shrinkage estimation to minimax shrinkage prediction. *Statistical Science*, 27(1): 82–94.
28. B. Li, F. Liang, J. Hu, X. He. (2012). Reno: Regularized nonparametric analysis of protein lysate array data. *Bioinformatics*, 28(9): 1223–1229.
29. Y. Yang, X. Chu, F. Liang, T.S. Huang. (2012). Pairwise exemplar clustering. In *Proc. of 26th AAAI Conference on Artificial Intelligence (AAAI'12)*, Toronto, Canada. (Acceptance rate: 294/1129 = 26.0%)

30. S. Lu, S. Hu, S. Li, F. Liang, J. Gao, T. Abdelzaher, J. Han. (2012). Quality of information based data selection and transmission in wireless sensor networks. In *Proc. of IEEE 33rd Real-Time Systems Symposium (RTSS'12)*, San Juan, Puerto Rico, December 2012, 327–338. (Acceptance rate: 35/157 = 22.2%)
31. J. Xu and F. Liang. (2010). Bayesian co-segmentation of multiple MR images. *Statistics and Its Interface*, 3(4): 513-521.
32. K. Mao, F. Liang, S. Mukherjee. (2010). Supervised dimension reduction using Bayesian mixture modeling. *Journal of Machine Learning Research*, 9: 501-508.
33. J. Gao, F. Liang, W. Fan, C. Wang, Y. Sun, J. Han. (2010). On community outliers and their efficient detection in information networks. In *Proc. of the 16th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'10)*, 813-822. (Acceptance rate: 77/578 = 13.3%)
34. Q. Wu, F. Liang, S. Mukherjee. (2010). Localized sliced inverse regression. *Journal of Computational and Graphical Statistics*, 19: 843–860.
35. X. Xu and F. Liang. (2010). Asymptotic minimax risk of predictive density estimation for non-parametric regression. *Bernoulli*, 16(2): 543–560.
36. J. Chu, M. Clyde, F. Liang. (2009). Bayesian function estimation using an overcomplete continuous wavelet dictionary. *Statistica Sinica*, 19: 1419–1438.
37. J. Xu, F. Liang, L. Gu. (2009). Bayesian co-segmentation of multiple MRI images. In *Proc. of the 6th IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, MA. (Acceptance rate: 168/527 = 31.8%)
38. J. Xia, F. Liang, Y. Wang. (2009). On clustering fMRI ising Potts and mixture regression models. In *Proc. of he 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society* (EMBC), Minneapolis, Minnesota.
39. L. Cao, J. Luo, F. Liang, T. Huang. (2009). Heterogeneous feature machines for visual recognition. In *Proc. of the12th IEEE International Conference on Computer Vision (ICCV'09)*, Kyoto, Japan. (Acceptance rate: 308/1327 = 23.2%)
40. X. Zhou, N. Cui, F. Liang, T. Huang. (2009). Hierarchical Gaussianization for image classification. In *Proc. of the 12th IEEE International Conference on Computer Vision (ICCV'09)*, Kyoto, Japan. (Acceptance rate: 308/1327 = 23.2%)
41. J. Xia, F. Liang, Y. Wang. (2009). fMRI analysis through Bayesian variable selection with a spatial prior. In *Proc. of the 6th IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, MA. (Acceptance rate: 168/527 = 31.8%)
42. J. Gao, F. Liang, W. Fan, Y. Sun, J. Han. (2009). Graph-based consensus maximization among supervised and unsupervised models. In *Proc. of the 23rd Annual Conference on Neural Information Processing Systems (NIPS09)*, Vancouver, British Columbia, Canada. (Acceptance rate: 263/1105 = 23.8%)
43. F. Liang, R. Paulo, G. Molina, M. Clyde, J. Berger. (2008). Mixtures of g-priors for Bayesian Variable Selection. *Journal of the American Statistical Association*, 103: 410–423.
44. W. Wu, S. Mukherjee, F. Liang. (2008). Localized sliced inverse regression. In *Proc. of the 22nd Annual Conference on Neural Information Processing Systems (NIPS'08)*. (Acceptance rate: 250/1022 = 24.5%)
45. N. Pillai, Q. Wu, F. Liang, S. Mukherjee, R. Wolpert. (2007). Characterizing the function space for Bayesian kernel models. *Journal of Machine Learning Research*, 8: 1769–1797.
46. F. Liang, S. Mukherjee, M. West. (2007). Understanding the use of unlabelled data in predictive modelling. *Statistical Science*, 22(2): 198–205
47. E. I. George, F. Liang, X. Xu. (2006). Improved minimax prediction under Kullback-Leibler loss. *Annals of Statistics*, 34: 78–91.
48. Li, T., Liang, F., Ma, S., Peng, W. (2005). An integrated framework on mining logs files for computing system management. In *Proc. of The 11th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD'05)*, Chicago, IL, USA. (Acceptance rate: 101/538 = 18.8%)

49. P. Golland, F. Liang, S. Mukherjee, D. Panchenko. (2005). Permutation tests for classification. In *Proc. of the 18th Annual Conference on Learning Theory* (COLT'05), Bertinoro, Italy. (Acceptance rate: 45/120 = 37.5%)
50. F. Liang and A. R. Barron. (2005). Exact minimax predictive density estimation and MDL. In *Advances in Minimum Description Length : Theory and Applications* (P. Grunwald, I. Myung and M. Pitt, eds.). The MIT Press.
51. F. Liang and A. R. Barron. (2004). Exact minimax strategies for predictive density estimation, data compression and model selection. *IEEE Information Theory Transactions*, 50: 2708–2726.
52. F. Liang, S. Ma, J. L. Hellerstein. (2002). Discovering fully dependent patterns. In *Proc. of the 2nd SIAM International Conference on Data Mining (SDM'02)*, Arlington, VA, USA. (Acceptance rate: 34/250 = 13.6%)
53. Liang, F. and Barron, A. (2002). Exact minimax strategies for predictive density estimation, data compression and model selection. In *Proc. of the 2002 IEEE International Symposium on Information Theory* (ISIT), Lausanne, Switzerland.
54. H. Zhao and F. Liang. (2001). On relationship inference using continuous gamete identity by descent data. *Journal of Computational Biology*, 8: 191-200.

BOOK REVIEWS

1. Liang F. (2009). The Minimum Description Length Principle, by Peter D. Grünwald, *Journal of the American Statistical Association*, 104:1286.
2. Banks D and Liang F. (2004). The Elements of Statistical Learning, by Hastie T, Tibshirani R, and Friedman J, *Journal of Classification*, 21:155-57.

EDITORSHIP

2024 - current	Associate Editor, Journal of Computational and Graphical Statistics
2023 - current	Associate Editor, Journal of the American Statistical Association
2023 - current	Area Editor, Statistical Analysis and Data Mining
2020 - 2022	Associate Editor, Statistical Analysis and Data Mining
2009 - 2016	Associate Editor, Bayesian Analysis
2013 - 2015	Editor, ISBA Bulletin

SELECTED PROFESSIONAL SERVICE

- Professional Service in International Society for Bayesian Analysis (ISBA)
  - Executive Secretary (2019-2021)
  - Board of Directors (2017-2019)
  - Savage Award Committee (2017-2018)
  - Mitchel Prize Committee (2009 - 2010)
- Review Panelist for National Science Foundation (2013, 2015, 2018, 2019)
- Organizing Committee
  - Perspectives in Statistical Modeling and Inference, UPenn, 2023.
  - Forty Years at the Interplay of Information Theory, Probability and Statistical Learning, Yale, 2024.
- Program Chair, ASA Section on Statistical Computing (2014); Program Committee Member for AISTATS (International Conference on Artificial Intelligence and Statistics), 2011, 2009 & 2013; for Midwest Statistics Research Colloquium, 2011 & 2013.
- Invited Session Organizer
  - Joint Statistical Meetings, Minneapolis, MI, August 2005.

- The 56th Session of the International Statistical Institute (ISI), 2007.
- WNAR/IMS annual meeting, 2009.
- Conference on Nonparametric Statistics and Statistical Learning (Columbus, OH), 2010.
- International Chinese Statistical Association (ICSA) Applied Statistics Symposium (Indianapolis, IN), 2010.
- Workshop on Bayesian Model Selection in ECNU (East China Normal University), Shanghai, Jan 14-18, 2013.
- IMS-SWUFE International Conference on Statistics and Probability, Chengdu, China, June 30 - July 4, 2013.
- Theory Subcommittee for 2013 Midwest Statistics Research Colloquium, 2013
- Joint Statistical Meetings, Seattle, WA, August 2015.
- IMS ENAR annual meeting, 2018

SELECTED CAMPUS SERVICE

- LAS Policy and Development Committee (2023-2024)
- LAS Curriculum Committee (2023-2024)
- LAS General Education Committee (2018-2019)
- Executive Education with Synchrony Financial, Gies College of Business (2018)
- Faculty Senate Representative (2017-19)
- College of Liberal Arts & Sciences (LAS) Faculty Appeals Committee (2014-16)
- Computational Science and Engineering Steering Committee (2014-current)

Ph.D. ADVISEES

- Kaihong Zhang, in progress
- Anwesha Chakravarti, in progress
- Christopher Qian, in progress
- Jaideep Mahajan, in progress
- Diptarka Saha, in progress
- Zach (Zihe) Liu, in progress
- Shishuang He (2023)
  Thesis: Identifiability and estimation of mixed membership stochastic blockmodels
  Current: Meta, Menlo Park, CA
- Wenjing Yin (2021)
  Thesis: Bayesian variable selection in high dimensional censored regression models
  Current: Uber, San Francisco, CA
- Elaine Y. Chen (2020)
  Thesis: Identifiability for latent class models
  Current: Meta, Menlo Park, CA
- Lingrui Gan (2019)
  Thesis: Bayesian regularization for graphical models and variants: theory and algorithms
  Current: Meta, Menlo Park, CA

- Yunbo Ouyang (2018)
  Thesis: Scalable sparsity structure learning using Bayesian methods
  Current: LinkedIn, Sunnyvale, CA
- Xichen Huang (2017)
  Thesis: Fast algorithms for Bayesian variable selection
  Current: Google, Mountain View, CA
- Jianjun Hu (2017)
  Thesis: Statistical methods for learning sparse features
  Current: Pinterest, San Francisco, CA
- Jin Wang (2016)
  Thesis: Scalable algorithms for Bayesian variable selection
  Current: Netflix, Bellevue, WA.
- Tianfang Xu (2016)
  Thesis: A fully Bayesian approach to uncertainty quantification of groundwater models
  Current: Assistant Professor, Department of Civil and Environmental Engineering, Utah State University.
- Jeffrey Y. Liu (2013)
  Thesis: Statistical modeling of heterogeneous data
  Current: Google, New York, NY
- Bin Li (2013)
  Thesis: Statistical models with diverging dimensionality
  Current: JD.com, San Francisco, CA
- Na Cui (2012)
  Thesis: Contributions to modeling parasite dynamics and dimension reduction
  Current: CStone Pharmaceuticals, Shanghai, China
- Jing Xia (2011)
  Thesis: Statistical methods for fMRI data analysis
  Current: Allergan, Chatham, NJ.
- Jianfeng Xu (2011)
  Thesis: Bayesian latent class models
  Current: Shanghai Hongpu Information and Technology Company (CEO & Founder)
- Jen-Hwa Chu (2007)
  Thesis: Bayesian function estimation using overcomplete dictionaries with application in genomics
  Current: Yale School of Medicine

Ph.D. COMMITTEE

- Ming Liao (Statistics, Duke, 2005)
- Yuhong Wu (Statistics, Duke, 2006)
- Fei Liu (Statistics, Duke, 2007)
- Kai Mao (Statistics, Duke, 2009)
- Ya-Hui Hsu (Statistics, 2010)
- Zhi He (Statistics, 2010)
- Ji Yeon Yang (Statistics, 2010)

- Xi Zhou (Electrical & Computer Engineering, 2010)
- Ji Young Kim (Statistics, 2011)
- Yang Feng (Statistics, 2011)
- Gang Chen (Statistics, 2012)
- Usman Tariq (Electrical & Computer Engineering, 2013)
- Zhen Li (Electrical & Computer Engineering, 2013)
- Lu Gan (Statistics, 2014)
- Debsunder Dutta (Civil & Environmental Engineering, 2014)
- Xinqi Chu (Electrical & Computer Engineering, 2015)
- Sujeeth Subramanya Bharadwaj (Electrical & Computer Engineering, 2015)
- Kai-Hsiang Lin (Electrical & Computer Engineering, 2015)
- Daniel K. Sewell (Statistics, 2015)
- Hye Sun Chang (Accountancy, Gies College of Business, 2015)
- Elena Boiarskaia (Kinesiology & Community Health, 2016)
- Mumtaz Bee Vauhkonen (Education Policy, Organization & Leadership, 2017)
- Jiangping Wang (Electrical & Computer Engineering, 2017)
- Wenzhao Xu (Civil & Environmental Engineering, 2017)
- Weihong Huang (Statistics, 2017)
- Yeon Joo, Park (Statistics, 2017)
- Mark M. Fredrickson (Statistics, 2018)
- Xiao Su (Statistics, 2019)
- Kangjae Lee (Informatics, 2019)
- Xinming Yang (Statistics, in progress)
- Albert Man (Statistics, in progress)
- Brandon Wang (Civil & Environmental Engineering, in progress)
- Jacob Mathew (Civil & Environmental Engineering, in progress)
- Jaewook Lee (School of Architecture, in progress)
- Jessica Boakye (Civil & Environmental Engineering, in progress)