

# Bin Liu

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## Research Interests

Data Mining and Machine Learning  
Recommender Systems  
Healthcare Analytics  
Trustworthy AI (Privacy and Security)

## Education

**Ph.D.**, Management (Information Technology), Rutgers Business School, **Rutgers University**, NJ, 2016

## Professional Experience

**Assistant Professor**, John Chambers College of Business and Economics  
West Virginia University, August 2020 – present

**Adjunct Assistant Professor**, Lane Department of Computer Science and Electrical Engineering  
West Virginia University, October 2020 – present

## Publications

### **Journal Papers**

1. Chuanbo Hu, **Bin Liu**, Xin Li, Yanfang Ye, Minglei Yin. "Knowledge-prompted ChatGPT: Enhancing Drug Trafficking Detection on Social Media". *Information & Management (I&M)*, Vol. 61, No. 6, pp. 104010, 2024.
2. Zijun Yao, **Bin Liu**, Fei Wang, Daby Sow, Ying Li. "Ontology-Aware Prescription Recommendation in Treatment Pathways using Multi-Evidence Healthcare Data". *ACM Transactions on Information Systems (TOIS)*, Vol. 41, No. 4, Article 99, 2023.
3. Chuanbo Hu, **Bin Liu**, Yanfang Ye, Xin Li. "Fine-grained Classification of Drug Trafficking Based on Instagram Hashtags". *Decision Support Systems (DSS)*, Vol. 165, pp. 113896, 2023.
4. Xingwei Zhang, Xiaolong Zheng, **Bin Liu**, Xiao Wang, Wenji Mao, Daniel Dajun Zeng, Fei-Yue Wang. "Towards Human-machine Recognition Alignment: An Adversarially Robust Multi-modal Retrieval Hashing Framework". *IEEE Transactions on Computational Social Systems (TCSS)*, Vol. 10, No. 5, pp. 2847–2859, 2023.
5. Chuanbo Hu, **Bin Liu**, Shuo Wang, Zhenduo Zhu, Amelia Adcock, James Simpkins, Xin Li. "Spatiotemporal Correlation Analysis of Hydraulic Fracturing and Stroke in the United States". *International Journal of Environmental Research and Public Health*, Vol.19, No.17, 2022.
6. Chuanbo Hu, Minglei Yin, **Bin Liu**, Xin Li, and Yanfang Ye. "Identifying Illicit Drug Dealers on Instagram with Large-scale Multimodal Data Fusion". *ACM Transactions on Intelligent Systems and Technology (TIST)*, Vol. 12, No. 5, Article 59, 2021.
7. Vibha Anand, Ying Li, **Bin Liu**, Mohamed Ghalwash, Eileen Koski, Kenney Ng, Jessica L. Dunne, Josefine Jönsson, Christiane Winkler, Mikael Knip, Jorma Toppari, Jorma Ilonen, Michael B. Killian, Brigitte I. Frohnert, Markus Lundgren, Anette-Gabriele Ziegler, William Hagopian, Riitta Veijola, and Marian Rewers. "Islet Autoimmunity and HLA Markers of Presymptomatic and Clinical Type 1 Diabetes: Joint Analyses of Prospective Cohort Studies in Finland, Germany, Sweden, and the U.S.". *Diabetes Care*, Vol. 44, No. 10, pp. 2269–2276, 2021. (**5-year Impact factor: 14.1**, the highest-ranked research journal devoted to diabetes treatment, care and prevention.)

8. **Bin Liu**, Ying Li, Soumya Ghosh, Zhaonan Sun, Kenney Ng, and Jianying Hu. "Complication Risk Profiling in Diabetes Care: A Bayesian Multi-Task and Feature Relationship Learning Approach". *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, Vol. 32, No. 7, pp. 1276–1289, 2020.
9. Neil Zhenqiang Gong and **Bin Liu**. "Attribute Inference Attacks in Online Social Networks". *ACM Transactions on Privacy and Security (TOPS)*, Vol. 21, No. 1, Article 3, 2018.
10. Jie Liu, **Bin Liu**, Yanchi Liu, Huipeng Chen, Lina Feng, Hui Xiong, and Yalou Huang. "Personalized Air Travel Prediction: A Multi-factor Perspective". *ACM Transactions on Intelligent Systems and Technology (TIST)*, Vol. 9, No. 3, Article 30, 2017.
11. **Bin Liu**, Yao Wu, Neil Zhenqiang Gong, Junjie Wu, Hui Xiong, and Martin Ester. "Structural Analysis of User Choices for Mobile App Recommendation". *ACM Transactions on Knowledge Discovery from Data (TKDD)*, Vol. 11, No. 2, Article 17, 2016.
12. **Bin Liu**, Hui Xiong, Spiros Papadimitriou, Yanjie Fu, and Zijun Yao. "A General Geographical Probabilistic Factor Model for Point of Interest Recommendation". *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, Vol. 27, No. 5, pp. 1167–1179, 2015.

### Referred Conference Papers

13. Mohsen Nayebi Kerdabadi, Arya Hadizadeh Moghaddam, **Bin Liu**, Mei Liu and Zijun Yao. "Contrastive Learning of Temporality Distinctiveness for Survival Analysis in Electronic Health Records". In Proceedings of the *32nd ACM International Conference on Information and Knowledge Management (CIKM '23)*, Oct., 2023.
14. Chuanbo Hu, Minglei Yin, **Bin Liu**, Xin Li, Yanfang Ye. "Detection of Illicit Drug Trafficking on Instagram: A Deep Multimodal Multilabel Learning Approach". In Proceedings of the *30th ACM International Conference on Information and Knowledge Management (CIKM '21)*, Nov., 2021. (**Best Applied Paper Award Runner Up**)
15. Hai Huang, Jiaming Mu, Neil Zhenqiang Gong, Qi Li, **Bin Liu**, Mingwei Xu. "Data Poisoning Attacks to Deep Learning Based Recommender Systems". In Proceedings of the *Network and Distributed System Security Symposium (NDSS 2021)*, February 2021.
16. **Bin Liu**, Ying Li, Kenney Ng. "Prognostication and Outcome-specific Risk Factor Identification for Diabetes Care via Private-shared Multi-task Learning". *2020 IEEE International Conference on Big Data (IEEE BigData 2020)*, December, 2020.
17. Ying Li, **Bin Liu**, Vibha Anand, Jessica L. Dunne, Markus Lundgren, Kenney Ng, Marian Rewers, Riitta Veijola, Mohamed Ghalwash. "Predicting Type 1 Diabetes Onset using Novel Survival Analysis with Biomarker Ontology". *AMIA 2020 Annual Symposium (AMIA 2020)*, 2020.
18. Zijun Yao, Yanjie Fu, **Bin Liu**, Wangsu Hu, and Hui Xiong. "Representing Urban Functions through Zone Embedding with Human Mobility Patterns". *27th International Joint Conference on Artificial Intelligence (IJCAI-18)*, Stockholm, Sweden, July, 2018.
19. **Bin Liu**, Ying Li, Zhaonan Sun, Soumya Ghosh, Kenney Ng. "Early Prediction of Diabetes Complications from Electronic Health Records: A Multi-task Survival Analysis Approach". *Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-18)*, New Orleans, LA, February, 2018.
20. Zijun Yao, Yanjie Fu, **Bin Liu**, Yanchi Liu, and Hui Xiong. "POI Recommendation: A Temporal Matching between POI Popularity and User Regularity". *2016 IEEE Conference on Data Mining (ICDM 2016)*, Barcelona, Spain, December, 2016.
21. Yanchi Liu, Chuanren Liu, **Bin Liu**, Meng Qu, Hui Xiong. "Unified Point-of-Interest Recommendation with Temporal Interval Assessment". In Proceedings of the *22nd ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2016)*, San Francisco, CA, 2016.
22. Neil Zhenqiang Gong, **Bin Liu**. "You Are Who You Know and How You Behave: Attribute Inference Attacks via Users' Social Friends and Behaviors". In Proceedings of the *25th USENIX Security Symposium (USENIX Security '16)*, Austin, TX, August, 2016.

23. Zijun Yao, Yanjie Fu, **Bin Liu**, and Hui Xiong. "The Impact of Community Safety on House Ranking". In Proceedings of 2016 SIAM International Conference on Data Mining (**SDM 2016**), Miami, FL, May, 2016.
24. Bing Hu, **Bin Liu**, Neil Zhenqiang Gong, Deguang Kong, and Hongxia Jin. "Protecting Your Children from Inappropriate Content in Mobile Apps: An Automatic Maturity Rating Framework". In Proceedings of the 24th ACM International Conference on Information and Knowledge Management (**CIKM 2015**), Melbourne, Australia, Oct., 2015.
25. **Bin Liu**, Deguang Kong, Lei Cen, Neil Zhenqiang Gong, Hongxia Jin, and Hui Xiong. "Personalized Mobile App Recommendation: Reconciling App Functionality and User Privacy Preference". In Proceedings of the Eighth International Conference on Web Search and Data Mining (**WSDM 2015**), Shanghai, China, Feb., 2015.
26. Yanjie Fu, **Bin Liu**, Yong Ge, Zijun Yao and Hui Xiong. "User Preference Learning with Multiple Information Fusion for Restaurant Recommendation". In Proceedings of 2014 SIAM International Conference on Data Mining (**SDM 2014**), Philadelphia, PA, April, 2014.
27. **Bin Liu**, Haifeng Chen, Abhishek Sharma, Guofei Jiang and Hui Xiong. "Modeling Heterogeneous Time Series Dynamics to Profile Big Sensor Data in Complex Physical Systems". 2013 IEEE International Conference on Big Data (IEEE **BigData 2013**), Santa Clara, CA, 2013.
28. **Bin Liu**, Yanjie Fu, Zijun Yao and Hui Xiong. "Learning Geographical Preferences for Point-of-Interest Recommendation". In Proceedings of the 19th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2013**), Chicago IL, 2013.
29. **Bin Liu** and Hui Xiong. "Point-of-Interest Recommendation in Location Based Social Networks with Topic and Location Awareness". In Proceedings of 2013 SIAM International Conference on Data Mining, (**SDM 2013**), Austin, Texas, USA, May, 2013.

## Patents

1. Haifeng Chen, Min Ding, **Bin Liu**, Abhishek Sharma, Kenji Yoshihira, Guofei Jiang. "Integrated Approach to Model Time Series Dynamics in Complex Physical Systems". US 9,245,235, granted 2016.

## Research Grants

- Co-Investigator, "Leveraging COVID-19 Insights to Develop Novel Behavior-Informed Multi-Task Machine Learning Frameworks for Targeted Public Health Interventions in Rural America", National Institutes of Health (NIH), Total: \$418,000, 12/2024 – 11/2026.
- Co-PI, "Data-Driven Autonomous Experiments for Energy Sciences: from First Principles to Machine Learning", West Virginia Higher Education Policy Commission, Total: \$1.3 million, Share \$170,000, 01/2023 – 12/2027.
- Co-PI (Site PI at WVU), "Collaborative Research: SaTC: CORE: Small: Securing Recommender Systems against Data Poisoning Attacks", National Science Foundation (NSF), Total: \$500,000, Share \$100,000, 01/2022 – 12/2024.
- Early career faculty seed grant, "Multi-Scale Integrative Approach to Digital Health: Collaborative Research and Education in Smart Health in West Virginia and Arkansas", National Science Foundation (NSF), Total: \$4M., Share \$15,000, 03/2022 – 07/2023.

## Teaching

### **Courses Taught**

- *Business Data Mining*, West Virginia University, Spring 2022, Spring 2023, Spring 2024.
- *Advanced Business Data Mining*, West Virginia University, Fall 2023, Fall 2024.
- *Artificial Intelligence and Machine Learning for Business*, West Virginia University, Spring 2024.

- *Big Data Technologies for Business*, West Virginia University, Fall 2024.
- *Introduction to Artificial Intelligence*, West Virginia University, Spring 2021, Spring 2022, Spring 2023.
- *Ethics and Data Collection*, West Virginia University, Fall 2021, Fall 2022, Fall 2023.
- *Special Topics in Cloud Computing*, West Virginia University, Fall 2020.
- *Business Statistics* (a.k.a Business Research Methods), Rutgers Business School, Fall 2018.

## **Professional Activities**

### **Editorial Board**

- Editor Board Member, [Journal of Business Analytics](#), 2018 –
- Associate Editor, International Conference on Information Systems (ICIS)
  - Human Computer Interaction, Artificial Intelligence, and Intelligent Augmentation track, 2020
  - Data Science and Predictive Analytics track, 2018

### **Journal Reviewer**

- Information Systems Research
- INFORMS Journal on Computing
- INFORMS Journal on Data Science
- IEEE Transactions on Knowledge and Data Engineering
- IEEE Transactions on Big Data
- IEEE Transactions on Dependable and Secure Computing
- IEEE Transactions on Services Computing
- IEEE Transactions on Neural Networks and Learning Systems
- IEEE Intelligent Systems
- ACM Transactions on Information Systems
- ACM Transactions on Knowledge Discovery from Data
- ACM Transactions on Intelligent Systems and Technology
- ACM Transactions on Management Information Systems
- ACM Transactions on Interactive Intelligent Systems
- Data Mining and Knowledge Discovery (Springer)
- Knowledge and Information Systems (Springer)
- Annals of Operations Research

### **Conference Program Committee**

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025
- ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR), 2020, 2021, 2022, 2023, 2024
- The Web Conference (WWW), 2022, 2023, 2024, 2025
- ACM Conference on Web Search and Data Mining (WSDM), 2021, 2022, 2023, 2024, 2025
- ACM Conference on Recommender Systems (RecSys), 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024
- SIAM International Conference on Data Mining (SDM), 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024
- INFORMS Workshop on Data Science, 2017, 2018, 2019, 2020, 2021, 2022, 2023
- AAAI Conference on Artificial Intelligence (AAAI), 2019, 2020, 2021, 2022
- ACM Conference on Information and Knowledge Management (CIKM), 2017, 2018, 2019, 2023
- Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), 2017, 2018, 2019