Lecheng Zheng

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RESEARCH INTEREST

My research focuses on **heterogeneous machine learning**, with an emphasis on developing generalizable and trustworthy AI methods for complex, real-world problems. I work on graph learning, multimodal representation learning, and foundation models, with applications in **AI for finance, cybersecurity, digital infrastructure, science, and healthcare**. My long-term goal is to develop adaptive AI systems that can learn from heterogeneous information and support reliable reasoning and decision-making across domains.

EDUCATION

University of Illinois at Urbana-Champaign, Champaign, Illinois, USA

- PhD in Computer Science
- Advisor: Jingrui He
- Dissertation: Heterogeneous Machine Learning: Characterization, Generation and Comprehension
- Committee: Jingrui He (Chair), John R Birge (University of Chicago), Jimeng Sun (UIUC), Yuxiong Wang (UIUC)

University of Kansas, Lawrence, Kansas, USA

- Bachelor of Computer Science
- Advisor: Jun (Luke) Huan

EMPLOYMENT

Presidential Postdoctoral Fellow — Jul 2025 – Present

Virginia Polytechnic Institute and State University

Blacksburg, Virginia, USA

- Mentor: Jian Ni, Chris Zobel

Research Intern — May 2023 – Aug 2023

NEC laboratories America

Princeton, New Jersey, USA

HONORS AND AWARDS

- Best Paper Award Runner-Up, IEEE BigData Undergraduate and REU Consortium — 2026
- CCI Cyber Innovation Scholar — 2026
- Presidential Postdoctoral Fellowship, Virginia Tech — 2025
- Computer Science Ph.D. Fellowship, University of Illinois Urbana-Champaign — 2023

GRANT

- **External Grant**

  •PI on Commonwealth Cyber Initiative Southwest Virginia (CCI-SWVA) Grant, $14,999, 2026 “Incentive-Compatible Federated Risk Detection for Cross-Institution Security Networks”

  •**Co-PI on Two NSF research proposals (under review, one currently under consideration for a funding recommendation).**

- **Internal Grant**

  •Co-PI on Pamplin Duo+ Seed Grant, $25,000, 2025–2027
  “AI-Powered Economic Network Analytics: Integrating Consumer Behavior Models with Graph Learning to Combat Financial Fraud” (PI: Jian Ni)

  •Co-PI on FY26 CALS Grant, $75,000, 2026–2028
  “AgriMind: A Multi-Modal AI Framework for Weather-Robust and Market-Adaptive Precision Agriculture” (PI: Jian Ni)

PUBLICATIONS

- **Research Impact and Highlights**

  •29 peer-reviewed publications: 27 conference papers and 2 journal papers.

  •1,055 citations; h-index: 18; i10-index: 23 (Google Scholar, November 10, 2026).

  •Best Paper Award Runner-Up at IEEE BigData Undergraduate and REU Consortium 2026

- **Business Journal**

1. **Lecheng Zheng**, Jian Ni, John R. Birge, Chris Zobel. Detecting Coordinated Behavior in Fragmented Networks: A Cross-Institutional Diffusion Approach to Customer Risk Analytics (Submitted to Operations Research)
2. Jian Ni, **Lecheng Zheng**, John R. Birge. Compliance Moral Hazard and the Backfiring Mandate. Management Science — Major Revision (not yet accepted).
3. **Lecheng Zheng**, Jian Ni, Jiyuan Yin. Test the Creative, Audit the Measurement: Adaptive Validation Allocation for Large-Scale Creative Experiments. (Ongoing Work).

- **Selected Publications**

⋆: Equal contribution; †: Student mentored by Lecheng Zheng

1. Leah Liu†, Alexandra Ni†, **Lecheng Zheng**. A Regime-Aware Dual-Memory LLM Agent for Event-Driven Financial Forecasting. IEEE BigData Undergraduate and REU Consortium 2026 (**Best Paper Award Runner-Up**).
2. **Lecheng Zheng**⋆, Zhengzhang Chen⋆, Dongjie Wang⋆, Chengyuan Deng⋆, Reon Matsuoka, and Haifeng Chen. LEMMA-RCA: A Large Multi-modal Multi-domain Dataset for Root Cause Analysis. ACM International Conference on Information and Knowledge Management (CIKM-2026).
3. Mengfei Lan†, **Lecheng Zheng**, Halil Kilicoglu. BioHiCL: Hierarchical Multi-Label Contrastive Learning for Biomedical Retrieval with MeSH Labels. The 64th Annual Meeting of the Association for Computational Linguistics (ACL-2026 Main Conference).
4. **Lecheng Zheng**, Dongqi Fu, Zihao Li, Jingrui He. OWLEYE: Zero-Shot Learner For Cross-domain Graph Data Anomaly Detection. International Conference on Learning Representations (ICLR-2026).
5. **Lecheng Zheng**⋆, Baoyu Jing⋆, Zihao Li⋆, Zhichen Zeng, Tianxin Wei, Mengting Ai, Xinrui He, Lihui Liu, Dongqi Fu, Jiaxuan You, Hanghang Tong, Jingrui He. PyG-SSL: A Graph Self-Supervised Learning Toolkit. ACM International Conference on Information and Knowledge Management (CIKM-2025).
6. Zihao Li, **Lecheng Zheng**, Bowen Jin, Dongqi Fu, Baoyu Jing, Yikun Ban, Jingrui He, Jiawei Han. Can Graph Neural Networks Learn Language with Extremely Weak Text Supervision? The 63rd Annual Meeting of the Association for Computational Linguistics (ACL-2025).
7. **Lecheng Zheng**, John Birge, Haiyue Wu, Yifang Zhang, Jingrui He. Cluster Aware Graph Anomaly Detection. The Web Conference 2025 (WWW-2025 Oral Presentation).
8. Mengfei Lan†, **Lecheng Zheng**, Shufan Ming, Halil Kilicoglu. Multi-label Sequential Sentence Classification via Large Language Model. The 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP-2024 Findings).
9. **Lecheng Zheng**, Baoyu Jing, Zihao Li, Hanghang Tong, Jingrui He. Heterogeneous Contrastive Learning for Foundation Models and Beyond. ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD-2024).
10. **Lecheng Zheng**, Zhengzhang Chen, Jingrui He, Haifeng Chen. MULAN: Multi-modal Causal Structure Learning and Root Cause Analysis for Microservice Systems. The Web Conference 2024 (WWW-2024 Oral Presentation).
11. **Lecheng Zheng**, Dawei Zhou, Hanghang Tong, Jiejun Xu, Yada Zhu, Jingrui He. FairGen: Towards Fair Graph Generation. IEEE International Conference on Data Engineering (ICDE-2024).
12. **Lecheng Zheng**⋆, Dongqi Fu⋆, Ross Maciejewski, Jingrui He. DrGNN: Deep Residual Graph Neural Network with Contrastive Learning. Transactions on Machine Learning Research (TMLR), 2024.
13. **Lecheng Zheng**, Jinjun Xiong, Yada Zhu, Jingrui He. Contrastive Learning with Complex Heterogeneity. ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD-2022).
14. **Lecheng Zheng**, Yu Cheng, Hongxia Yang, Nan Cao, Jingrui He. Deep Co-Attention Network for Multi-View Subspace Learning. The Web Conference 2021 (WWW-2021).
15. Dawei Zhou, **Lecheng Zheng**, Jianbo Li, Yada Zhu, Jingrui He. Domain Adaptive Multi-Modality Neural Attention Network for Financial Forecasting. The Web Conference 2020 (WWW-2020).

- **Additional Peer-Reviewed Publications**

1. **Lecheng Zheng**⋆, Ziwei Wu⋆, Yuancheng Yu, Ruizhong Qiu, John Birge, Jingrui He. Fair Anomaly Detection For Imbalanced Groups. AI4GOOD Workshop @ the Annual Conference on Neural Information Processing Systems 2026 (NeurIPS-AI4Good 2026).
2. Longfeng Wu, Tong Zeng, Giovanni Seni, Zhimin Peng, Bhanu Pratap Singh Rawat, Si Zhang, Yao Zhou, Bowen Xu, **Lecheng Zheng**, Bo Ji, Yujun Yan, Dawei Zhou. HypRQ-VAE: Hyperbolic Item Indexing for Long-Tail-Aware Generative Recommender Systems. The IEEE International Conference on Data Mining (ICDM-2026).
3. Shuaicheng Zhang, Tuo Wang, **Lecheng Zheng**, Stephen Adams, Don Williams, Derek Snaidauf, Dawei Zhou. AgentPDM: Context-Driven Agentic Reasoning for Predictive Maintenance. ACM International Conference on Information and Knowledge Management (CIKM-2026).
4. Baoyu Jing, Sanhorn Chen, **Lecheng Zheng**, Boyu Liu, Zihao Li, Jiaru Zou, Tianxin Wei, Zhining Liu, Zhichen Zeng, Ruizhong Qiu, Xiao Lin, Yuchen Yan, Qi Yu, Dongqi Fu, Jingrui He, Hanghang Tong. TRQA: Time Series Reasoning Question And Answering Benchmark. In Proceedings of the Fifth Workshop on Generation, Evaluation and Metrics (ACL-GEM 2026).
5. Zihao Li, Xiao Lin, Zhining Liu, Jiaru Zou, Ziwei Wu, **Lecheng Zheng**, Dongqi Fu, Yada Zhu, Hendrik Hamann, Hanghang Tong, Jingrui He. Language in the Flow of Time: Time-Series-Paired Texts Weaved into a Unified Temporal Narrative. International Conference on Learning Representations (ICLR-2026).
6. **Lecheng Zheng**, Zhengzhang Chen, Haifeng Chen. Online Multi-modal Root Cause Identification in Microservice Systems. The IEEE International Conference on Big Data (BigData-2025).
7. Longfeng Wu, Yao Zhou, Tong Zeng, Zhimin Peng, Bhanu Pratap Singh Rawat, **Lecheng Zheng**, Giovanni Seni, Dawei Zhou. Bi-NAS: Towards Effective and Personalized Explanation for Recommender Systems via Bi-Level Neural Architecture Search. The IEEE International Conference on Data Mining (ICDM-2025).
8. Dongqi Fu, Yada Zhu, Zhining Liu, **Lecheng Zheng**, Xiao Lin, Zihao Li, Liri Fang, Katherine Tieu, Onkar Bhardwaj, Kommy Weldemariam, Hanghang Tong, Hendrik Hamann, Jingrui He. ClimateBench-M: A Multi-Modal Climate Data Benchmark with a Simple Generative Method. ACM International Conference on Information and Knowledge Management (CIKM-2025).
9. **Lecheng Zheng**, Yada Zhu, Jingrui He. Fairness-aware Multi-view Clustering. SIAM International Conference on Data Mining (SDM-2023).
10. Dawei Zhou⋆, **Lecheng Zheng**⋆, Dongqi Fu, Jiawei Han, Jingrui He. MentorGNN: Deriving Curriculum for Pre-Training GNNs. ACM International Conference on Information and Knowledge Management (CIKM-2022).
11. Jianbo Li, **Lecheng Zheng**, Yada Zhu, Jingrui He. Outlier Impact Characterization for Time Series Data. The Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI-2021).
12. Dawei Zhou, **Lecheng Zheng**, Jiawei Han, Jingrui He. A Data-driven Graph Generative Model for Temporal Interaction Networks. ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD-2020).
13. **Lecheng Zheng**, Yu Cheng, Jingrui He. Deep Multimodality Model for Multi-task Multi-view Learning. SIAM International Conference on Data Mining (SDM-2019).
14. Dawei Zhou⋆, **Lecheng Zheng**⋆, Jiejun Xu, Jingrui He. Misc-GAN: A Multi-Scale Generative Model for Graphs. Frontiers, 2019.

- **Manuscripts Under Review**

1. **Lecheng Zheng**, Jiyuan Yin, Jian Ni. BV-Sampler: Bias-Variance-Aware Sampling for Graph Neural Networks. Submitted to ICLR 2027.
2. **Lecheng Zheng**, Ziwei Wu, Yuancheng Yu, Ruizhong Qiu, John Birge, Jingrui He. Rethinking Fair Anomaly Detection via Representation Learning. Submitted to ICLR 2027.

INVITED TALK

- **Virginia Tech** Jan 2025
  - Heterogeneous Machine Learning: Characterization, Generation and Comprehension
- **NEC Laboratories America** Dec 2024
  - Heterogeneous Machine Learning: Characterization, Generation and Comprehension

- **Clemson University** Feb 2024
  - Understanding Heterogeneous Machine Learning: Characterization, Generation and Comprehension
- **Tufts University** Aug 2021
  - Generative Model for Static and Dynamic Graphs

TUTORIAL EXPERIENCE

- **KDD Tutorial** Aug 2024
  - Topic: Heterogeneous Contrastive Learning for Foundation Models and Beyond
- **SDM Tutorial** Apr 2023
  - Topic: Contrastive Learning: A Heterogeneous Perspective
- **IJCAI Tutorial** Jan 2021
  - Topic: Exploring Rare Categories on Graphs: Representation, Inference, and Generalization

TEACHING & MENTORING EXPERIENCE

- **Co-Instructor** 08/2025 - 12/2025
  - •Machine Learning (CS 4824), Virginia Tech, approximately 90 undergraduate students.
  - •Shared responsibility for course instruction and classroom teaching with Dr. Dawei Zhou.
  - •Delivered lectures on cluster analysis and special topics in heterogeneous machine learning.
  - •Developed instructional materials that integrated conceptual intuition, mathematical foundations, and practical implementation.
- **UIUC Teaching Assistant** 01/2022 - 05/2022
  - •Introduction to Data Mining, 170+ undergraduate students and 10+ graduate students (CS 412)
  - •Assisted in the development of course assignments.
  - •Organized the recitation sessions before midterm and final exam.
  - •Provided feedback to graduate students on course projects.
- **UIUC Ph.D. Research Mentor** 01/2024 - 01/2026
  - •Mentored a junior Ph.D. student on multi-label learning for structuring information from biomedical literature.
  - •Guided the student towards independent model development, experimental design, and paper writing.
  - •Two papers accepted by **EMNLP 2025 Findings** and **ACL 2026 Main Conference**.
- **VT Undergraduate Research Mentor** 05/2026 - Present
  - •Mentored two early-stage undergraduate students on AI and machine learning for financial forecasting.
  - •Designed and led weekly meetings covering the research process from data collection and literature review to model development, experimental evaluation, and scientific writing, while guiding students toward greater research independence.
  - •Our work is selected as **Best Paper Award Runner-Up** at the IEEE BigData the Undergraduate and REU Consortium 2026.
- **VT Ph.D. Research Mentor** 05/2026 - Present
  - •Mentored a second-year Ph.D. student on graph anomaly detection, providing feedback on research ideas, methodological design, and experimental evaluation through weekly meetings.
  - •Guided the student toward greater research independence; Preparing the resulting work for submission to ICML 2027.

SERVICE

- **Area Chair In Conferences**
  2026: ACL ARR October Cycle
- **Program Committee/Reviewer In Conferences**
  2027: ICLR, EACL
  2026: ICML, IJCAI, ACL, ICLR, AISTATS, WSDM, AAAI, NeurIPS
  2025: BigData, CIKM, NeurIPS, ICML, IJCAI, PAKDD, AISTATS, WebConf, ICLR, AAAI, WSDM
  2024: BigData, CIKM, EMNLP, NeurIPS, ICML, IJCAI, PAKDD, WebConf, ICLR, AAAI, WSDM, SDM
  2023: BigData, CIKM, NeurIPS, KDD, IJCAI, WebConf, AAAI, WSDM, SDM
  2022: CIKM, KDD, IJCAI, WebConf, AAAI, SDM
  Before 2022: CIKM, IJCAI, AAAI, BigData

- **Journal Reviewer**

  1.IEEE Transactions on Circuits and Systems for Video Technology

  2.Transactions on Mobile Computing

  3.ACM Computing Surveys

  4.The ACM Transactions on Knowledge Discovery from Data

  5.Data Mining and Knowledge Discovery

  6.Transactions on Intelligent Systems and Technology

  7.Engineering Applications of Artificial Intelligence