Chen Ling

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PRINCIPAL INTERESTS

My research focuses on data mining and applying machine learning techniques to handle real-world problems. More concretely, my works can be divided into two streams. *1) Data Mining on Graphs:* Deep Graph Generation, Graph Representation Learning, and Graph Inverse Problem; *2)* Large Language Model: Customizing large language models into domain-specific applications; and *3) Neural Machine Reasoning:* Analogical Reasoning, Case-based Reasoning, and Commonsense Reasoning.

ACADEMIC BACKGROUND

Ph.D. Computer Science 2020 - present
Emory University, Atlanta, GA

- Ph.D. research in graph data mining under supervision of Professor Liang Zhao.
- Conducted research in *graph data mining* and *neural machine reasoning* with demonstrated publication history in top-tier conferences, including ICML, KDD, ICLR, theWebConf (WWW), ICDM, SDM, and ECML-PKDD.

M.Sc. Computer Sciences 2018 - 2020
University of Delaware, Newark, DE

- Conducted research in the area of social network analysis and time series analysis with demonstrated publication in top-tier conferences.

B.Sc. Computer Science 2014 - 2017
University of Vermont, Burlington, VT

- Recipient of Global Gateway Academic Achievement Scholarship, 2015
- Recipient of International Student Accomplishment Scholarship, 2014

SPECIAL ACHIEVEMENTS

Awards and Invited Talks

- *Professional Development Funding.* $2,500, Emory University
- *ICDM Student Travel/Attendance Award.* 2021, 2022.
- *National Science Foundation Student Travel Award.* 2022.
- *ICDM Best Paper Candidate*, for "Deep Generation of Heterogeneous Networks", 21st IEEE International Conference on Data Mining, 2021.
- SIGNET Seminar at the University of Delaware, *NesTPP: Modeling Thread Dynamics in Online Discussion Forums*, Newark, DE, 2019.
- *Dean's List of Computer Science Department*, for "students achieved top-10% GPA", the University of Vermont, 2015, 2016.
- *Global Gateway Achievement Scholarship* for "Campus-wide Academic Achievement", $30,000 for three consecutive years, the University of Vermont, 2015.
- *International Student Accomplishment Scholarship* for "Academic Achievement", $10,000, the University of Vermont, 2014.

Academic Service

- **Organizer**: LLM4Bio at AAAI 2024
- **Reviewer**: KDD (2022, 2023, 2024), NeurIPS (2022, 2023), EMNLP (2023), NAACL (2024), WSDM (2024)

- **Program Committee**: DLG-KDD (2020, 2021, 2022), DLG-AAAI (2021, 2022, 2023), UDM-AAAI (2023), ECML-PKDD (2022)

SELECTED PUBLICATIONS

A full list is available at my Google Scholar page.

15. Nguyen Do, Tanmoy Chowdhury, **Chen Ling**, Liang Zhao, My T. Thai. MIM-Reasoner: Learning with Theoretical Guarantees for Multiplex Influence Maximization. *The 27th International Conference on Artificial Intelligence and Statistics (AISTATS 2024).* Valencia, Spain, 2024.
14. Junruo Gao, **Chen Ling**, Carl Yang, Liang Zhao. Helper Recommendation with Seniority Control in Online Health Community. *2024 SIAM International Conference on Data Mining (SDM 2024).* Houston, TX, 2023.
13. **Chen Ling**, Xuchao Zhang, Xujiang Zhao, Yanchi Liu, Wei Cheng, Takao Osaki, Katsushi Matsuda, Haifeng Chen, Liang Zhao. Open-ended Commonsense Reasoning with Unrestricted Answer Candidates. *The 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP 2023).* Singapore, 2023.
12. **Chen Ling**, Junji Jiang, Junxiang Wang, My Thai, Lukas Xue, James Song, Meikang Qiu, Liang Zhao. Deep Graph Representation Learning and Optimization for Influence Maximization. *Fortieth International Conference on Machine Learning (ICML 2023).* Hawaii, 2023.
11. **Chen Ling***, Guangji Bai*, Liang Zhao. Temporal Domain Generalization with Drift-Aware Dynamic Neural Networks. *The Eleventh International Conference on Learning Representations (ICLR 2023).* Kigali, Rwanda, 2023. [**Oral Presentation**: Top-5% among all accepted papers.]
10. Guangji Bai, **Chen Ling**, Yuyang Gao, Liang Zhao. Saliency-Augmented Memory Completion for Continual Learning. *2023 SIAM International Conference on Data Mining (SDM 2023).* Minneapolis, MN, 2023.
9. **Chen Ling**, Xuchao Zhang, Xujiang Zhao, Yifeng Wu, Yanchi Liu, Wei Cheng, Haifeng Chen, Liang Zhao. Knowledge-enhanced Prompt for Open-domain Commonsense Reasoning. *Workshop on Uncertainty Reasoning and Quantification in Decision Making: 37th AAAI Conference.* Washington, D.C., 2022.
8. **Chen Ling**, Carl Yang, Liang Zhao. Motif-guided Heterogeneous Graph Deep Generation. *Knowledge and Information Systems (KAIS)*, 65.7 (2023): 3099-3124.
7. **Chen Ling**, Tanmoy Chowdhury, Junji Jiang, Junxiang Wang, Xuchao Zhang, Haifeng Chen, and Liang Zhao. DeepGAR: Deep Graph Learning for Analogical Reasoning. *The 22nd IEEE International Conference on Data Mining. (ICDM 2022).* Orlando, FL, 2022.
6. **Chen Ling**, Henning Cao, and Liang Zhao. STGEN: Deep Continuous-time Spatiotemporal Graph Generation. *The 2022 European Conference on Machine Learning and Principles Discovery in Databases. (ECML-PKDD 2022).* Grenoble, France, 2022.
5. **Chen Ling**, Junji Jiang, Junxiang Wang, and Liang Zhao. SL-VAE: Variational Autoencoder for Source Localization in Graph Information Diffusion. *The 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2022).* Washington, D.C., 2022.
4. **Chen Ling**, Carl Yang, and Liang Zhao. Deep Generation of Heterogeneous Networks. *The 21st IEEE International Conference on Data Mining (ICDM 2021).* Online, 2021. [**Best Paper Candidate**]

3. Liming Zhang, Liang Zhao, Shan Qin, Dieter Pfoser, and **Chen Ling**. TG-GAN: Continuous-time Temporal Graph Deep Generative Models with Time-Validity Constraints. *The 30th International World Wide Web Conference, (theWebConf 2021).* Online, 2021.
2. **Chen Ling**, Di Cui, Guangmo Tong, and Jianmin Zhu. On Forecasting Dynamics in Online Discussion Forums. *The 21st IEEE Multimedia and Expo (ICME 2021).* Online, 2021.
1. **Chen Ling**, Mozi Chen, and Guangmo Tong. NesTPP: Modeling Information Diffusion in Online Discussion Forum. *The 31st ACM Hypertext (HT 2020).* Online, 2020.

EMPLOYMENT HISTORY

Research Associate 2022, 2023
NEC Labs America, Data Science & System Security Group, Princeton, NJ

- Participated as a remote research contractor for various publication-oriented long-term projects. Mentor: Xuchao Zhang, Xujiang Zhao, Haifeng Chen
- Proposed to design a prompt-based natural language reasoning framework for commonsense QA tasks.
- Designed a Graph Neural Network-based framework with a customized optimization method for analogical reasoning.

Research Assistant 2020 - Present
Emory University, Atlanta, GA

- Leveraged deep generative models to generate complex structured data, including heterogeneous graph generation, temporal graph generation, and spatiotemporal graph generation.
- Leveraged deep graph representation learning to conduct network behavior analysis, including information diffusion source localization and influence maximization on social networks.
- Led several undergraduate computer science courses (Advanced Algorithm Analysis and Intro to Java Programming) as graduate TA and co-instructor.

Research Assistant 2018 - 2020
University of Delaware, Newark, DE

- Worked on several research projects in the area of social network rumor containment and information diffusion function modeling.
- Leveraged data-driven approaches to capture complex correlations between social cascades, and the results are published at ACM HT'20 entitled with *Nestpp: Modeling thread dynamics in online discussion forums.*
- Designed structure-preserving models with provable performance guarantees in social network dynamics prediction, and the results are published at IEEE ICME'21 entitled with *On Forecasting Dynamics In Online Discussion Forums.*

Research Intern 2018
iFLYTEK, Anhui, CHINA

- Worked as a Natural Language Processing (NLP) associate researcher at iFLYTEK's Research platform.
- Performed creation and optimization of machine & deep learning models for multi-label classification, label distribution prediction of MOOC test questions, and text similarity calculation. Increased classification accuracy of the multi-label classification from 66% to 89%.

- Organized weekly Paper Reading Club that includes more than 20 undergraduate and graduate students for sharing innovative research ideas and presenting state-of-the-art research papers.

Cognitive Solution Developer 2016
IBM, Burlington, VT

- Participated in a full-stack team to develop a cloud-based tone analyzer for image sentiment analysis using Watson Cognitive Cloud.
- Assisted senior software engineers in designing API interfaces in the development of the Watson Business Mobile App.
- Created and presented a computer vision project – Human Face Recognition using IBM Watson API in IBM's worldwide IBM Intern Conference.