Jinning Li

PhD in Computer Science, University of Illinois at Urbana-Champaign

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EDUCATION

University of Illinois at Urbana-Champaign — Aug 2020 - Jan 2025
Ph.D. Candidate in Computer Science. GPA: 4.0
Advisor: Prof. Tarek Abdelzaher.
Thesis Committee: Prof. Chengxiang Zhai, Prof. Hanghang Tong, and Prof. Bolek, Szymanski.

University of Illinois at Urbana-Champaign — Aug 2020 - Dec 2022
M.S. in Computer Science. GPA: 4.0
Advisor: Prof. Tarek Abdelzaher.

Shanghai Jiao Tong University — Sep 2015 - Jun 2019
B.S. in Computer Science (ACM Honors Class). GPA: 3.8
Advisors: Prof. Yong Yu and Prof. Xiaofeng Gao.

RESEARCH INTERESTS

Large Language Models, Interpretable Graph Representations, Recommendation System, Information Retrieval, Social Networks, Multi-Modal LLMs, Computer Vision, Autonomous Driving

INDUSTRY

Google | Research Scientist (FTE) *Google Search* — Mar 2025 - Present
- Retrieval-augmented generation, long context and multi-modal citation, and citation-enhanced large language model post-training for Google AI Overview and AI Mode.

Google | Research Intern *Google Search* — May - Aug 2024
- Multi-modal query intent classification using chain-of-thought enhanced few-shot Gemini.
- A Gemini-based pseudo-rating model for multi-modal search results, delivering performance comparable to human evaluators, applied to search quality evaluation and LLM distillation.

Amazon | Applied Scientist Intern *Alexa Research, Intelligent Decision* — May - Aug 2023
- Developed a structure-aware large language model adapter for efficient fine-tuning of LLAMA.
- Proposed a relational attention and the KG-induced reasoning path to fuse LLM with KG.
- Outperformed existing LLM adapters like LoRA by **14**% on QA benchmark datasets.
- Distributed LLM training with deepspeed and accelerate libs. Paper: 📄

Twitter | Applied Research Intern *Cortex Research* — May - Aug 2022
- Enhanced tweet LLM representation learning with a large-scale knowledge graph of non-textual units using torchbiggraph lib. Achieved **5**% improvements on all the 7 downstream tasks from both internal benchmarks and public datasets. Paper: 📄

Pony.ai | Machine Learning Engineer (FTE) *Perception Team* — Jul 2019 - Aug 2020
- Deployed obstacles (cars, pedestrians, cyclists) classification system for autonomous driving with ResNet and random forest. Real-time model inference with TensorRT. Reduced **8**% hard brakes.
- Proposed and deployed a real-time obstacle trajectory prediction for driveways with RNN and random forest. Solved **24**% of driveway-related safty disengagements or hard brake issues.

YITU Technology | Research Intern *Face Recognition Team* — Feb - Jun 2019
- Improved face verification accuracy by **4.8**% in internal datasets with the proposed identification-preserving super-resolution autoencoder model. Paper: 📄

PUBLICATIONS

Learning to Slice: Self-Supervised Interpretable Hierarchical Representation Learning with Graph Auto-Encoder Tree 📄 🎧

Jinning Li, Ruipeng Han, Jingying Zeng, Dachun Sun, Chenkai Sun, Hanghang Tong, ChengXiang Zhai, Boleslaw K. Szymanski, Tarek F. Abdelzaher

In *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (**KDD**) 2025

Perturbation-Based Graph Active Learning for Semi-Supervised Belief Representations 📄🎧

Dachun Sun, **Jinning Li**, Xinyi Liu, You Lyu, Hongjue Zhao, Denizhan Kara, Tarek Abdelzaher

In *The 34th International Conference on Computer Communications and Networks* (**ICCCN**) 2025

The Irrational LLM: Cognitive Agents with Weighted Retrieval-Augmented Generation 📄

Dachun Sun, You Lyu, **Jinning Li**, Xinyi Liu, Denizhan Kara, Christian Lebiere, Tarek Abdelzaher

In *The 34th International Conference on Computer Communications and Networks* (**ICCCN**) 2025

Modeling Online Ideological Community Dynamics with Recurrent VGAEs

Dachun Sun, You Lyu, **Jinning Li**, Xinyi Liu, Tarek Abdelzaher

In *The 6th International Conference on Big Data Analytics and Practices* (**IBDAP**) 2025

Anatomy of Conflict: A Tool for Understanding Conflict Dynamics from Social Media Data

Dachun Sun, **Jinning Li**, You Lyu, Xinyi Liu, Christina Youn, Jianyuan Zhan, Tarek Abdelzaher

In *IEEE International Conference on Smart Applications, Communications, Networking* (**SmartNets**) 2025

SCRAG: Social Computing-Based Retrieval Augmented Generation for Community Response Forecasting in Social Media Environments

Dachun Sun, You Lyu, **Jinning Li**, Yizhuo Chen, Tianshi Wang, Tomoyoshi Kimura, Tarek Abdelzaher

In *IEEE International Conference on Smart Computing* (**SmartComp**) 2025

LLM-Guided Disentangled Belief Representation Learning on Social Graphs 📄🎧

Jinning Li, Ruipeng Han, Chenkai Sun, Dachun Sun, Ruijie Wang, J. Zeng, Y. Yan, H. Tong, T. Abdelzaher

In *The 33rd International Conference on Computer Communications and Networks* (**ICCCN**) 2024

Decoding the Silent Majority: Inducing Belief Augmented Social Graph with Large Language Model for Response Forecasting 📄🎧

Chenkai Sun, **Jinning Li**, Yi Fung, Hou Pong Chan, Tarek Abdelzaher, ChengXiang Zhai, Heng Ji

In *The 2023 Conference on Empirical Methods in Natural Language Processing* (**EMNLP**) 2023

Reconciling Competing Sampling Strategies of Network Embedding 📄🎧

Yuchen Yan, Baoyu Jing, Lihui Liu, Ruijie Wang, **Jinning Li**, Tarek Abdelzaher, Hanghang Tong

In *Conference on Neural Information Processing Systems* (**NIPS**) 2023

Influence Pathway Discovery on Social Media 📄

Xinyi Liu, Ruijie Wang, Dachun Sun, **Jinning Li**, C. Youn, Y. Lyu, J. Zhan, D. Wu, X. Xu, M. Liu, X. Lei, Z. Xu, Y. Zhang, Z. Li, Q. Yang, T. Abdelzaher

In *The 9th IEEE International Conference on Collaboration and Internet Computing* (**IEEE CIC**) 2023

The Paradox of Information Access: On Modeling Polarization in the Age of Information 📄

Chao Xu, Jinyang Li, D. Sun, **Jinning Li**, Tarek Abdelzaher, J. Graham, M. Macy, C. Lebiere, B. Szymanski

In *IEEE Transactions on Control of Network Systems* (**TCNS**) 2023

Measuring the Effect of Influential Messages on Varying Personas 📄🎧

Chenkai Sun, **Jinning Li**, Hou Pong Chan, ChengXiang Zhai, Heng Ji

In *Annual Meeting of the Association for Computational Linguistics* (**ACL**) 2023

Noisy Positive-Unlabeled Learning with Self-Training for Knowledge Graph Reasoning 📄

Ruijie Wang, Baoyu Li, Yichen Lu, Dachun Sun, **Jinning Li**, Y. Yan, S. Liu, H. Tong, T. Abdelzaher

In *Annual Meeting of the Association for Computational Linguistics* (**ACL**) 2023

Unsupervised Image Classification by Ideological Affil. from User-Content Interactions 📄

Xinyi Liu, **Jinning Li**, D. Sun, R. Wang, T. Abdelzaher, M. Brown, A. Barricelli, M. Kirchner, A. Basharat

In PhoMemes Workshop at *AAAI Conference on Web and Social Media* (**ICWSM**) 2023

Unsupervised Belief Representation Learning with Variational Graph Auto-Encoders 📄🎧

Jinning Li, Huajie Shao, Dachun Sun, Ruijie Wang, Yuchen Yan, J. Li, S. Liu, H. Tong, T. Abdelzaher

In *International ACM SIGIR Conference* (**SIGIR**) 2022

NTULM: Enriching Social Media Text Representations with Non-Textual Units 📄

Jinning Li*, Shubhanshu Mishra*, Ahmed El-Kishky, Sneha Mehta, Vivek Kulkarni

In W-NUT Workshop at *International Conference on Computational Linguistics* (**COLING**) 2022

Learning to Sample and Aggregate: Few-shot Reasoning over Temporal Knowledge Graph 📄

Ruijie Wang, Zheng Li, Dachun Sun, Shengzhong Liu, **Jinning Li**, Bing Yin, Tarek Abdelzaher

In *Conference on Neural Information Processing Systems* (**NIPS**) 2022

Cost Function Learning in Memorized Social Nets with Cognitive Behavioral Asymmetry 📄

Yanbing Mao, **Jinning Li**, Naira Hovakimyan, Tarek Abdelzaher, Christian Lebiere

In *IEEE Transactions on Computational Social Systems* (**TCSS**) 2022

Dissecting Cross-Layer Dependency Inference on Multi-Layered Inter-Dependent Nets 📄

Yuchen Yan, Qinghai Zhou, **Jinning Li**, Tarek Abdelzaher, Hanghang Tong

In *International Conference on Information and Knowledge Management* (**CIKM**) 2022

ID Preserving Face Super-Resolution Generative Adversarial Networks 📄🎧

Jinning Li, Yichen Zhou, Jie Ding, Cen Chen, Xulei Yang

In *IEEE Access* 2020

Scribble-to-Painting Transformation with Multi-Task Generative Adversarial Networks 📄🎧

Jinning Li, Yexiang Xue

In *International Joint Conference on Artificial Intelligence* (**IJCAI**) 2019

Senti2Pop: Sentiment-Aware Topic Popularity Prediction on Social Media 📄

Jinning Li, Yirui Gao, Xiaofeng Gao, Yan Shi, Guihai Chen

In *IEEE International Conference on Data Mining* (**ICDM**) 2019

DancingLines: An Analytical Scheme to Depict Cross-Platform Event Popularity 📄🎧

Tianxiang Gao, Weiming Bao, **Jinning Li**, X. Gao, B. Kong, Y. Tang, G. Chen, X. Li

In *International Conference on Database and Expert Systems Applications* (**DEXA**) 2018

<table>
<tr><td>RESEARCH
EXPERIENCE</td><td>

University of Illinois at Urbana-Champaign *Social Sensing, Knowledge Graph, NLP*

Ph.D. Candidate. Advisor: Prof. Tarek Abdelzaher   Aug 2020 - Present

- Unsupervised explainable belief representation learning for users and contents on social networks, based on variational graph autoencoders 📄.
- Led a team and developed the DARPA INCAS system 🗔 to automatically collect data from social medias, analyze and predict the belief and response of social entities using the proposed InfoVGAE and hierarchical regression model tree algorithms 📄.

Purdue University *Computer Vision, GANs*

Research Assistant. Advisor: Prof. Yexiang Xue   Sep - Dec 2018

- Oil painting arts generation with proposed multi-task generative adversarial networks.

Cornell University *Counterfactual Machine Learning, Recommendation Systems*

Research Assistant. Advisor: Prof. Thorsten Joachims   Jul - Aug 2018

- Counterfactual Risk Minimization Model with Logged Bandit Feedbacks.
- Rank 1 in Criteo Advertisement Placement Competition.

Shanghai Jiao Tong University *NLP and Data Mining for Social Networks*

Research Assistant. Advisor: Prof. Xiaofeng Gao   Jul 2017 - Jun 2019

- Cross-platform social event popularity detection and alignment.
- Sentiment-aware topic popularity time series prediction on social media.

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AWARDS		
Zhiyuan International Research Scholarship *(First Prize)*.		2019
Han-Ying-Ju-Hua Scholarship.		2018
Academic Excellence Scholarship of SJTU *(First Prize)*.		2017, 2018
International Interdisciplinary Contest in Modeling *(Meritorious Winner)*.		2017
Zhiyuan Honorary Scholarship.		2016, 2017
International Mathematical Contest in Modeling *(Outstanding Winner)*.		2015
Dongrun-Yau International High School Science Award.		2015

ACADEMIC SERVICES

Teaching Assistant at CS122: Programming

Teaching Assistant at CS307: Operating System
Teaching Assistant at CS510: Information Retrieval
Program Committee at AAAI, IJCAI, SIGIR, KDD, ACL *Reviewer* at TIST, TKDE

Programming C, C++, Java, Python (TensorFlow, PyTorch, Huggingface libs)
Proficiencies SQL, BigQuery, HTML, Javascript, Matlab, LaTeX,