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

EDUCATION

University of Illinois at Urbana-Champaign

Aug 2020 - Mar 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

• Improved face verification accuracy by 4.8% in internal datasets with the proposed identificationpreserving 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 (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 Dinning 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 <i>Conference on Neural Information Processing Systems</i> (NIPS) 2022		
	Cost Function Learning in Memorized Social Nets with Cognitive Behavioral Asymmetry		
	Yanbing Mao, Jinning Li , Naira Hovakimyan, Tarek Abdelzaher, Christian Lebiere In <i>IEEE Transactions on Computational Social Systems</i> (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		
Research	University of Illinois at Urbana-Champaign Social Sensing, Knowledge (University of Illinois at Urbana-Champaign Social Sensing, Knowledge Graph, NLP	
Experience	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 Syste	ms	
	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.		
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	Teaching Assistant at CS122: Programming		
Services			

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,