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

jinning4@illinois.edu www.jinningli.cn +1 217-200-2694

### **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 Graph + Large Language Models, Disentangled Embedding, Information Retrieval,

Social Networks, Multi-Modal LLMs, Generative AI, Computer Vision, Autonomous Driving

## **INDUSTRY**

## 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 identificationpreserving super-resolution autoencoder model. Paper:

# Publications Unsupervised Belief Representation Learning with Variational Graph Auto-Encoders 🚨 💭

Jinning Li, Huajie Shao, Dachun Sun, R. Wang, Y. Yan, J. Li, S. Liu, H. Tong, T. Abdelzaher In International ACM SIGIR Conference (SIGIR) 2022

# LLM-Guided Disentangled Belief Representation Learning on Social Graphs 🚨 🔾

Jinning Li, Ruipeng Han, Chenkai Sun, D. Sun, R. 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, T. 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 and 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 and 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 and A. Basharat In PhoMemes Workshop at AAAI Conference on Web and Social Media (ICWSM) 2023 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, and 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 MANUSCRIPTS Unsupervised Interpretable Ideological Embedding with Variational Graph Autoencoders 📙 Jinning Li, Xinyi Liu, Huajie Shao, Dachun Sun, Ruijie Wang, Matthias Kirchner, Arslan Basharat, Yuchen Yan, Hanghang Tong, and Tarek Abdelzaher Under Review at *Transactions on Knowledge Discovery from Data* (**TKDD**)

# Structure-Aware Adapter for Large Language Model 🚨

Jinning Li, Pragaash Ponnusamy, Z. Sun, J. FitzGerald, J. Oh, C. Ma, W. Shen, C. Guo, T. Abdelzaher Under Review at The Web Conference 2025 (WWW)

## RESEARCH EXPERIENCE

## 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.

### 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, TIST

Programming C, C++, Java, Python (TensorFlow, PyTorch, Huggingface libs)

PROFICIENCIES SQL, BigQuery, HTML, Javascript, MATLAB, LATEX,