Xinyi Liu

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EDUCATION

University of Illinois Urbana-Champaign   Champaign, IL
Ph.D. candidate in Computer Science   *Expected May 2027*

Columbia University   New York, NY
Master of Science in Data Science   *May 2022*

Nanjing University of Posts and Telecommunications   Nanjing, CN
Bachelor of Engineering   *July 2019*

PUBLICATIONS

FIRST-AUTHORED PUBLICATIONS

[13] **DocCHA: Towards LLM-Augmented Interactive Online diagnosis System**
      Xinyi Liu, Dachun Sun, Yi R Fung, Dilek Hakkani-Tür, Tarek Abdelzaher
      SIGDIAL 2025

[12] **GPSocio: A Transformer-based General-purpose Social Network Representation System**
      Xinyi Liu, Dachun Sun, Tarek Abdelzaher
      ASONAM 2025

[11] **Beliefs in Motion: Simulating Opinion Dynamics via LLM-Powered Community Reactions**
      Xinyi Liu, Dachun Sun, Dilek Hakkani Tur, Tarek Abdelzaher
      ASONAM 2025

[10] **Influence Message Wargaming in the Metaverse: Towards LLM-Based Persuasion and Counter-Persuasion**
      Xinyi Liu, Dachun Sun, Tarek Abdelzaher
      IEEE MetaCom 2025

[9]   **Uncovering Cross-Domain Recommendation Ability of Large Language Models**
      Xinyi Liu, Ruijie Wang, Dachun Sun, Dilek Hakkani-Tur, Tarek Abdelzaher
      WWW workshop 2025

[8]   **Influence Pathway Discovery on Social Media**
      Xinyi Liu, Ruijie Wang, Dachun Sun, Jinning Li, Christina Youn, You Lyu, Jianyuan Zhan, Dayou Wu, Xinhe Xu, Mingjun Liu, Xinshuo Lei, Zhihao Xu, Yutong Zhang, Zehao Li, Qikai Yang, Tarek Abdelzaher
      IEEE CIC 2023

[7] **Unsupervised Image Classification by Ideological Affiliation from User-Content Interaction Patterns**
Xinyi Liu, Jinning Li, Dachun Sun, Ruijie Wang, Tarek Abdelzaher, Matt Brown, Anthony Barricelli, Matthias Kirchner, Arslan Basharat
ICWSM workshop 2023

[6] **Clustering Algorithm in Wireless Sensor Networks Based on Differential Evolution Algorithm**
Xinyi Liu, Ke Mei, and Shujuan Yu
IEEE ITNEC 2020

Co-authored Publications

[5] **The Irrational LLM: Implementing Cognitive Agents with Weighted Retrieval-Augmented Generation**
Dachun Sun, You Lyu, Jinning Li, **Xinyi Liu**, Denizhan Kara, Christian Lebiere, Tarek Abdelzaher
ICCCN 2025

[4] **Perturbation-based Graph Active Learning for Semi-Supervised Belief Representation Learning**
Dachun Sun, Jinning Li, **Xinyi Liu**, You Lyu, Hongjue Zhao, Denizhan Kara and Tarek Abdelzaher
ICCCN 2025

[3] **Anatomy of Conflict: a Tool for Understanding Conflict Dynamics from Social Media Data**
Dachun Sun, Jinning Li, You Lyu, **Xinyi Liu**, Christina Youn, Tarek Abdelzaher
IEEE SmartNets 2025

[2] **Modeling Online Ideological Community Dynamics with Recurrent Variational Graph Auto-Encoders**
Dachun Sun, You Lyu, Jinning Li, **Xinyi Liu**, Tarek Abdelzaher
IEEE IBDAP 2025

[1] **Low-Resolution ADCs for Two-Hop Massive MIMO Relay System under Rician Channels**
Shujuan Yu, **Xinyi Liu**, Jun Cao, and Yun Zhang
Entropy 2021; 23(8):1074

Projects

DARPA INCAS | *LLM, PyTorch, Flask, Docker*   May 2022 – Dec 2024

- DARPA INCAS: Influence Campaign Awareness and Sensemaking — a multi-year project on understanding influence operations in low-dimensional information spaces and their impact on populations.
- Developed an interactive demo system that integrates ideology embedding, narrative pathway discovery, and influencer detection.
- Deployed the system at: incas.csl.illinois.edu, supporting visual exploration and interactive analysis of influence campaigns.

NYC Employment Data Analysis | *R, D3.js, Bookdown*   Nov 2020 – Jan 2021

- Created interactive visualizations (R, D3.js) analyzing employment counts and salary trends across demographic groups.
- Published a project report using R Bookdown: NYC Employment Analysis Book.
- Finalist, Columbia DSI Best Student Project Competition; presented findings at: Project Presentation.

WORK EXPERIENCE

Amazon – Applied Science Intern | *Causal Inference, Persona Modeling* Alexa AI, Summer 2025

- Developed a behavior-conditioned LLM framework to simulate realistic user-AI conversations grounded in population-level persona groups.
- Leveraged causal inference to refine behavioral segmentation and control dialogue synthesis.
- Demonstrated strong gains in structural realism and behavioral fidelity over eight baseline models.

ByteDance – Data Science Intern | *Data Mining, User Segmentation,*   Summer 2022

- Designed and validated user segments using classification metrics (precision, recall, ROC-AUC) and cross-validation.
- Analyzed large-scale user behavior logs to identify actionable segment-level engagement trends.
- Built interactive BI dashboards to support product decisions through visualized behavioral insights.