

Xiyao Cheng

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Columbia, Missouri - 65203, US

EDUCATION

• University of Missouri - Columbia, Mizzou

01/2021 - expected Dec 2026

Ph.D. in Computer Science

Columbia, USA

- Academic Advisor: **Prof. Prasad Calyam** Curators' Distinguished Professor, Center Director of AI Education, Research and Infrastructure (AERI)
- Dissertation: **Knowledge Graph based Data Models for Scholar Recommendations in Academic Social Networks**
- **2024 Outstanding Ph.D. Student in Computer Science Department**
- GPA: 3.97/4.0

• China Agricultural University, CAU

09/2016 - 01/2019

M.S. in Computer Science

Beijing, China

• Tianjin Polytechnic University, TJPU

09/2012 - 06/2016

B.E. in Software Engineering

Tianjin, China

RESEARCH INTERESTS

- Computational Network Science
- Human-Centered AI and Conversational Intelligence
- Knowledge-driven Cyber Defense
- AI for Social Good

WORK EXPERIENCE

Center for Cyber Education, Research and Infrastructure (Mizzou CERI)

05/2021 – present

Research Assistant

Columbia, Missouri, USA

- Proposed and developed knowledge graph-based scholar recommendation systems leveraging deep learning and LLMs, with applications in cybersecurity, flexible manufacturing, and healthcare.
- Published 16+ peer-reviewed papers in top-tier venues including IEEE DSAA, IEEE TBD, ACM Computing Surveys, and CCPE.
- Contributed to NSF proposal writing on cybersecurity and flexible manufacturing in collaboration with faculty and postdoctoral researchers across multiple institutions.
- Mentored graduate and undergraduate students from diverse backgrounds in research methodology and project execution.
- Conducted sponsored research funded by NSF and Army Research Lab, collaborating with University of Southern California, Texas Tech University, and Missouri S&T.

MU Informatics and Data Science Institute

12/2025 – present

Research Assistant

Columbia, Missouri, USA

- Co-led development of an AI-driven scholar recommendation platform with Dr. Sounak Chakraborty (Fellow, International Statistical Institute) and Dr. Nilanjan Chakraborty, advancing methods for interdisciplinary research collaboration.
- Developed a hypergraph-based time-aware attention network and a relational scoring mechanism for team recommendation by jointly optimizing diversity, quality, and coverage and a deployed web application.

Artificial Intelligence and Complex Systems (AICS) group

01/2023 - 05/2023

Ph.D Student Research Aide

Columbia, Missouri, USA

- Collaborated with Dr. Mayank Kejriwal (Research Associate Professor of Industrial and Systems Engineering) from University of South California to propose and develop a knowledge graph-based scholar recommendation system
- Constructed a heterogeneous knowledge graph from NSF award and Semantic Scholar publication data, and applied deep learning models to enable complex multi-hop scholar retrieval.

- Designed and conducted end-to-end experiments evaluating recommendation performance; benchmarked against multiple baselines to validate the effectiveness of the proposed approach.

Innovation Diffusion Lab

05/2022 - 05/2023

Ph.D Student Research Aide

Columbia, Missouri, USA

- Developed a domain-specific scholarly search platform with Dr.Kerk Kee (Virginia and Choc Hutcheson Professor in Mass Communication) for medical researchers and clinicians, including the KnowCOVID-19 Science Gateway and Vidura Chatbot.
- Designed and conducted end-to-end experiments demonstrating quantitative performance improvements over baselines.
- Performed a usability study with 15+ real users to evaluate system effectiveness in practical settings, collecting and analyzing survey-based feedback.

College of Information and Electrical Engineering

09/2016 - 01/2019

Research Assistant

Beijing, China

- Worked with Dr.Ying Chen, designed annotation guidelines and led annotators in labeling a Sina Weibo-sourced emotion-cause dataset, ensuring high inter-annotator agreement and data quality.
- Developed and evaluated machine learning models on the annotated emotion-cause corpus, demonstrating that the curated dataset enables high-performance emotion cause identification.
- Built and deployed a food safety information extraction application system combining rule-based and machine learning methods to extract structured story details from real-world news articles.

TEACHING EXPERIENCE

University of Missouri-Columbia

Aug - Dec 2023, Aug - Dec 2026

Teaching Assistant

- Assisted Dr. Ufuktepe in teaching and grading a course on *Algorithm Design and Programming I*. Designed and taught lab lectures with 100+ undergraduate students.
- Responsible for developing, and managing course materials, holding office hours, and submitting and approving grades. Designed and developed an AI-powered educational platform to enhance classroom learning experiences.

University of Missouri-Columbia

Aug - Dec 2023, Jan - May 2026

Teaching Assistant

- Assisted Dr. Micheal Jurczyk in teaching and grading a course on *Computer Network*. Mentored 80+ undergraduate students and graduate students.
- Responsible for lecturing, developing, and managing course materials, holding office hours, and submitting and approving grades.

University of Missouri-Columbia

Jan - May 2022, Aug - Dec 2025

Teaching Assistant

- Assisted Prof. Prasad Calyam with teaching a course on *Cloud Computing*. Designed hands-on instruction labs that use public clouds such as e.g., AWS, GCP, as well as open clouds such as e.g., GENI, Chameleon, Nautilus, and CloudLab.
- Mentored and helped 80+ graduate and undergraduate students in class.
- Mean Course Evaluation Score: 4.7/5

University of Missouri-Columbia

Aug - Dec 2022, Jan - May 2023

Teaching Assistant

- Assisted Prof. Ries in teaching and grading a course on *Advanced Algorithm Design*. Designed and taught lab lectures with 40+ undergraduate students.
- Responsible for developing, and managing course materials, holding office hours, and submitting and approving grades.

JOURNAL PAPERS

- [1] **Cheng, X.**, Rayhan, M., Pandey A., Zhang Y., Kejriwal M., & Calyam P., *ScholarInfluencer: AI-driven Role-Aware Scholar Recommendations based on Temporal Graph Networks*. ACM Transactions on Knowledge Discovery from Data, 2026. *Under Reviewing*. **Impact Factor: 4.9**
- [2] **Cheng, X.**, Rayhan, M., Edara Lakshmi S., Pandey A., Zhang Y., Kejriwal M., & Calyam P., *Knowledge Graph-based Modeling for Identifying Scholar Teams in Academic Social Networks*. IEEE Transactions on Artificial Intelligence, 2026. *Under Reviewing*. **Impact Factor: 6.4**
- [3] Zhang, Y., **Cheng, X.**, Oruche, R., Sivarathri, S. S., & Calyam, P. *ScholarFinder: Knowledge Embedding Based Recommendations Using a Deep Embedded Clustering Model*. IEEE Transactions on Big Data, 2025. **Impact Factor: 5.7**
- [4] Oruche, R., Goruganthu, S. K., Akula, R., **Cheng, X.**, Md Goni, A., Shibo, B. W., Kee, K., Zampieri, M., & Calyam, P. *A Survey on the Recent Advancements in Human-Centered Dialog Systems*. ACM Computing Surveys, 2025. **Impact Factor: 28.0**
- [5] Oruche, R., **Cheng, X.**, Zeng, Z., Vazzana, A., Goni, M. A., Shibo, B. W., Goruganthu, S. K., Kee, K., & Calyam, P. *Chatbot Dialog Design for Improved Human Performance in Domain Knowledge Discovery*. IEEE Transactions on Human-Machine Systems, 2025. **Impact Factor: 4.9**
- [6] Neupane, R. L., Calyam, P., Wang, S., Neupane, K., Pandey, A., **Cheng, X.**, Gafurov, D., et al. *Online Self-Service Learning Platform for Application-Inspired Cloud Development and Operations (DevOps) Curriculum*. IEEE Transactions on Learning Technologies, 2024. **Impact Factor: 4.9**
- [7] Oruche, R., Milman, E. D., Lemus Alarcon, M., **Cheng, X.**, Pandey, A., Wang, S., Calyam, P., & Kee, K. *Science gateway adoption using plug-in middleware for evidence-based healthcare data management*. Concurrency and Computation: Practice and Experience, e7195, 2022.
- [8] **Cheng, X.**, Chen, Y., Cheng, B. X., et al. *An Emotion Cause Corpus for Chinese Microblogs with Multiple-user Structures*. ACM Transactions on Asian and Low-Resource Language Information Processing, 17(1):1–19, 2017.
- [9] Chen, Y., Cheng, B. X., **Cheng, X.** *Food Safety Document Classification Using LSTM-based Ensemble Learning*. Revista Tecnica de la Facultad de Ingenieria Universidad del Zulia, 39(10):172–178, 2016.

CONFERENCE PAPERS

- [1] **Cheng, X.**, Roy, U., Pandey A., Chakraborty N., Chakraborty S., & Calyam, P. *Heterogeneous Hypergraph Attention Network for Scholar Recommendation and Team Formation*. In *35th International ACM Conference on Knowledge and Information Management (CIKM 2026)*, pp. 1–11, 2026. **Acceptance Rate: 27%**
- [2] **Cheng, X.**, Edara, L. S., Zhang, Y., Kejriwal, M., & Calyam, P. *Influence Role Recognition and LLM-Based Scholar Recommendation in Academic Social Networks*. In *Proceedings of the 11th IEEE International Conference on Data Science and Advanced Analytics (DSAA)*, pp. 1–11, 2024. **Acceptance Rate: 25%**
- [3] Shibo, B. W., Oruche, R., Goni, M. A., **Cheng, X.**, Milman, E., Calyam, P., & Kee, K. *Sifting Through Clutter and Finding Answers that Utter Among COVID-19 Data for Medical Users via Gateways*. 2023.
- [4] Neupane, K., Yeddulapalli, H. S., Kambhampati, A., **Cheng, X.**, Neupane, R. L., Kung, E. L., Rinehart, A., & Calyam, P. *Automation of News Content Curation and Storytelling for Local Newsrooms*. In *Proceedings of IEEE HPCC/DSS/SmartCity/DependSys*, pp. 1051–1060, 2023.
- [5] **Cheng, X.**, Zhang, Y., Joshi, H., Kejriwal, M., & Calyam, P. *Knowledge graph-based embedding for connecting scholars in academic social networks*. In *Proceedings of the 10th IEEE International Conference on Data Science and Advanced Analytics (DSAA)*, pp. 1–10, 2023.
- [6] Wang, S., Neupane, R., Pandey, A., **Cheng, X.**, & Calyam, P. *Online Learning Platform for Application-Inspired Cloud and DevOps Curriculum*. In *Proceedings of IEEE HiPC Workshops*, pp. 35–42, 2021.
- [7] Oruche, R., Milman, E. D., **Cheng, X.**, Joish, M., Kulkarni, C., Sharma, A., Kee, K., Regunath, H., & Calyam, P. *Measurement of Utility in User Access of COVID-19 Literature via AI-powered Chatbot*. In *Proceedings of IEEE AIPR*, pp. 1–13, 2021.
- [8] Chen, Y., Hou, W., **Cheng, X.**, & Li, S. *Joint learning for emotion classification and emotion cause detection*. In *Proceedings of EMNLP*, pp. 646–651, 2018. **Acceptance Rate: 20.8%**
- [9] Chen, Y., Hou, W., & **Cheng, X.** *Hierarchical convolution neural network for emotion cause detection on microblogs*. In *ICANN 2018, Part I*, pp. 115–122. Springer, 2018.

ADVISING AND MENTORSHIP

- Upasana Roy (2025-2026), CS PhD Student at University of Missouri (Currently)
- Mahady Hasan Rayhan (2025), CS PhD Student at University of Missouri (Currently)
- Harshavardhan Chintapatla (2025-2026), CS Master Student at University of Missouri (Currently)
- Lakshimi Srinivas Edara (2023-2024), CS Master Student at University of Missouri, joined Spectrum
- Harsh Joshi (2022-2023), CS Master Student at University of Missouri, joined Cummins Inc.

PROFESSIONAL SERVICE

- Journal Peer-Reviewer:

- Concurrency and Computation: Practice and Experience (2025, 2026)
- Discover Artificial Intelligence, Springer Nature (2025, 2026)
- IEEE Transactions on Network and Service Management (TNSM) (2023, 2024, 2025)
- Scientific Reports, Springer Nature (2025)

- Conference Peer-Reviewer:

- IEEE International Conference on Network and Service Management (CNSM) (2026)
- IEEE International Conference on Computing, Networking and Communications (ICNC), Social Computing and Data Mining (SCDM) Symposium (2024, 2025)
- IEEE Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN) (2024)
- IEEE International Conference on Network Softwarization (NetSoft) (2025)
- IEEE International Performance, Computing, and Communications Conference (IPCCC) (2024)
- IEEE International Conference on Communications (ICC) (2024, 2025)