Hangfeng He

Address: 250 Hutchison Rd, Rochester, NY 14620, USA
Tel: (585) 275-8848 Email: hangfeng.he@rochester.edu

Research Interests

My research interests include natural language processing and machine learning, with a focus on interpreting deep learning models, leveraging indirect signals, and advancing reasoning in large language models.

Academic Positions

University of Rochester, Rochester, NY, USA 2022-present
Assistant Professor in Computer Science and Data Science

Education

University of Pennsylvania, Philadelphia, PA, USA 2017-2023
Ph.D. in Computer and Information Science
Advisors: Dan Roth and Weijie Su
Peking University, Beijing, China 2013-2017
B.S. in Computer Science, *Summa Cum Laude*

Publications

1. Huanxin Sheng, Xinyi Liu, **Hangfeng He**, Jieyu Zhao, and Jian Kang. 2025. "Analyzing Uncertainty of LLM-as-a-Judge: Interval Evaluations with Confor-

mal Prediction." In *Proceedings of the 2025 Conference on Empirical Methods in Natural Language Processing (to appear)*, 12 pages.

2. Xinyi Liu, Weiguang Wang, and **Hangfeng He**. 2025. "The Role of Model Confidence on Bias Effects in Measured Uncertainties." In *Findings of the Association for Computational Linguistics: EMNLP 2025 (to appear)*, 11 pages.

3. Boyi Zhang, Zhuo Liu, and **Hangfeng He**. 2025. "TreeRare: Syntax Tree-Guided Retrieval and Reasoning for Knowledge-Intensive Question Answering." In *Proceedings of the 2025 Conference on Empirical Methods in Natural Language Processing (to appear)*, 12 pages.

4. Zhuo Liu, Ding Yu, and **Hangfeng He**. 2025. "On the Role of Model Prior in Real-World Inductive Reasoning." In *Proceedings of the 2025 Conference on Empirical Methods in Natural Language Processing (to appear)*, 10 pages.

5. **Hangfeng He** and Weijie Su. 2025. "A Law of Next-Token Prediction in Large Language Models." In *Physical Review E*, 11 pages.

6. Ding Yu, Zhuo Liu, and **Hangfeng He**. "Same Company, Same Signal: The Role of Identity in Earnings Call Transcripts." In *Findings of the Association for Computational Linguistics: ACL 2025*, pp. 18403-18422.

7. Jiarui Wu, Zhuo Liu, and **Hangfeng He**. 2025. "Mitigating Hallucinations in Multimodal Spatial Relations through Constraint-Aware Prompting." In *Findings of the Association for Computational Linguistics: NAACL 2025*, pp. 3450-3468.

8. Xinyi Liu, Pinxin Liu, and **Hangfeng He.** 2024. "An Empirical Analysis on Large Language Models in Debate Evaluation." In *Proceedings of the 62nd Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)*, pp. 470–487.

9. **Hangfeng He**, Hongming Zhang, and Dan Roth. 2024. "SocREval: Large Language Models with the Socratic Method for Reference-Free Reasoning Evaluation." In *Findings of the Association for Computational Linguistics: NAACL 2024*, pp. 2736–2764.

10. Sindhu Kishore and **Hangfeng He.** 2024. "Unveiling Divergent Inductive Biases of LLMs on Temporal Data." In *Proceedings of the 2024 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (Volume 2: Short Papers)*, pp. 220–228.

11. Matteo Sordello, Niccolo Dalmasso, **Hangfeng He**, and Weijie Su. 2024. "Robust Learning Rate Selection for Stochastic Optimization via Splitting Diagnostic." *Transactions on Machine Learning Research*, 18 pages.

12. **Hangfeng He** and Weijie Su. 2023. "A Law of Data Separation in Deep Learning." *Proceedings of the National Academy of Sciences* 120 (36): e2221704120. *Direct Submission*.

13. Kaifu Wang, **Hangfeng He**, Tin Nguyen, Piyush Kumar, and Dan Roth. 2023. "On Regularization and Inference with Label Constraints." In *Proceedings of the 40th International Conference on Machine Learning*, vol. 202, Proceedings of Machine Learning Research, pp. 35740–35762.

14. Mohammad Rostami, **Hangfeng He**, Muhao Chen, and Dan Roth. 2022. "Transfer Learning via Representation Learning." In *Federated and Transfer Learning*, pp. 233–257.

15. Shuxiao Chen, Koby Crammer, **Hangfeng He**, Dan Roth, and Weijie Su (**alphabetical order**). 2022. "Weighted Training for Cross-Task Learning." In *International Conference on Learning Representations*, 12 pages. *Oral presentation*.

16. Cong Fang, **Hangfeng He**, Qi Long, and Weijie Su (**alphabetical order**). 2021. "Exploring Deep Neural Networks via Layer-Peeled Model: Minority Collapse in Imbalanced Training." *Proceedings of the National Academy of Sciences* 118 (43): e2103091118. *Direct Submission*.

17. **Hangfeng He**, Mingyuan Zhang, Qiang Ning, and Dan Roth. 2021. "Foreseeing the Benefits of Incidental Supervision." In *Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing*, pp. 1782–1800.

18. Zhun Deng, **Hangfeng He**, and Weijie Su. 2021. "Toward Better Generalization Bounds with Locally Elastic Stability." In *Proceedings of the 38th International Conference on Machine Learning*, vol. 139, Proceedings of Machine Learning Research, pp. 2590–2600.

19. Ayal Klein, Jonathan Mamou, Valentina Pyatkin, Daniela Stepanov, **Hangfeng He**, Dan Roth, Luke Zettlemoyer, and Ido Dagan. 2020. "QANom: Question-Answer Driven SRL for Nominalizations." In *Proceedings of the 28th International Conference on Computational Linguistics*, pp. 3069–3083.

20. Shuxiao Chen, **Hangfeng He**, and Weijie Su (**alphabetical order**). 2020. "Label-Aware Neural Tangent Kernel: Toward Better Generalization and Local Elasticity." In *Advances in Neural Information Processing Systems*, vol. 33, pp. 15847–15858.

21. Zhun Deng, **Hangfeng He**, Jiaoyang Huang, and Weijie Su. 2020. "Towards Understanding the Dynamics of the First-Order Adversaries." In *Proceedings of the 37th International Conference on Machine Learning*, vol. 119, Proceedings of Machine Learning Research, pp. 2484–2493.

22. **Hangfeng He**, Qiang Ning, and Dan Roth. 2020. "QuASE: Question-Answer Driven Sentence Encoding." In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, pp. 8743–8758.

23. Soham Dan, **Hangfeng He**, and Dan Roth. 2020. "Understanding Spatial Relations through Multiple Modalities." In *Proceedings of the Twelfth Language Resources and Evaluation Conference*, pp. 2368–2372.

24. **Hangfeng He** and Weijie Su. 2020. "The Local Elasticity of Neural Networks." In *International Conference on Learning Representations*, 13 pages.

25. Qiang Ning, **Hangfeng He**, Chuchu Fan, and Dan Roth. 2019. "Partial or Complete, That's the Question." In *Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1 (Long and Short Papers)*, pp. 2190–2200.

26. Jingjing Xu, **Hangfeng He**, Xu Sun, Xuancheng Ren, and Sujian Li. 2018. "Cross-Domain and Semi-Supervised Named Entity Recognition in Chinese

Social Media: A Unified Model." *IEEE/ACM Transactions on Audio, Speech, and Language Processing* 26 (11): 2142–2152.

27. Federico Fancellu, Adam Lopez, Bonnie Webber, and **Hangfeng He**. 2017. "Detecting Negation Scope Is Easy, Except When It Isn't." In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 2, Short Papers*, pp. 58–63.

28. **Hangfeng He** and Xu Sun. 2017. "F-Score Driven Max Margin Neural Network for Named Entity Recognition in Chinese Social Media." In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 2, Short Papers*, pp. 713–718.

29. **Hangfeng He** and Xu Sun. 2017. "A Unified Model for Cross-Domain and Semi-Supervised Named Entity Recognition in Chinese Social Media." In *Proceedings of the AAAI Conference on Artificial Intelligence*, vol. 31, no. 1. pp. 3216-3222.

30. **Hangfeng He**, Federico Fancellu, and Bonnie Webber. 2017. "Neural Networks for Negation Cue Detection in Chinese." In *Proceedings of the Workshop Computational Semantics Beyond Events and Roles*, pp. 59–63.

Preprints

1. Adiba Mahbub Proma, Neeley Pate, James Druckman, Gourab Ghoshal, **Hangfeng He**, and Ehsan Hoque. 2025. "An Empirical Analysis of LLMs for Countering Misinformation." arXiv:2503.01902 [cs.CL], 6 pages.

2. Hang Hua, Yunlong Tang, Ziyun Zeng, Liangliang Cao, Zhengyuan Yang, **Hangfeng He**, Chenliang Xu, and Jiebo Luo. 2024. "MMCOMPOSITION: Revisiting the Compositionality of Pre-Trained Vision-Language Models." *arXiv:2410.09733 [cs.CV]*, 16 pages.

3. **Hangfeng He**, Hongming Zhang, and Dan Roth. 2023. "Rethinking with Retrieval: Faithful Large Language Model Inference." *arXiv:2301.00303 [cs.CL]*, 12 pages.

Teaching

CSC 511: Large Language Models
Fall 2024, Fall 2025

CSC 247/447: Natural Language Processing
Spring 2023, Fall 2023, Spring 2025

CSC 442: Artificial Intelligence
Fall 2022

Professional Service

NSF/CRA Service
Mentor for CSGRAD4US Graduate Fellowship Program (2025)

Workshop Organizations
Co-organizer for Trustworthy Foundation Models Workshop (2025)

Area Chair
ARR (2025), EMNLP (2025), IJCNLP-AACL (2023, 2025)

Senior Program Committee Member
AAAI (2023)

Program Committee Member
ACL (2020-2021), COLING (2025), EMNLP (2019), NAACL (2019)

Conference Reviewer
ARR (2021, 2024, 2025), ICLR (2024), ICML (2021, 2023), NeurIPS (2020)

Journal Reviewer
IEEE TNNLS (2018-2020), TACL (2023)

University Service

AI BS and PhD Programs Committee	2024-present
Data Science Working Group Co-Chair	2023-present
Data Science M.S. Admission Committee	2022-present
Computer Science Faculty Search Committee	2024-2025
Computer Science Graduate Education Committee	2024-2025
Computer Science Undergraduate Education Committee	2023-2024
Annual URCS Newsletter Committee	2023-2024
Computer Science Ph.D. Admission Committee	2022-2023
Data Science Faculty Search Committee	2022-2023

Invited Talks

Rethinking LLM Behaviors: From Uncertainty and Priors to Financial Applications

Invited Talk at UR CLS Language Science Lecture Series

A Law of Data Separation in Deep Learning

Invited Session Talk at JSM, August, 2023

Invited Session Talk at ICSA, June, 2023

Moving Beyond Scale-Driven Learning

Invited Talk at UR GIDS, October, 2022

Local Elasticity: A Phenomenological Approach Toward Understanding Deep Learning

Invited Talk at uOttawa TML seminar, November, 2021

Incidental Supervision for Natural Language Understanding

Invited Talk at USC/ISI AI Seminar, October, 2021