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Haoran Wang

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Research Interests

My research involves building trustworthy AI systems, with a specific emphasis on improving both robustness and interpretability. I am broadly interested in fundamental research and interdisciplinary collaborations motivated by important applications, including detecting misinformation and analyzing social networks.

Education

Present **PhD, Computer Science**, *Illinois Institute of Technology*.
Advisor: Dr. Kai Shu

2021 **MS, Computer Science**, *University of Oregon*.
Advisor: Dr. Thien Huu Nguyen

2019 **BS, Computer Science**, *Purdue University*.
Advisor: Dr. Yung-Hsiang Lu

Publications

[C4] ***Haoran Wang***, Kai Shu. Trojan Activation Attack: Red-Teaming Large Language Models using Steering Vectors for Safety-Alignment. In *Proceedings of the 33rd ACM International Conference on Information and Knowledge Management (CIKM)*.

[C3] Yue Huang, Lichao Sun, ***Haoran Wang***, Siyuan Wu, Qihui Zhang, Chujie Gao, Yixin Huang, Wenhan Lyu, Yixuan Zhang, Xiner Li, Zhengliang Liu, Yixin Liu, Yijue Wang, Zhikun Zhang, Bhavya Kailkhura, Caiming Xiong, Chao Zhang, Chaowei Xiao, Chunyuan Li, Eric Xing, Furong Huang, Hao Liu, Heng Ji, Hongyi Wang, Huan Zhang, Huaxiu Yao, Manolis Kellis, Marinka Zitnik, Meng Jiang, Mohit Bansal, James Zou, Jian Pei, Jian Liu, Jianfeng Gao, Jiawei Han, Jieyu Zhao, Jiliang Tang, Jindong Wang, John Mitchell, Kai Shu, Kaidi Xu, Kai-Wei Chang, Lifang He, Lifu Huang, Michael Backes, Neil Zhenqiang Gong, Philip S. Yu, Pin-Yu Chen, Quanquan Gu, Ran Xu, Rex Ying, Shuiwang Ji, Suman Jana, Tianlong Chen, Tianming Liu, Tianyi Zhou, Willian Wang, Xiang Li, Xiangliang Zhang, Xiao Wang, Xing Xie, Xun Chen, Xuyu Wang, Yan Liu, Yanfang Ye, Yinzhi Cao, Yue Zhao. TrustLLM: Trustworthiness in Large Language Models. In *Proceedings of the Forty-first International Conference on Machine Learning (ICML)*.

[C2] ***Haoran Wang***, Kai Shu. Explainable Claim Verification via Knowledge-Grounded Reasoning with Large Language Models. In *Findings of the Association for Computational Linguistics: EMNLP 2023 (EMNLP-Findings)*.

[C1] ***Haoran Wang***, Yingtong Dou, Canyu Chen, Lichao Sun, Philip S. Yu, Kai Shu. Attacking Fake News Detectors via Manipulating News Social Engagement. In *Proceedings of the ACM Web Conference 2023 (WWW)*.

Preprints

[P5] ***Haoran Wang***, Kai Shu. Every Picture Tells a Story: Verifying Multi-Hop Multi-Modal Claims. *Preprint 2024*.

[P4] ***Haoran Wang***, Kai Shu. Spatial-Aware Visual Program Reasoning for Complex Visual Questions Answering. *Preprint 2024*.

[P3] Aman Rangapur, ***Haoran Wang***, Kai Shu. Fin-Fact: A Benchmark Dataset for Multimodal Financial Fact Checking and Explanation Generation. *Preprint 2023*.

[P2] Aman Rangapur, ***Haoran Wang***, Kai Shu. Investigating Online Financial Misinformation and Its Consequences: A Computational Perspective. *Preprint 2023*.

[P1] Canyu Chen, ***Haoran Wang***, Matthew Shapiro, Yunyu Xiao, Fei Wang, Kai Shu. Combating Health Misinformation in Social Media: Characterization, Detection, Intervention, and Open Issues. *Preprint 2022*.

Research Experience

Fall 2022 – Present
Graduate Research Assistance, *Illinois Institute of Technology*, Chicago, IL.
- Advisor: Dr. Kai Shu
- Project: **GUISE**, sponsored by *Charles River Analytics, DARPA*.
- Developed systems to extract information flows on social media using a hierarchical template approach.

Fall 2021 – Summer 2022
Graduate Research Assistance, *Montana State University*, Bozeman, MT.
- Advisor: Dr. Laura Stanley
- Project: **iPAL**, sponsored by *NSF* and *NIH*.
- Developed an ecosystem of mobile, wearable health monitoring devices, and AR/VR/MR devices to provide cognitive behavioral therapy as an intervention for users with opioid use disorder (OUD).
- Developed immersive biofeedback breathing exercise on Vuzix Blade AR glasses and Microsoft HoloLens 2 MR glasses that can process PPG(BVP) signal in real-time.

Fall 2018 – Spring 2019
Undergraduate Research Assistance, *Purdue University*, West Lafayette, IN.
- Advisor: Dr. Yung-Hsiang Lu
- Project: **CAM2**, sponsored by *NSF*.
- Evaluated different solutions to Big Data storage problem of unstructured data.
- Built a distributed database to store images and videos along with their metadata captured by network cameras around the globe.

Fellowships & Awards

2022 🏆 **Provost Doctoral Fellowship**, Stevens Institute of Technology

2021 🏆 **Benjamin Fellowship**, Montana State University

2019 🏆 **Semester Honor Student**, Purdue University

Teaching Experience

CS 210: Computer Science I, *Spring 2020, Winter 2021, Spring 2021*, University of Oregon.
Graduate Teaching Assistant

CS 211: Computer Science II, *Fall 2020*, University of Oregon.
Graduate Teaching Assistant

Grant Proposal Writing Experience

DHS: CAOE: Countering Misinformation in the Era of Large Language Models.
My Role: Discussing research objectives and writing multiple proposal tasks in explainable fact-checking using large language models.

ASFOR: YIP: Influence Narratives Defender: Leveraging Social Media Research for Detection, Interpretation, and Assessment of Influence Narratives.
My Role: Formulating the research topic and writing proposal task, *Narrative Representation and Extraction*, *Narrative Detection and Interpretation*, and *Impact Assessment and Mitigation*.

Academic Service

Program Committee: AAAI 2024, KDD 2024

Student Volunteer: ACM FAccT 2023

External Reviewer: SIGIR {2023, 2024}, WWW {2023, 2024}, TKDE 2023, NIPS {2023, 2024}, ACL{2023, 2024}, ICDM{2023, 2024}, IJCAI{2023, 2024}, PAKDD 2024

Mentoring

Aman Rangapur, IIT MS student

Hans Guttormsen, IIT UG student

George Li, High School student

Technical Skills

Programming languages: Python, Java, C, C++, C#, JavaScript, SQL, Bash, R, Julia

Deep learning frameworks: PyTorch, Hugging Face Transformers, PyTorch Geometric

HPC: CUDA, OpenMP, MPI

Software: Linux, Git, Google Cloud Computing, LaTeX