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Wenqian Ye

Research Statement

My research focuses on robustness and trustworthiness in machine learning systems. I have extensively worked on out-of-domain (OOD) generalization, uncertainty quantification, and the impact of spurious correlations in classical machine learning. More recently, my work has extended to AI alignment, with a particular focus on understanding and mitigating reward hacking behaviors in Large Language Models (LLMs) and Agentic AI.

Education

2023 – Now **PhD in Computer Science**, *School of Engineering and Applied Science*, University of Virginia.
Advisor: Aidong Zhang

2020 – 2022 **MS in Computer Science**, *Courant Institute of Mathematical Sciences*, New York University.
Concentration: Machine Learning

2017 – 2020 **BS in Mathematics**, *College of Liberal Arts & Sciences*, University of Illinois Urbana-Champaign.
Thesis Advisor: Sanjay Patel
Double Minor in Computer Science and Electrical Engineering

Selected Publications († denotes co-first authors)

2026 **Wenqian Ye, Guangtao Zheng, Yunsheng Ma, Xu Cao, Bolin Lai, James Rehg, Aidong Zhang**, *MM-SpuBench: Towards Better Understanding of Spurious Biases in Multimodal LLMs*, ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD).
Oral Presentation at NeurIPS 2024 RBFM Workshop

2026 **Wenqian Ye, Di Wang, Guangtao Zheng, Bohan Liu, Aidong Zhang**, *SAGE: Spuriousness-Aware Guided Prompt Exploration for Mitigating Multimodal Bias*, AAAI Conference on Artificial Intelligence (AAAI).

2025 **Wenqian Ye, Guangtao Zheng, Aidong Zhang**, *Rectifying Shortcut Behaviors in Preference-based Reward Learning* , Advances in Neural Information Processing Systems (NeurIPS).

2025 **Wenqian Ye, Guangtao Zheng, Aidong Zhang**, *Improving Group Robustness on Spurious Correlation via Evidential Alignment*, ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD).
Best Paper Award

2025 **Wenqian Ye, Guangtao Zheng, Xu Cao, Yunsheng Ma, Aidong Zhang**, *Spurious Correlations in Machine Learning: A Survey*, ICML Workshop on Data-Centric Machine Learning Research.
Under Review at TMLR

2025 **Guangtao Zheng, Wenqian Ye, Aidong Zhang**, *NeuronTune: Towards Self-Guided Spurious Bias Mitigation*, International Conference on Machine Learning (ICML).

2025 **Guangtao Zheng, Wenqian Ye, Aidong Zhang**, *ShortcutProbe: Probing Prediction Shortcuts for Learning Robust Models*, International Joint Conference on Artificial Intelligence (IJCAI).

2025 **Wei Qian, Chenxu Zhao, Yangyi Li, Wenqian Ye, Mengdi Huai**, *Towards Unveiling Predictive Uncertainty Vulnerabilities in the Context of the Right to Be Forgotten*, Conference on Information and Knowledge Management (CIKM).

2025 **Xu Cao, Yifan Shen, Bolin Lai, Wenqian Ye, Yunsheng Ma, Joerg Heintz, Jintai Chen, Jianguo Cao, James M Rehg**, *What is the Visual Cognition Gap between Humans and Multimodal LLMs?*, Conference on Language Modeling (COLM).

2024 **Guangtao Zheng, Wenqian Ye, Aidong Zhang**, *Benchmarking Spurious Bias in Few-Shot Image Classifiers*, European Conference on Computer Vision (ECCV).

2024 **Guangtao Zheng, Wenqian Ye, Aidong Zhang**, *Spuriousness-Aware Meta-Learning for Learning Robust Classifiers*, ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD).

2024 **Guangtao Zheng, Wenqian Ye, Aidong Zhang**, *Learning Robust Classifiers with Self-Guided Spurious Correlation Mitigation*, International Joint Conference on Artificial Intelligence (IJCAI).

2024 **Xu Cao†, Wenqian Ye†, Kenny Moise, Megan Coffee**, *MpoxVLM: A Vision-Language Model for Diagnosing Skin Lesions from Mpox Virus Infection*, Machine Learning for Health Symposium (ML4H).

2024 **Yunsheng Ma, Xu Cao, Wenqian Ye, Can Cui, Kai Mei, Ziran Wang**, *Learning Autonomous Driving Tasks via Human Feedbacks with Large Language Models*, Findings in Conference on Empirical Methods in Natural Language Processing (EMNLP Findings).

2024 **Xu Cao, Tong Zhou, Yunsheng Ma, Wenqian Ye, Can Cui, Kun Tang, Zhipeng Cao, Kaizhao Liang, Ziran Wang, James Rehg, Chao Zheng**, MAPLM: A Real-World Large-Scale Vision-Language Dataset for Map and Traffic Scene Understanding, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*.

2024 **Yunsheng Ma, Can Cui, Xu Cao, Wenqian Ye, Peiran Liu, Juanwu Lu, Amr Abdelraouf, Rohit Gupta, Kyungtae Han, Aniket Bera, James Rehg, Ziran Wang**, LaMPilot: An Open Benchmark Dataset for Autonomous Driving with Language Model Programs, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*.

2023 **Wenqian Ye, Yunsheng Ma, Xu Cao, Kun Tang**, Mitigating Transformer Overconfidence via Lipschitz Regularization, *Conference on Uncertainty in Artificial Intelligence (UAI)*.

2023 **Xu Cao†, Wenqian Ye†, Elena Sizikova, Xue Bai, Megan Coffee, Hongwu Zeng, Jianguo Cao** , ViTASD: Robust ViT Baselines for Autism Spectrum Disorder Facial Detection, *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*.

2023 **Yunsheng Ma, Wenqian Ye, Xu Cao, Amr Abdelraouf, Kyungtae Han, Rohit Gupta, Ziran Wang**, CEMFormer: Learning to Predict Driver Intentions from In-Cabin and External Cameras via Spatial-Temporal Transformers, *IEEE Intelligent Transportation Systems Conference (ITSC)*.

2023 **Wenqian Ye†, Yunsheng Ma†, Xu Cao** , Uncertainty Estimation in Deterministic Vision Transformer , *AAAI Workshop on Uncertainty Reasoning and Quantification in Decision Making (UDM-AAAI)*.

Professional Experience

2025-2025 **Applied Scientist Intern**, AWS AI Fundamental Research.
Research on improving agentic alignment with reward reasoning models. Analyze this problem with a Bayesian inference and reward maximization perspective.

2023 – Now **Graduate Research Assistant**, University of Virginia.
Conduct research on improving robustness and alignment of machine learning models. Publish research in top AI and data mining conferences, and develop open-source tools.

2022 – Now **Adjunct Researcher**, *NYU Langone Health*, New York University.
Conduct part-time research on Artificial Intelligence-enabled diagnosis of Tuberculosis and COVID-19 using radiologic imaging in resource-constrained environments. Lead the development of AI algorithmic frameworks (e.g., VLMs and AI agents) for screening Monkeypox using dermatologic images.

2022 – 2023 **Software Engineer**, *Cirrus Logic Inc.*
Performed comprehensive validation and testing of embedded software for audio and haptics applications, focusing on automation and analysis. Contributed to both internal and customer-facing UI design, while executing system-level testing across device drivers, firmware, and UI software. Developed prototypes of DSP algorithms using Python/Matlab and implemented fixed-point firmware using C/C++.

Fellowships & Grants

2025 NeurIPS Scholar Award
2025 **KDD Best Paper Award** (1 out of ∼3000 submissions)
2024 OpenAI Researcher Access Program
2023 UAI Travel Award
2023 AAAI Travel Award
2023 UVA Computer Science Fellowship

Teaching Experience

Spring 2026 **CS 6501 Workshop on Building AI Agents**, *Prof. Henry Kautz*, University of Virginia.
- Graded assignments, projects and provided detailed feedback.
- Led weekly office hours and actively supported students on Canvas.

Fall 2025 **CS 4774: Machine Learning**, *Prof. Hadi Daneshmand*, University of Virginia.
- Design course projects and grade the assignments.

Spring 2025 **CS 4501/6501: Analyzing Online Behavior for Public Health**, *Prof. Henry Kautz*, University of Virginia.
- Graded assignments, projects and provided detailed feedback.
- Led weekly office hours and actively supported students on Canvas.

Fall 2024 **CS 6316: Machine Learning**, *Prof. Aidong Zhang*, University of Virginia.
- Guest Lecture on the topic of Spurious Correlations in Machine Learning.

Fall 2024 **CS 4501: Natural Language Processing**, *Prof. Yu Meng*, University of Virginia.
- Designed coding/conceptual assignments for the course contents.
- Graded assignments and provided detailed feedback.
- Led weekly office hours and actively supported students on Canvas.

Fall 2021 **CSCI-GA 2590: Natural Language Processing**, *Prof. He He*, New York University.
- Graded assignments, exams, and final projects.
- Developed the autograder for coding assignments.
- Led office hours and supported students on CampusWire.

Services

Organizer **Co-organizer/Program Chair**.
WDFM-AD Workshop (CVPR 2025; ICCV 2025);
LLVM-AD Workshop (WACV 2024; ITSC 2024; WACV 2025);
AI4CHL Workshop (ICLR 2025);

Roundtable Chair.
ML4H 2024

Program Committee **Journals**.
ACM TIST; IEEE TPAMI; IEEE IoT-J; IJHCI; IEEE T-IV; IEEE VTM; IEEE Internet Computing

Conferences.
ICML; ICLR; NeurIPS; KDD; CVPR; ECCV; ICCV; AAAI; IJCAI; AISTATS; ICASSP; MICCAI; ISBI; ACML

Membership **Member**.
IEEE; ACM; AAAI; IEEE SPS

Mentorship **Mentor**.
ML4H(2023, 2024)

Technical Skills

Languages **Python**, C/C++, R, MATLAB, Golang, SystemVerilog, LaTeX
Packages PyTorch, TensorFlow, AG2, LangChain/LangGraph, Huggingface, Scikit-learn
Others AWS Bedrock, CUDA, SQL, Git, Jenkins