Xiyang Wu

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Education

University of Maryland — College Park, MD
Ph.D. in Electrical and Computer Engineering, GAMMA Laboratory — *Aug. 2021 – Dec. 2026 (Expected)*
Advisor: Dinesh Manocha GPA: 3.83/4.00

Georgia Institute of Technology — Atlanta, GA
M.S. in Electrical and Computer Engineering, CORE Robotics Laboratory — *Aug. 2019 – May. 2021*
Advisor: Matthew Gombolay GPA: 4.00/4.00

Tianjin University — Tianjin, China
B.Eng. in Measuring and Controlling Technologies and Instruments (Honors Class) — *Sep. 2015 – Jul. 2019*
Advisor: Xiaodong Zhang GPA: 3.85/4.00

Publication

(* indicates equal contributions)

1. **Xiyang Wu**, Jihui Jin, Nilotpal Sinha, Gouthaman KV, Vishnu Raj, Dinesh Manocha. Mitigating Hallucinations in Synthetic Video Question Answering through Robust Visual Grounding and Reasoning. *Preprint Internal Review.* Dolby Laboratories, Inc. 2025

2. **Xiyang Wu***, Zongxia Li*, Yubin Qin, Guangyao Shi, Hongyang Du, Dinesh Manocha, Tianyi Zhou, Jordan Lee Boyd-Graber. VideoHallu: Enhancing Multimodal Synthetic Video Understanding via Reinforcement Curriculum Learning. *arXiv:2505.01481* Link, Code, Project Page, Dataset.

3. **Xiyang Wu**, Souradip Chakraborty, Ruiqi Xian, Jing Liang, Tianrui Guan, Fuxiao Liu, Brian Sadler, Dinesh Manocha, Amrit Singh Bedi. Highlighting the Safety Concerns of Deploying LLMs/VLMs in Robotics. *arXiv:2402.10340, The 2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2025).* Link, Code, Project Page.

4. **Xiyang Wu***, Zongxia Li*, Hongyang Du, Huy Nghiem, Guangyao Shi. Benchmark evaluations, applications, and challenges of large vision language models: A survey. *arXiv:2501.02189, TMM-OpenWorld 2025 Workshop at The IEEE / CVF Computer Vision and Pattern Recognition Conference 2025 (CVPR 2025 Workshop)* Link.

5. **Xiyang Wu***, Tianrui Guan*, Dianqi Li, Shuaiyi Huang, Xiaoyu Liu, Xijun Wang, Ruiqi Xian, Abhinav Shrivastava, Furong Huang, Jordan Lee Boyd-Graber, Tianyi Zhou, Dinesh Manocha. AUTOHALLUSION: Automatic Generation of Hallucination Benchmarks for Vision-Language Models. *arXiv:2406.10900, The 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP 2024).* Link, Project Page.

6. **Xiyang Wu***, Chak Lam Shek*, Wesley A. Suttle, Carl Busart, Erin Zaroukian, Dinesh Manocha, Pratap Tokekar, Amrit Singh Bedi. LANCAR: Leveraging Language for Context-Aware Robot Locomotion in Unstructured Environments. *The 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024).* Link, Project Page.

7. Tianrui Guan*, Fuxiao Liu*, **Xiyang Wu**, Ruiqi Xian, Zongxia Li, Xiaoyu Liu, Xijun Wang, Lichang Chen, Furong Huang, Yaser Yacoob, Dinesh Manocha, Tianyi Zhou. HallusionBench: An Advanced Diagnostic Suite for Entangled Language Hallucination and Visual Illusion in Large Vision-Language Models. *The IEEE / CVF Computer Vision and Pattern Recognition Conference 2024 (CVPR 2024).* Link, Code.

8. **Xiyang Wu**, Rohan Chandra, Tianrui Guan, Amrit Singh Bedi, Dinesh Manocha. Intent-Aware Planning in Heterogeneous Traffic via Distributed Multi-Agent Reinforcement Learning. *7th Annual Conference on Robot Learning (CoRL 2023) (**Oral**). MRS Workshop at The 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2023) (**Best Paper Award**)* Link, Code.

9. Haoyue Liu, **Xiyang Wu**, Ning Yan, Zexiao Li, Xiaodong Zhang. A novel image registration-based dynamic photometric stereo method for online defect detection in aluminum alloy castings. *Digital Signal Processing*, 2023.

10. Ming Li, Chenguang Wang, Yijun Liang, Xiyao Wang, Yuhang Zhou, **Xiyang Wu**, Yuqing Zhang, Ruiyi Zhang, Tianyi Zhou. CaughtCheating: Is Your MLLM a Good Cheating Detective? Exploring the Boundary of Visual Perception and Reasoning *arXiv:2507.00045* Link.

11. Zongxia Li, Yapei Chang, Yuhang Zhou, **Xiyang Wu**, Zichao Liang, Yoo Yeon Sung, Jordan Lee Boyd-Graber. Semantically-Aware Rewards for Open-Ended R1 Training in Free-Form Generation *arXiv:2506.15068* Link, Code.

12. Ruiqi Xian, **Xiyang Wu**, Tianrui Guan, Xijun Wang, Boqing Gong, Dinesh Manocha. SOAR: Self-supervision Optimized UAV Action Recognition with Efficient Object-Aware Pretraining. *arXiv:2409.18300*, *Submitted to IEEE Robotics and Automation Letters (RA-L).* Link.

13. Tianrui Guan*, Ruiqi Xian*, Xijun Wang, **Xiyang Wu**, Mohamed Elnoor, Daeun Song, Dinesh Manocha. AGL-NET: Aerial-Ground Cross-Modal Global Localization with Varying Scales. *The 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024).* Link.

14. Esmaeil Seraj, **Xiyang Wu**, Matthew Gombolay. FireCommander: An Interactive, Probabilistic Multi-agent Environment for Joint Perception-Action Tasks. *arXiv:2011.00165*. Link, Code.

Working Experience

Dolby Laboratories, Inc. Atlanta, GA

Research Intern *Mentor: Jihui Jin* *May. 2025 – Aug. 2025*

- **Mitigating Hallucination in Synthetic Video Question-answering.** Enhanced foundation model synthetic video understanding abilities with spatial and motion-awareness via depth estimation, visual grounding, and motion tracking; applied instruction tuning and curriculum reinforcement fine-tuning on real and synthetic video datasets.

Research Experience

GAMMA Laboratory, University of Maryland College Park, MD

Research Assistant *Advisor: Dinesh Manocha* *Sep. 2022 – Now*

- **Physics-Aware Synthetic Video Understanding and Generation** (In progress). Leveraging multi-modal foundation models to improve synthetic video understanding and evaluation, enabling physics-aware, higher-quality video generation.
- **Automated Adversarial Agents for Probing Embodied AI Vulnerabilities** (In progress). Developing multi-modal foundation model agents to adversarially attack reasoning in Vision-Language -Action (VLA) models.
- **Hallucinations in Multi-modal LLMs** (In progress). Investigating methods to detect and mitigate hallucinations in multi-modal foundation modes' reasoning and question answering.
- **Intent-aware Autonomous Driving**. Developed a distributed multi-agent RL algorithm that jointly predicts trajectories and intents in dense traffic, integrating high-level behavioral incentives for decision-making and low-level incentives for motion planning.

Cognitive Optimization and Relational (CORE) Robotics Laboratory Atlanta, GA

Research Assistant *Advisor: Matthew Gombolay* *Jan. 2020 – Dec. 2020*

- **FireCommander: Multi-agent Wildfire Pruning System.** Implemented state-of-the-art reinforcement learning methods in a custom simulation for multi-agent firefighting tasks.

Laboratory of Micronano Manufacturing Technology Tianjin, China

Research Assistant *Advisor: Xiaodong Zhang* *Sep. 2018 – Jul. 2019*

- **Online Scratch Inspection System.** Designed a defect detection system using photometric stereo and advanced image processing techniques.

Skills

- **Programming:** Python, C/C++, MATLAB, Shell Scripting, JavaScript
- **Machine Learning:** PyTorch, Deep Learning, Reinforcement Learning (RL), Reinforcement Learning from Human Feedback (RLHF)
- **Foundation Models:** Large Language Models (LLMs), Vision-Language Models (VLMs), Video Understanding, Visual Grounding, World Models, Diffusion Models, Supervised Fine-tuning (SFT), Reinforcement Fine-tuning (RFT)
- **Robotics & Simulation:** ROS, Robot Navigation, Manipulation, Control Systems, Vision-Language-Action (VLA) Models, Embodied AI, Autonomous Driving
- **Other:** Scientific Writing, Teaching, Leadership, Collaboration

Teaching Experience

Graduate Teaching Assistant — *University of Maryland*

ENEB 354: Discrete Mathematics for Information Technology	*Fall 2024*
ENEE 664: Optimal Control	*Spring 2023*
ENEE 245: Digital Circuits and Systems Laboratory	*Spring 2023, Spring 2025*
ENEE 303: Analog and Digital Electronics	*Fall 2022*
ENEE 307: Electronic Circuits Design Laboratory	*Spring 2022*
ENEE 322: Signal and System Theory	*Fall 2021*

Honor & Awards

- Best Paper Award, IROS 2023 MRS Workshop
- Merit Student Award in Tianjin University, 2018
- Samsung Scholarship, 2017
- Secondary Scholarship in Hexagon Innovation Laboratory in Tianjin University, 2016
- National Secondary Award in the 10th iCAN International Contest of Innovation, 2016

Academic Service

- **Journal Reviewer:** *IEEE Access*, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, *Journal of Medical Internet Research (JMIR)*, *IEEE Robotics and Automation Letters (RA-L)*
- **Conference Reviewer:** *CVPR*, *ICRA*, *IROS*, *EMNLP*, *NAACL*, *ACL*
- **Program Committee Member:** CoCoMARL Workshop at RLC
- **Graduate Application Committee:** University of Maryland
- **TA Training and Development (TATD) Fellow:** 2025–2026, Department of lectrical and Computer Engineering, University of Maryland