Ruijie Zheng

University of Maryland, College Park

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RESEARCH INTEREST

- Robot Foundation Model Pre-Training
- (Latent) World Model Learning for Embodied Agent
- Self-supervised Representation Learning for Embodied Foundation Model

EDUCATION

University of Maryland College Park

Ph.D. in Computer Science; Advisors: Furong Huang, Hal Daumé III — *2022 - present*

B.S. in Computer Science, Departmental High Honors — *2018 - 2022*

B.S. in Mathematics, Departmental High Honors — *2018 - 2022*

EXPERIENCE

Research Intern — GEAR Lab of NVIDIA, Remote

Projects: (Gr00t-N1) Vision-language action models for humanoid robot

Mentors: Jim Fan, Scott Reed — *August 2024 - present*

Research Intern — Microsoft Research AI Frontiers, Redmond

Projects: LLM/VLM-powered agent that learns from rich environment feedbacks.

Mentors: Ching-An Cheng, Adith Swaminathan — *June 2024 - August 2024*

Research Intern — Microsoft Research, Redmond

Projects: Temporal action abstraction in multitask offline pretraining

Mentors: Andrey Kolobov, Ching-An Cheng — *June 2023 - August 2023*

Research Assistant — University of Maryland, College Park

Advisors: Furong Huang, Hal Daumé III — *2020 - present*

PUBLICATION

1. **GR00T N1: An Open Foundation Model for Generalist Humanoid Robots**
   Ruijie Zheng and NVIDIA GEAR Team (Core Contributor of Model Training).
   Preprint, 2025

2. **Magma: A Foundation Model for Multimodal AI Agents**
   Jianwei Yang, Reuben Tan, Qianhui Wu1, **Ruijie Zheng**, Baolin Peng, Yongyuan Liang, Yu Gu, Mu Cai, Seonghyeon Ye, Joel Jang, Yuquan Deng, Lars Liden, Jianfeng Gao.
   In *IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025*

3. **TraceVLA: Visual Trace Prompting Enhances Spatial-Temporal Awareness for Generalist Robotic Policies**
   Ruijie Zheng, Yongyuan Liang, Shuaiyi Huang, Jianfeng Gao, Hal Daumé III, Andrey Kolobov, Furong Huang, Jianwei Yang.
   In *International Conference on Learning Representation (**ICLR**), 2025*

4. **PRISE: LLM-Style Sequence Compression for Learning Temporal Action Abstractions in Control**
   Ruijie Zheng, Ching-An Cheng, Hal Daumé III, Furong Huang, Andrey Kolobov.
   In *International Conference on Machine Learning (**ICML**), 2024 **(Oral Presentation (1.5%))**, and **Spotlight Talk** at 2nd Pre-Training for Robot Learning Workshop (PRL) at CoRL 2023*

5. **Premier-TACO is a Few-Shot Policy Learner: Pretraining Multitask Representation via Temporal Action-Driven Contrastive Loss**
   Ruijie Zheng, Yongyuan Liang, Xiyao Wang, Shuang Ma, Hal Daumé III, Huazhe Xu, John Langford, Praveen Palanisamy, Kalyan Shankar Basu, Furong Huang.
   In *International Conference on Machine Learning (**ICML**), 2024.*

6. **ACE: Off-Policy Actor-Critic with Causality-Aware Entropy Regularization**
   Tianying Ji, Yongyuan Liang, Yan Zeng, Yu Luo, Guowei Xu, Jiawei Guo, **Ruijie Zheng**, Furong Huang, Fuchun Sun, Huazhe Xu
   In *International Conference on Machine Learning (**ICML**), 2024 **(Oral Presentation (1.5%))**.*

7. **Adapting Static Fairness to Sequential Decision-Making: Bias Mitigation Strategies towards Equal Long-term Benefit Rate**
   Yuancheng Xu, Chenghao Deng, Yanchao Sun, **Ruijie Zheng**, Xiyao Wang, Jieyu Zhao, Furong Huang
   In *International Conference on Machine Learning (**ICML**), 2024.*

8. **DrM: Mastering Visual Reinforcement Learning through Dormant Ratio Minimization**
   Guowei Xu*, **Ruijie Zheng***, Yongyuan Liang*, Xiyao Wang, Zhecheng Yuan, Tianying Ji, Yu Luo, Xiaoyu Liu, Jiaxin Yuan, Pu Hua, Shuzhen Li, Yanjie Ze, Hal Daumé III, Furong Huang, Huazhe Xu.
   In *International Conference on Learning Representations (**ICLR**), 2024 **(Spotlight Presentation (5%))**.*
9. **COPlanner: Plan to Roll Out Conservatively but to Explore Optimistically for Model-Based RL**
   Xiyao Wang, **Ruijie Zheng**, Yanchao Sun, Ruonan Jia, Wichayaporn Wongkamjan, Huazhe Xu, Furong Huang.
   In *International Conference on Learning Representations (**ICLR**), 2024.*

10. **Game-Theoretic Robust Reinforcement Learning Handles Temporally-Coupled Perturbations**
    Yongyuan Liang, Yanchao Sun, **Ruijie Zheng**, Xiangyu Liu, Benjamin Eysenbach, Tuomas Sandholm, Furong Huang, Stephen Marcus McAleer.
    In *International Conference on Learning Representations (**ICLR**), 2024.*

11. **TACO: Temporal Latent Action-Driven Contrastive Loss for Visual Reinforcement Learning**
    Ruijie Zheng, Xiyao Wang, Yanchao Sun, Shuang Ma, Jieyu Zhao, Huazhe Xu, Hal Daumé III, Furong Huang.
    In *Neural Information Processing Systems (**NeurIPS**), 2023.*

12. **Is Model Ensemble Necessary? Model-based RL via a Single Model with Lipschitz Regularized Value Function**.
    Ruijie Zheng*, Xiyao Wang*, Huazhe Xu, Furong Huang.
    In *International Conference on Learning Representations (**ICLR**), 2023*, and **Spotlight Presentation** in Deep RL Workshop at NeurIPS 2022.

13. **Certifiably Robust Policy Learning against Adversarial Communication in Multi-agent Systems**
    Yanchao Sun, **Ruijie Zheng**, Parisa Hassanzadeh, Yongyuan Liang, Soheil Feizi, Sumitra Ganesh, Furong Huang.
    In *International Conference on Learning Representations (**ICLR**), 2022.*

14. **Is Imitation All You Need? Generalized Decision-Making with Dual-Phase Training**
    Yao Wei, Yanchao Sun, **Ruijie Zheng**, Sai Vemprala , Rogerio Bonatti, Shuhang Chen, Ratnesh Madaan, Zhongjie Ba, Ashish Kapoor, Shuang Ma.
    In *International Conference on Computer Vision (**ICCV**), 2023.*

15. **Who Is the Strongest Enemy? Towards Optimal and Efficient Evasion Attacks in Deep RL**.
    Yanchao Sun, **Ruijie Zheng**, Yongyuan Liang, Furong Huang.
    In *International Conference on Learning Representations (**ICLR**), 2022.*
    Best Paper Award at NeurIPS 2021 Workshop on Safe and Robust Control of Uncertain Systems

16. **Transfer RL across Observation Feature Spaces via Model-Based Regularization**.
    Yanchao Sun, **Ruijie Zheng**, Xiyao Wang, Andrew E Cohen, Furong Huang.
    In *International Conference on Learning Representations (**ICLR**), 2022.*

17. **Efficiently Improving the Robustness of RL Agents against Strongest Adversaries**.
    Yongyuan Liang, Yanchao Sun, **Ruijie Zheng**, Furong Huang.
    In *Neural Information Processing Systems (**NeurIPS**), 2022.*

HONORS AND AWARDS

- **Best Paper Award at NeurIPS 2021 Workshop on Safe and Robust Control of Uncertain Systems**
- **Dean's Fellowship** (UMD Computer Science Department)
- **Milton Abramowitz Award** (UMD Mathematics Department)
- **Christopher David Malter Memorial Scholarship** (UMD Computer Science Department)
- **Daniel Sweet Undergraduate Research Fellowship** (UMD Mathematics Department)

- **John D. Gannon Scholarship** (UMD Computer Science Department)

SERVICES

Conference Reviewer: **NeurIPS** 2023,2024, **ICML** 2023, 2024, **ICLR** 2024
Workshop Program Committee: Foundational Model for Decision Making (**FMDM**) Workshop at **NeurIPS** 2023