

Yunfu Deng

CONTACT INFORMATION

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yfdeng.com

EDUCATION

University of Wisconsin, Madison, WI

Ph.D. in Computer Science, Advisor: Prof. Josiah Hanna

Sept. 2022 – Present

Rutgers University, New Brunswick, NJ

M.S. in Electrical and Computer Engineering, Advisor: Prof. Abdeslam Boularias

May 2022

Central China Normal University, Wuhan, China

B.Eng. in Computer Science

Jun. 2019

RESEARCH INTEREST

My research focuses on enabling robots to anticipate the behavior and outcomes of their policies before real-world deployment. I work on three connected directions: (i) sim-to-real transfer through learned latent representations that bridge simulation and reality; (ii) off-policy evaluation for scalable assessment of policies, including hierarchical and foundation-model-based controllers; and (iii) world model learning with structured latent dynamics for long-horizon prediction.

SELECTED PUBLICATIONS

Yunfu Deng, Josiah Hanna. *Intra-Option Fitted Q-Evaluation: Evaluating Hierarchical Policies from Non-Hierarchical Data*. **NeurIPS 2026** (Under review).

Yunfu Deng, Josiah Hanna. *BIFROST: Bridging Invariant Feature Representation for Observation-space Sim2Real Transfer*. **IROS 2026** (Under review).

Yunfu Deng, Daniel Nikovski. *ORIGAMI: Object Representation Inferred Geometrically for Articulated Manipulation*. **IROS 2026** (Under review).

Yunfu Deng, Yuhao Li, Josiah Hanna. *Abstract Sim2Real through Approximate Information States*. **IEEE RA-L 2026** (also presented at NeurIPS 2025 Workshop on Embodied World Models for Decision Making; to appear at IROS 2026)

Shiyang Lu, Abdeslam Boularias, **Yunfu Deng**, Kostas Bekris. *Self-Supervised Learning of Object Segmentation from Unlabeled RGB-D Videos*. **ICRA 2023**.

Liam Schramm, **Yunfu Deng**, Edgar Granados, Abdeslam Boularias. *USHER: Unbiased Sampling for Hindsight Experience Replay*. **CoRL 2022**.

Yunfu Deng, Kun Xu, Yue Hu, Yunduan Cui, Gengzhao Xiang, Zhongming Pan. *Learning Effectively from Intervention for Visual-based Autonomous Driving*. **ITSC 2022**.

EMPLOYMENT AND EXPERIENCE

Mitsubishi Electric Research Laboratories

Research Intern, Host: Dr. Daniel Nikovski

May 2025 – Aug. 2025

- Developed ORIGAMI, a training-free geometric pipeline that recovers articulated object kinematics from a single RGB-D demonstration for sample-efficient RL (IROS 2026 submission).
- Demonstrated zero-shot sim-to-real transfer on a SO-101 arm: 44.7% real-world success on folding ruler manipulation vs. 9.3% (DrQ-v2) and 11.7% (AutoURDF).

ByteDance Seed Robotics

Research Intern

June 2023 – Sept. 2023

- Developed an early vision-language-action (VLA) model for robotic manipulation, with ranking-based RL fine-tuning from physical human feedback.
- Improved success rate from 9.3% to 42.7% on the CALVIN benchmark.

DiDi Labs

Research Intern

June 2024 – Sept. 2024

- Built infrastructure for a multi-agent driving simulator initialized from real-world driving logs, and implemented a ranking-based RLHF pipeline (preference data → reward modeling → policy fine-tuning) on top of it for foundation driving models.

University of Wisconsin, Madison

Ph.D. Student, Advisor: Prof. Josiah Hanna

Sept. 2022 – Present

- Developed a cross-domain bisimulation framework that learns shared latent representations for zero-shot sim2real transfer under both perceptual and dynamics gaps (IROS 2026 submission).
- Formalized the abstract sim2real problem and developed a self-predictive simulator grounding method; deployed on a physical NAO bipedal robot with 73%/56% success on navigation and ball-kicking (IEEE RA-L 2026).
- Designed Intra-Option FQE for evaluating option-level policies from primitive transition data without behavior policy annotations (NeurIPS 2026 submission).
- Building a large-scale off-policy evaluation benchmark for robot foundation models on Open X-Embodiment.

Rutgers University, New Brunswick

Graduate Research Assistant, Advisor: Prof. Abdeslam Boularias

Sept. 2021 – Aug. 2022

- Proposed USHER, an unbiased sampling algorithm for Hindsight Experience Replay that corrects hindsight bias in stochastic environments via importance sampling (CoRL 2022).
- Designed a self-supervised system for object segmentation from unlabeled RGB-D videos using 3D reconstruction and contrastive learning (ICRA 2023).

Chinese Academy of Sciences, Shenzhen Institute of Advanced Technology

Assistant Engineer

Sept. 2019 – Aug. 2021

- Developed a hierarchical imitation learning framework for vision-based autonomous driving with expert interventions (ITSC 2022).

PROFESSIONAL SERVICES

Reviewer: IROS (2021–2024), ICRA (2022–2024), CoRL (2023–2025), ITSC 2022, RLC 2026, IEEE RA-L 2026

Mentoring: Yuhao Li, undergraduate at UW–Madison (now Ph.D. at UMass Amherst), co-author on IEEE RA-L 2026 2024–2025