

# YUXIN CHEN

PHD · CONTROL · ROBOTICS · MACHINE LEARNING

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## SUMMARY

I build safe and agile embodied agents that intelligently perceive, interact with, and collaborate within the physical world while adhering to human values. My research emphasizes whole-body control of mobile robots, dexterous manipulation, and human-robot interaction, leveraging state-of-the-art advancements in reinforcement learning, generative models, optimization, and control.

## EDUCATION

### University of California, Berkeley

#### PH.D. MECHANICAL ENGINEERING (CONTROL)

Berkeley, CA

Aug 2022 – May 2027

- Advisor: Prof. Masayoshi Tomizuka
- Minors: Machine Learning, Optimization

### University of Michigan, Ann Arbor

#### M.S. ROBOTICS

Ann Arbor, MI

Aug 2020 – May 2022

- Advisor: Prof. Ram Vasudevan

### University of Michigan, Ann Arbor

#### B.S.E. AEROSPACE ENGINEERING (SUMMA CUM LAUDE)

Ann Arbor, MI

Sep 2018 – May 2020

- Minor: Computer Science

### Shanghai Jiao Tong University

#### B.S. MECHANICAL ENGINEERING

Shanghai, China

Sep 2016 – Aug 2020

## RESEARCH EXPERIENCE

### University of California, Berkeley

#### GRADUATE STUDENT RESEARCHER

Berkeley, CA

Aug 2022 – Present

Faculty member: Prof. Masayoshi Tomizuka

Affiliation: Mechanical Systems Control (MSC) Laboratory & Berkeley AI Research (BAIR) & Center for Humanoid Intelligence (HIC)

### University of Michigan, Ann Arbor

#### GRADUATE STUDENT RESEARCHER

Ann Arbor, MI

May 2020 – Jul 2022

Faculty member: Prof. Ram Vasudevan

Affiliation: Robotics and Optimization for the Analysis of Human Motion (ROAHM) Laboratory

### University of Michigan, Ann Arbor

#### UNDERGRADUATE RESEARCH ASSISTANT

Ann Arbor, MI

Oct 2018 – May 2020

Faculty member: Prof. Ella Atkins & Prof. Brent Gillespie

Affiliation: Autonomous Aerospace Systems (A2SYS) Laboratory & HAPTIX Laboratory

## WORKING EXPERIENCE

### Robotics and AI Institute

#### RESEARCH INTERN. (MENTOR: JIUGUANG WANG)

Cambridge, MA

Mar 2025 – Aug 2025

### Mitsubishi Electric Research Laboratories

#### RESEARCH INTERN. (MENTOR: DEVESH JHA & DIEGO ROMERES)

Cambridge, MA

May 2024 – Aug 2024

### Zoox, Inc.

#### SOFTWARE ENGINEERING INTERN. (MENTOR: RICK ZHANG)

Foster City, CA

May 2021 – Aug 2021

### Honda R&D Americas, LLC

#### STUDENT MEMBER, MULTIDISCIPLINARY DESIGN PROGRAM (MENTOR: TYLER NAES)

Ann Arbor, MI

Jan 2021 – Dec 2021

### ZF (China) Investment Co., Ltd

#### SOFTWARE DEVELOPMENT & TESTING INTERN. (MENTOR: YI ZHANG)

Shanghai, China

Jan 2018 – Mar 2018

# PUBLICATIONS

(The superscript \* indicates equal contribution.)

## Journal

- [J3] S. Zhao\*, X. Zhu\*, **Y. Chen**, C. Li, X. Zhang, M. Ding, M. Tomizuka, "DexH2R: Task-oriented Dexterous Manipulation from Human to Robots," *IEEE/ASME Transactions on Mechatronics (T-MECH)*, 2025.
- [J2] R. Jalayer, **Y. Chen**, M. Jalayer, C. Orsenigo, M. Tomizuka, "Testing Human-Hand Segmentation on In-Distribution and Out-of-Distribution Data in Human-Robot Interactions Using a Deep Ensemble Model," *Mechatronics*, vol. 110, pp. 103365, 2025.
- [J1] P. Ewen, A. Li, **Y. Chen**, S. Hong and R. Vasudevan, "These Maps are Made for Walking: Real-Time Terrain Property Estimation for Mobile Robots," *IEEE Robotics and Automation Letters (RA-L)*, vol. 7, no. 4, pp. 7083-7090, 2022.

## Conference Proceedings

- [C12] **Y. Chen\***, J. Wei\*, C. Xu, B. Li, M. Tomizuka, A. Bajcsy, R. Tian, "Reimagination with Test-time Observation Interventions: Distractor-Robust World Model Predictions for Visual Model Predictive Control," *2026 IEEE International Conference on Robotics and Automation (ICRA)*, 2026. (acceptance rate: 38.0%)
- [C11] S. Zhao, K. Yang, **Y. Chen**, C. Li, Y. Xie, X. Zhang, C. Wang, M. Tomizuka, "DexCtrl: Towards Sim-to-Real Dexterity with Adaptive Controller Learning," *2026 IEEE International Conference on Robotics and Automation (ICRA)*, 2026. (acceptance rate: 38.0%)
- [C10] G. Zhan, L. Tao, P. Wang, Y. Wang, **Y. Chen**, Y. Li, H. Li, M. Tomizuka, S. Li, "Mean Flow Policy with Instantaneous Velocity Constraints for One-step Action Generation," *The Fourteenth International Conference on Learning Representations (ICLR)*, 2026. (acceptance rate: 28.0%)
- [C9] **Y. Chen\***, X. Zhu\*, L. Sun\*, F. Niroui, S. Le Cleac'h, J. Wang, K. Fang, "Versatile Loco-Manipulation through Flexible Interlimb Coordination," *2025 Conference on Robot Learning (CoRL)*, 2025. (acceptance rate: 35.8%, **Oral: 5.69%**)
- [C8] **Y. Chen\***, C. Tang\*, J. Wei, C. Li, R. Tian, X. Zhang, W. Zhan, P. Stone, M. Tomizuka, "MEReQ: Max-Ent Residual-Q Inverse RL for Sample-Efficient Alignment from intervention," *2025 Conference on Robot Learning (CoRL)*, 2025. (acceptance rate: 35.8%)
- [C7] **Y. Chen**, D. Jha, M. Tomizuka, D. Romeres, "FDPP: Fine-tune Diffusion Policy with Human Preference," *2025 IEEE International Conference on Robotics and Automation (ICRA)*, 2025. (acceptance rate: 38.7%)
- [C6] T. Zhang, Z. Wu, **Y. Chen**, Y. Wang, B. Liang, S. Moura, M. Tomizuka, M. Ding, W. Zhan, "Physics-Aware Robotic Palletization with Online Masking Inference," *2025 IEEE International Conference on Robotics and Automation (ICRA)*, 2025. (acceptance rate: 38.7%, **Best Paper Award in Automation: 10/4153**)
- [C5] **Y. Chen\***, Y. Xu\*, J. Nie, Y. Wang, H. Zhuang, M. Okumura, "Advancing Cross-domain Discriminability in Continual Learning of Vision-Language Models," *Advances in Neural Information Processing Systems (NeurIPS)*, 2024. (acceptance rate: 25.8%)
- [C4] **Y. Chen**, C. Tang, R. Tian, C. Li, J. Li, M. Tomizuka and W. Zhan, "Quantifying Interaction Level Between Agents Helps Cost-efficient Generalization in Multi-agent Reinforcement Learning," *Proceedings of the 1st Reinforcement Learning Conference (RLC)*, 2024. (acceptance rate: 40%)
- [C3] **Y. Chen**, C. Tang, R. Tian, C. Li, J. Li, M. Tomizuka and W. Zhan, "Quantifying Agent Interaction in Multi-Agent Reinforcement Learning for Cost-efficient Generalization," *Proceedings of the 23rd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pp. 2201-2203, 2024. (Extended Abstract, acceptance rate: 45.1%)
- [C2] P. Ewen, J.P. Sleiman, **Y. Chen**, W.C. Lu, M. Hutter and R. Vasudevan, "Generating Continuous Motion and Force Plans in Real-Time for Legged Mobile Manipulation," *2021 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 4933-4939, 2021. (acceptance rate: 43.6%)
- [C1] M. Romano, **Y. Chen**, O. Marshall, and E. Atkins, "Nailed it: Autonomous Roofing with a Nailgun-Equipped Octocopter," *AIAA Aviation 2021 Forum*, pp. 3211, 2021.

## Workshop

- [W4] **Y. Chen\***, X. Zhu\*, L. Sun\*, F. Niroui, S. Le Cleac'h, J. Wang, K. Fang, "Versatile Loco-Manipulation through Flexible Interlimb Coordination," *RSS 2025 Workshop on Whole-body Control and Bimanual Manipulation: Applications in Humanoids and Beyond (WCBM)*, 2025.
- [W3] **Y. Chen\***, J. Wei\*, C. Xu, B. Li, M. Tomizuka, A. Bajcsy, R. Tian, "Reimagination with Test-time Observation Interventions: Distractor-Robust World Model Predictions for Visual Model Predictive Control," *RSS 2025 Workshop on Out-of-Distribution Generalization in Robotics (OOD)*, 2025. (**Oral, Best Paper Finalist**)
- [W2] **Y. Chen**, D. Jha, M. Tomizuka, D. Romeres, "Adapting Diffusion Policies to Human Preferences via Reward-Guided Fine-Tuning," *ICRA 2025 Workshop on Safely Leveraging Vision-Language Foundation Models in Robotics: Challenges and Opportunities (Safe-VLM)*, 2025. (**Oral**)
- [W1] P. Wang, X. Zhu, **Y. Chen**, C. Xu, M. Tomizuka, C. Li, "Residual Policy Gradient: A Reward View of KL-regularized Objective," *ICRA 2025 Workshop on Safely Leveraging Vision-Language Foundation Models in Robotics: Challenges and Opportunities (Safe-VLM)*, 2025. (**Spotlight**)

## Preprints and Working Papers

- [P5] **Y. Chen\***, K. Fang\*, X. Zhu\*, F. Niroui, L. Sun, J. Wang, "SAGA: Open-World Mobile Manipulation via Structured Affordance Grounding," *under review*, 2025.
- [P4] Z. Xu, J. Liu, **Y. Chen**, K. Keutzer, M. Tomizuka, C. Xu, C. Peng, "SparseGen: Fast 3D Gaussian Generation from Sparse Queries," *under review*, 2025.
- [P3] Z. Huang, Y. Li, C. Zhang, R. Zhang, G. Wang, **Y. Chen**, X. Liu, M. Tomizuka, X. Ji, "Generalizing Robot Manipulation Policies via 3D Consistent Waypoints," *under review*, 2025.
- [P2] F. Zhang, P. Wang, C. Li, Y. Li, **Y. Chen**, L. Feng, C. Xu, M. Tomizuka, B. An, "REAR: Scalable Test-time Preference Realignment through Reward Decomposition," *under review*, 2025.
- [P1] P. Wang, X. Zhu, **Y. Chen**, C. Xu, M. Tomizuka, C. Li, "Residual Policy Gradient: A Reward View of KL-regularized Objective," *under review*, 2025.

## TEACHING EXPERIENCE

### University of California, Berkeley

ADVANCED CONTROL SYSTEM I (MECENG 232) - GRADUATE STUDENT INSTRUCTOR

Berkeley, CA

Fall 2024

Instructor: Prof. Masayoshi Tomizuka

ADVANCED CONTROL SYSTEM II (MECENG 233) - GRADUATE STUDENT INSTRUCTOR

Spring 2024, Spring 2026

Instructor: Prof. Masayoshi Tomizuka

AI FOR AUTONOMY (MECENG 292B) - GRADUATE STUDENT INSTRUCTOR

Spring 2024

Instructor: Dr. Wei Zhan

### University of Michigan, Ann Arbor

SELF-DRIVING CARS: PERCEPTION AND CONTROL (ROB 535) - GRADUATE STUDENT INSTRUCTOR

Ann Arbor, MI

Fall 2021

Instructor: Prof. Ram Vasudevan

MOTION PLANNING (EECS 598) - COURSE ASSISTANT

Winter 2021

Instructor: Prof. Dmitry Berenson

INTRODUCTION TO AEROSPACE SYSTEMS (AERO 201) - COURSE ASSISTANT

Fall 2019

Instructor: Prof. Ella Atkins

## ACADEMIC SERVICES

### Journal Reviewer

- IEEE Robotics and Automation Letters (RA-L)

2024 – Present

### Conference Reviewer

- International Conference on Learning Representations (ICLR) 2025 – 2026
- International Conference on Machine Learning (ICML) 2025 – 2026
- Robotics: Science and Systems (RSS) 2025 – 2026
- Conference on Robot Learning (CoRL) 2025
- IEEE International Conference on Robotics and Automation (ICRA) 2024 – 2026
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2023 – 2025
- Reinforcement Learning Conference (RLC) 2025
- Conference on Computer Vision and Pattern Recognition (CVPR) 2026
- European Conference on Computer Vision (ECCV) 2026
- Learning for Dynamics & Control Conference (L4DC) 2025

### Program Committee

- Co-organizer of IAVVC workshop on Scenario and Behavior Diversity in Simulation for Autonomous Vehicle Validation 2023
- Program Committee of ICRA workshop on Human-Centered Robot Learning in the Era of Big Data and Large Models 2025
- Program Committee for the 40th AAAI Conference on Artificial Intelligence (AAAI-26) 2025

## INVITED TALKS

### Advancing Cross-domain Discriminability in Continual Learning of Vision-Language Models

- TwelveLabs Webinar

Feb 2025

### Scaling Mobile Manipulation from Whole-body Coordination to Open-world Semantics

- Shenglanxueyuan Webinar
- Machine Vision and Intelligence Group at Shanghai Jiao Tong University

Dec 2025

Jan 2026

## AWARDS AND SCHOLARSHIPS

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- 2025 **Departmental Block Grant Fellowship**, *University of California, Berkeley*  
2025 **ICRA 2025 Best Paper Award in Automation**, *IEEE Robotics and Automation Society*  
2025 **Qualcomm Innovation Fellowship Finalist**, *Qualcomm Incorporated*  
2020 **Outstanding Graduates of Shanghai (top 3%)**, *Ministry of Education of Shanghai*  
2020 **Capstone Design Gold Award (top 1%)**, *Shanghai Jiao Tong University*  
2020 **James B. Angell Scholar**, *University of Michigan*  
2019 **Roger King Scholarship**, *University of Michigan*  
2018 **Longey-SJTU Global Elite Scholarship**, *Shanghai Jiao Tong University*  
2017 **Rongchang Science and Technology Innovation Scholarship**, *Shanghai Jiao Tong University*  
2017 **Undergraduate Academic Excellence Scholarship**, *Shanghai Jiao Tong University*