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 — *Berkeley, CA*
Ph.D. Mechanical Engineering (Control) — *Aug 2022 – May 2027*
- Advisor: Prof. Masayoshi Tomizuka
- Minors: Machine Learning, Optimization

University of Michigan, Ann Arbor — *Ann Arbor, MI*
M.S. Robotics — *Aug 2020 – May 2022*
- Advisor: Prof. Ram Vasudevan

University of Michigan, Ann Arbor — *Ann Arbor, MI*
B.S.E. Aerospace Engineering (Summa Cum Laude) — *Sep 2018 – May 2020*
- Minor: Computer Science

Shanghai Jiao Tong University — *Shanghai, China*
B.S. Mechanical Engineering — *Sep 2016 – Aug 2020*

Research Experience

University of California, Berkeley — *Berkeley, CA*
Graduate Student Researcher — *Aug 2022 – Present*
Faculty member: Prof. Masayoshi Tomizuka
Affiliation: Mechanical Systems Control (MSC) Laboratory & Berkeley AI Research (BAIR) & Berkeley DeepDrive (BDD)

University of Michigan, Ann Arbor — *Ann Arbor, MI*
Graduate Student Researcher — *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 — *Ann Arbor, MI*
Undergraduate Research Assistant — *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 — *Cambridge, MA*
Research Intern. (Mentor: Jiuguang Wang) — *Mar 2025 – Jul 2025*

Mitsubishi Electric Research Laboratories — *Cambridge, MA*
Research Intern. (Mentor: Devesh Jha & Diego Romeres) — *May 2024 – Aug 2024*

Zoox, Inc. — *Foster City, CA*
Software Engineering Intern. (Mentor: Rick Zhang) — *May 2021 – Aug 2021*

Honda R&D Americas, LLC — *Ann Arbor, MI*
Student member, Multidisciplinary Design Program (Mentor: Tyler Naes) — *Jan 2021 – Dec 2021*

ZF (China) Investment Co., Ltd — *Shanghai, China*
Software Development & Testing Intern. (Mentor: Yi Zhang) — *Jan 2018 – Mar 2018*

PUBLICATIONS

*(The superscript * indicates equal contribution.)*

Journal

[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*, 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

[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%)

[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: 1/1606**)

[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

[P4] **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," *under review*, 2025.

[P3] 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," *under review*, 2025.

[P2] 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.

[P1] S. Zhao*, X. Zhu*, **Y. Chen**, C. Li, X. Zhang, M. Ding, M. Tomizuka, "DexH2R: Task-oriented Dexterous Manipulation from Human to Robots," *under review*, 2024.

Teaching Experience

University of California, Berkeley *Berkeley, CA*

Advanced Control System I (MECENG 232) - Graduate Student Instructor *Fall 2024*
Instructor: Prof. Masayoshi Tomizuka

Advanced Control System II (MECENG 233) - Graduate Student Instructor *Spring 2024*
Instructor: Prof. Masayoshi Tomizuka

AI for Autonomy (MECENG 292B) - Graduate Student Instructor *Spring 2024*
Instructor: Dr. Wei Zhan

University of Michigan, Ann Arbor *Ann Arbor, MI*

Self-Driving Cars: Perception and Control (ROB 535) - Graduate Student Instructor *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*
- International Conference on Machine Learning (ICML) *2025*
- Robotics: Science and Systems (RSS) *2025*
- Conference on Robot Learning (CoRL) 2025
- IEEE International Conference on Robotics and Automation (ICRA) *2024 – 2025*
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) *2023 – 2025*
- Reinforcement Learning Conference (RLC) *2025*
- 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*

Awards and Scholarships

2025 **ME Graduate 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*