

# 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

Sep 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

### Zoxx, 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%, **Oral: 4.47%**)
- [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

|   |               |
|---|---------------|
| <b>University of California, Berkeley</b>   | 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  |               |
| <b>University of Michigan, Ann Arbor</b>  | 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

|   |                |
|---|----------------|
| <b>Journal Reviewer</b>   |                |
| • IEEE Robotics and Automation Letters (RA-L)   | 2024 – Present |
| <b>Conference Reviewer</b>  |                |
| • 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           |
| <b>Program Committee</b>  |                |
| • 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 | <b>Departmental Block Grant Fellowship</b> , <i>University of California, Berkeley</i>                |
| 2025 | <b>ICRA 2025 Best Paper Award in Automation</b> , <i>IEEE Robotics and Automation Society</i>         |
| 2025 | <b>Qualcomm Innovation Fellowship Finalist</b> , <i>Qualcomm Incorporated</i>                         |
| 2020 | <b>Outstanding Graduates of Shanghai (top 3%)</b> , <i>Ministry of Education of Shanghai</i>          |
| 2020 | <b>Capstone Design Gold Award (top 1%)</b> , <i>Shanghai Jiao Tong University</i>                     |
| 2020 | <b>James B. Angell Scholar</b> , <i>University of Michigan</i>  |
| 2019 | <b>Roger King Scholarship</b> , <i>University of Michigan</i>   |
| 2018 | <b>Longey-SJTU Global Elite Scholarship</b> , <i>Shanghai Jiao Tong University</i>                    |
| 2017 | <b>Rongchang Science and Technology Innovation Scholarship</b> , <i>Shanghai Jiao Tong University</i> |
| 2017 | <b>Undergraduate Academic Excellence Scholarship</b> , <i>Shanghai Jiao Tong University</i>           |