

Ajay Mandlekar

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Overview

I am a Senior Research Scientist at NVIDIA AI in the GEAR lab. I obtained my Ph.D. in Electrical Engineering from Stanford University (2016-2022) advised by Silvio Savarese and Fei-Fei Li.

I lead simulation-based research on the GEAR team, with a focus on making simulation a scalable method for training humanoid foundation models. Our research encompasses many different directions, such as synthetic data generation, real-to-sim and sim-to-real methods, extending simulation platforms to new applications such as deformable manipulation and loco-manipulation, and learning algorithms leveraging imitation learning, reinforcement learning, and planning, in simulation.

Selected Publications (see website for full list)

- *Point Bridge: 3D Representations for Cross Domain Policy Learning*
Siddhant Haldar, Lars Johansmeier, Lerrel Pinto, Abhishek Gupta, Dieter Fox, Yashraj Narang, **Ajay Mandlekar**
Under Review
[\[arXiv\]](#) [\[website\]](#) [\[code\]](#)
- *DexMachina: Functional Retargeting for Bimanual Dexterous Manipulation*
Mandi Zhao, Yifan Hou, Dieter Fox, Yashraj Narang, **Ajay Mandlekar**[†], Shuran Song[†]
Under Review
[\[arXiv\]](#) [\[website\]](#) [\[code\]](#)
- *Generalizable Domain Adaptation for Sim-and-Real Policy Co-Training*
Shuo Cheng*, Liqian Ma*, Zhenyang Chen, **Ajay Mandlekar**[†], Caelan Garrett[†], Danfei Xu
NeurIPS 2025
[\[arXiv\]](#) [\[website\]](#) [\[code\]](#)
- *What Matters in Learning from Large-Scale Datasets for Robot Manipulation*
Vaibhav Saxena, Matthew Bronars*, Nadun Ranawaka Arachchige*, Kuancheng Wang, Woo Chul Shin, Soroush Nasiriany, **Ajay Mandlekar**[†], Danfei Xu[†]
ICLR 2025
[\[arXiv\]](#) [\[website\]](#) [\[code\]](#)
- *Sim-and-Real Co-Training: A Simple Recipe for Vision-Based Robotic Manipulation*
Abhiram Maddukuri*, Zhenyu Jiang*, Lawrence Yunliang Chen*, Soroush Nasiriany*, Yuqi Xie, Yu Fang, Wenqi Huang, Zu Wang, Zhenjia Xu, Nikita Chernyadev, Scott Reed, Ken Goldberg, **Ajay Mandlekar**[†], Linxi Fan[†], Yuke Zhu[†]
RSS 2025
[\[arXiv\]](#) [\[website\]](#)

- *DexMimicGen: Automated Data Generation for Bimanual Dexterous Manipulation via Imitation Learning*
Zhenyu Jiang*, Yuqi Xie*, Kevin Lin*, Zhenjia Xu, Weikang Wan, **Ajay Mandlekar**[†], Linxi Fan[†], Yuke Zhu[†]
ICRA 2025
[\[arXiv\]](#) [\[website\]](#) [\[code\]](#)
- *SkillMimicGen: Automated Demonstration Generation for Efficient Skill Learning and Deployment*
Caelan Garrett*, **Ajay Mandlekar***, Bowen Wen, Dieter Fox
CoRL 2024
[\[arXiv\]](#) [\[website\]](#)
- *RoboCasa: Large-Scale Simulation of Everyday Tasks for Generalist Robots*
Soroush Nasiriany, Abhiram Maddukuri, Lance Zhang, Adeet Parikh, Aaron Lo, Abhishek Joshi, **Ajay Mandlekar**, Yuke Zhu
RSS 2024
[\[arXiv\]](#) [\[website\]](#) [\[code\]](#)
- *MimicGen: A Data Generation System for Scalable Robot Learning using Human Demonstrations*
Ajay Mandlekar, Soroush Nasiriany*, Bowen Wen*, Iretiayo Akinola, Yashraj Narang, Linxi Fan, Yuke Zhu, Dieter Fox
CoRL 2023
Oral at CoRL 2023 Towards Generalist Robots Workshop
[\[arXiv\]](#) [\[website\]](#) [\[code\]](#)
- *Human-in-the-Loop Task and Motion Planning for Imitation Learning*
Ajay Mandlekar*, Caelan Garrett*, Danfei Xu, Dieter Fox
CoRL 2023
Best Paper Runner-Up and Oral at CoRL 2023 Deployable Workshop
[\[arXiv\]](#) [\[website\]](#)
- *Imitating Task and Motion Planning with Visuomotor Transformers*
Murtaza Dalal, **Ajay Mandlekar***, Caelan Garrett*, Ankur Handa, Ruslan Salakhutdinov, Dieter Fox
CoRL 2023
[\[arXiv\]](#) [\[website\]](#) [\[code\]](#)
- *What Matters in Learning from Offline Human Demonstrations for Robot Manipulation*
Ajay Mandlekar, Danfei Xu, Josiah Wong, Soroush Nasiriany, Chen Wang, Rohun Kulkarni, Li Fei-Fei, Silvio Savarese, Yuke Zhu, Roberto Martín-Martín
CoRL 2021
Oral (6.5% acceptance)
[\[arXiv\]](#) [\[website\]](#) [\[video\]](#) [\[code\]](#) [\[blog\]](#)
- *Learning Multi-Arm Manipulation Through Collaborative Teleoperation*
Albert Tung*, Josiah Wong*, **Ajay Mandlekar**, Roberto Martín-Martín, Yuke Zhu, Li Fei-Fei, Silvio Savarese
ICRA 2021
Best Multi-Robotic Systems Paper Finalist
[\[arXiv\]](#) [\[website\]](#) [\[video\]](#)

- *Human-in-the-Loop Imitation Learning using Remote Teleoperation*
Ajay Mandlekar, Danfei Xu*, Roberto Martin-Martin*, Yuke Zhu, Li Fei-Fei, Silvio Savarese
Technical Report 2020
[\[arXiv\]](#) [\[website\]](#) [\[video\]](#)
- *robosuite: A Modular Simulation Framework and Benchmark for Robot Learning*
Yuke Zhu, Josiah Wong, **Ajay Mandlekar**, Roberto Martin-Martin
Technical Report 2020
[\[arXiv\]](#) [\[website\]](#)
- *Learning to Generalize Across Long-Horizon Tasks from Human Demonstrations*
Ajay Mandlekar*, Danfei Xu*, Roberto Martin-Martin, Silvio Savarese, Li Fei-Fei
RSS 2020
[\[arXiv\]](#) [\[website\]](#) [\[video\]](#)
- *IRIS: Implicit Reinforcement without Interaction at Scale for Learning Control from Offline Robot Manipulation Data*
Ajay Mandlekar, Fabio Ramos, Byron Boots, Silvio Savarese, Li Fei-Fei, Animesh Garg, Dieter Fox
ICRA 2020
[\[arXiv\]](#) [\[website\]](#) [\[video\]](#)
- *Scaling Robot Supervision to Hundreds of Hours with RoboTurk: Robotic Manipulation Dataset through Human Reasoning and Dexterity*
Ajay Mandlekar, Jonathan Booher, Max Spero, Albert Tung, Anchit Gupta, Yuke Zhu, Animesh Garg, Silvio Savarese, Li Fei-Fei
IROS 2019
Best Cognitive Robotics Paper Finalist
[\[arXiv\]](#) [\[website\]](#) [\[blog\]](#) [\[talk\]](#)
- *RoboTurk: A Crowdsourcing Platform for Robotic Skill Learning through Imitation*
Ajay Mandlekar, Yuke Zhu, Animesh Garg, Jonathan Booher, Max Spero, Albert Tung, Julian Gao, John Emmons, Anchit Gupta, Emre Orbay, Silvio Savarese, Li Fei-Fei
CoRL 2018
[\[arXiv\]](#) [\[website\]](#) [\[talk\]](#)

Community Service

Workshop Organization

- Data Generation for Robotics, RSS 2024
- Overlooked Aspects of Imitation Learning, RSS 2022
- Advances and Challenges in Imitation Learning for Robotics, RSS 2020

Academic Service

- Area Chair for CoRL 2025
- Reviewer for CoRL, RSS, ICRA, IROS, ICLR, NeurIPS, ICML, CVPR, IEEE T-RO

Work Experience and Education

Research Scientist, NVIDIA GEAR Lab, July 2025 – Present

Research Scientist, NVIDIA Seattle Robotics Lab, Jan 2022 – June 2025

Ph.D., Electrical Engineering, Stanford University, 2016 – 2022

NDSEG Fellow

M.S., Computer Science, Stanford University, 2018

GPA: 4.1

B.S., Electrical Engineering & Computer Science (dual major), Caltech, 2016

GPA: 4.1

Officer of Tau Beta Pi Engineering Honor Society

Monta Vista High School, Cupertino, CA