

# Hejia Zhang

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<https://hejiazhang.me>

## Professional Experience

### Current Employment

**NIO USA** – Staff Research Scientist, Robotics AI

Leading dexterous manipulation research for next-generation embodied AI systems.

San Jose, CA, USA,

12/2025 – Present

### Previous Employment

**Skild AI** – Early Member of Technical Staff

Joined Skild AI in its early stage and helped build the initial robotics learning and manipulation stack for general-purpose robot policies.

San Mateo, CA, USA,

10/2024 – 10/2025

### Research Collaborations

**Robotics Institute, CMU** – Research Collaborator (Dexterous Manipulation)

Co-leading research on learning for dexterous robot hand design and control.

Pittsburgh, PA, USA,

01/2025 – Present

**SLURM Lab, USC** – Research Collaborator (Robot Learning)

Co-leading research on applying and benchmarking foundation models for robot manipulation.

Los Angeles, CA, USA,

08/2024 – 08/2025

## Education

**Ph.D. in Computer Science**, University of Southern California

Advisor: Prof. Stefanos Nikolaidis

01/2020 – 08/2024

**M.S. in Computer Science**, University of Southern California

Advisor: Prof. Gaurav Sukhatme & Prof. Stefan Schaal

01/2018 – 12/2019

**B.S. in Bioengineering**, Zhejiang University

07/2017

## Publications

### Under review

‡ denotes equal contributions

[U3] Jianren Wang<sup>‡</sup>, **Hejia Zhang**<sup>‡</sup>, Jie Han, Xueyang Qi, Yang Zhang, Hang Zhao, Abhinav Gupta, Deepak Pathak. **Learning to Design and Control Hands with Human-Level Dexterity**. *Submitted to ICRA, 2026*.

### Journals

‡ denotes equal contributions

[J4] Peter Kolapo, Steven Schafrik, **Hejia Zhang**, Stefanos Nikolaidis, Zach Agioutantis. **Integrating Robotic Systems in Underground Roof Support Machine**. *Journal of Industrial Safety*, 2024.

[J3] **Hejia Zhang**, Shao-Hung Chan, Jie Zhong, Jiaoyang Li, Peter Kolapo, Sven Koenig, Zach Agioutantis, Steven Schafrik, Stefanos Nikolaidis. **Multi-Robot Geometric Task-and-Motion Planning for Collaborative Manipulation Tasks**. *Autonomous Robots (AURO)*, 2023.

[J2] Ryan Julian, Eric Heiden, Zhangpeng He, **Hejia Zhang**, Stefan Schaal, Joseph J. Lim, Gaurav S. Sukhatme, Karol Hausman. **Scaling Simulation-to-Real Transfer by Learning a Latent Space of Robot Skills**. *International Journal of Robotics Research (IJRR)*, Vol 39, Issue 10–11, 2020.

[J1] Chaoyang Zhu, Kejie Huang, Shuyuan Yang, Ziqi Zhu, **Hejia Zhang**, Haibin Shen. **An Efficient Hardware Accelerator for Structured Sparse Convolutional Neural Networks on FPGAs**. *IEEE Transactions on Very Large Scale Integration Systems (TVLSI)*, Vol 28, Issue 9, 2020.

### Conferences

‡ denotes equal contributions

[C8] Enyu Zhao<sup>‡</sup>, Vedant Raval<sup>‡</sup>, **Hejia Zhang**<sup>‡</sup>, Jiageng Mao, Zeyu Shangguan, Stefanos Nikolaidis, Yue Wang, Daniel Seita. **ManipBench: Benchmarking Vision-Language Models for Low-Level Robot Manipulation**. *In Conference on Robot Learning (CoRL)*, 2025.

- [C7] Vedant Raval<sup>‡</sup>, Enyu Zhao<sup>‡</sup>, **Hejia Zhang**, Stefanos Nikolaidis, Daniel Seita. **GPT-Fabric: Folding and Smoothing Fabric by Leveraging Pre-Trained Foundation Models**. In *International Symposium on Robotics Research (ISRR)*, 2024.
- [C6] Varun Bhatt, Heramb Nemlekar, Matthew C. Fontaine, Bryon Tjanaka, **Hejia Zhang**, Ya-Chuan Hsu, Stefanos Nikolaidis. **Surrogate Assisted Generation of Human-Robot Interaction Scenarios**. In *Conference on Robot Learning (CoRL)*, 2023. (Oral Presentation; 6.6% acceptance rate).
- [C5] Shivin Dass<sup>‡</sup>, Karl Pertsch<sup>‡</sup>, **Hejia Zhang**, Youngwoon Lee, Joseph J. Lim, Stefanos Nikolaidis. **PATO: Policy Assisted TeleOperation for Scalable Robot Data Collection**. In *Robotics: Science and Systems (R:SS)*, 2023.
- [C4] **Hejia Zhang**, Shao-Hung Chan, Jie Zhong, Jiaoyang Li, Sven Koenig, Stefanos Nikolaidis. **A MIP-Based Approach for Multi-Robot Geometric Task-and-Motion Planning**. In *The 18th IEEE International Conference on Automation Science and Engineering (CASE)*, 2022.
- [C3] **Hejia Zhang**<sup>‡</sup>, Matthew C. Fontaine<sup>‡</sup>, Amy Hoover, Julian Togelius, Bistra Dilkina, Stefanos Nikolaidis. **Video Game Level Repair via Mixed Integer Linear Programming**. In *The 16th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE-20)*, 2020. (Oral Presentation; 25% acceptance rate).
- [C2] **Hejia Zhang**, Po-Jen Lai, Sayan Paul, Suraj Kothawade and Stefanos Nikolaidis. **Learning Collaborative Action Plans from Unlabeled Youtube Videos**. In *International Symposium on Robotics Research (ISRR)*, 2019.
- [C1] Ryan Julian<sup>‡</sup>, Eric Heiden<sup>‡</sup>, Zhangpeng He, **Hejia Zhang**, Stefan Schaal, Joseph J. Lim, Gaurav S. Sukhatme, Karol Hausman. **Scaling simulation-to-real transfer by learning composable robot skills**. Presented at *International Symposium on Experimental Robotics (ISER)*, 2018.

## Workshops

<sup>‡</sup> denotes equal contributions

- [W6] Varun Bhatt, Heramb Nemlekar, Matthew Christopher Fontaine, Bryon Tjanaka, **Hejia Zhang**, Ya-Chuan Hsu, Stefanos Nikolaidis. **Surrogate Assisted Generation of Human-Robot Interaction Scenarios**. In *Robotics: Science and Systems (R:SS) Workshop on Environment Generation for Generalizable Robots*, 2023.
- [W5] Shivin Dass, Karl Pertsch, **Hejia Zhang**, Youngwoon Lee, Joseph J. Lim, Stefanos Nikolaidis. **Assisted Teleoperation for Scalable Robot Data Collection**. In *Conference on Robot Learning (CoRL) Workshop on Pre-training Robot Learning*, 2022.
- [W4] **Hejia Zhang**, Shao-Hung Chan, Jie Zhong, Jiaoyang Li, Sven Koenig, Stefanos Nikolaidis. **A MIP-Based Approach for Multi-Robot Geometric Task-and-Motion Planning**. In *Southern California Robotics Symposium (SCR)*, 2022.
- [W3] **Hejia Zhang** and Stefanos Nikolaidis. **Robot Learning Collaborative Manipulation Plans from YouTube Cooking Videos**. In *Robotics: Science and Systems (R:SS) Workshop on Emergent Behaviors in Human-Robot Systems*, 2020.
- [W2] **Hejia Zhang**, Eric Heiden, Stefanos Nikolaidis, Joseph J. Lim, and Gaurav S. Sukhatme. **Auto-conditioned Recurrent Mixture Density Networks for Learning Generalizable Robotic Manipulation Skills**. In *Southern California Robotics Symposium (SCR)*, 2019.
- [W1] Zhanpeng He<sup>‡</sup>, Ryan Julian<sup>‡</sup>, Eric Heiden, **Hejia Zhang**, Stefan Schaal, Joseph J. Lim, Gaurav S. Sukhatme, Karol Hausman. **Simulator Predictive Control: Using Learned Task Representations and MPC for Zero-Shot Generalization and Sequencing**. Presented at *Conference on Neural Information Processing Systems (NeurIPS) Deep Reinforcement Learning Workshop*, 2018.

## Technical Reports

- [T4] Steven Schafrik (PI), Zach Agioutantis (Co-PI), Stefanos Nikolaidis (Co-PI), Peter Kolapo, Anastasia Xenaki, **Hejia Zhang** (led the robot motion programming, human-machine interface design and programming). **Roof Bolting Module Automation for Enhancing Miner Safety**. *Alpha Foundation for the Improvement of Mine Safety and Health*.
- [T3] **Hejia Zhang**, Jie Zhong, Stefanos Nikolaidis. **Zero-Shot Imitating Collaborative Manipulation Plans from YouTube Cooking Videos**. In *ArXiv*.  
- Paper of the Month by Kinova Robotics.

- [T2] Eric Heiden<sup>‡</sup>, David Millard<sup>‡</sup>, **Hejia Zhang** and Gaurav S. Sukhatme. **Interactive Differentiable Simulation**. *In ArXiv*.
- [T1] **Hejia Zhang**, Eric Heiden, Stefanos Nikolaidis, Joseph J. Lim, and Gaurav S. Sukhatme. **Auto-conditioned Recurrent Mixture Density Networks for Learning Generalizable Robot Skills**. *In ArXiv*.

## Hands-On Demonstrations

- [D1] Eura Shin, **Hejia Zhang**, Rey J Pocius, Nathaniel Dennler, Heather Culbertson, Naghmeh Zamani and Stefanos Nikolaidis. Robot-assisted hair-brushing. *Presented at Conference on Neural Information Processing Systems (NeurIPS)*, 2019.

## Honors, Grants & Awards

Lambda's Research Grant Program (\$2000 GPU credits.)	2025
OpenAI Researcher Access Program Grant (\$5000 API credits.)	2024
Oral Presentation, Conference on Robot Learning (CoRL)	2023
CoRL Travel Award	2023
Oral Presentation, AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment	2020
Viterbi MS Best Research Award, USC	2019
NeurIPS Travel Award	2019

## Technical Leadership & Mentorship

**Chengyu Deng** (UG at Tsinghua University, Next: PhD student at HKU).

*Learning-guided geometric task-and-motion planning (USC-Tsinghua Summer Research Program).*

**Zhenghui Su** (MS student at USC).

*Learning-guided geometric task-and-motion planning.*

**Peter Wang** (UG student at USC, Next: PhD student at Yale).

*Learning-guided geometric task-and-motion planning (Provost's Research Fellowship awardee).*

**Jie Zhong** (MS student at USC).

*Multi-robot geometric task-and-motion planning, (CASE 2022, AURO 2023).*

**Zechen Wang** (UG student at USC).

*Assisted teleoperation for scalable robot data collection, (RSS 2023).*

**Ruth Berkun** (HS student mentoring through the USC Viterbi SHINE program).

*Commonsense knowledge learning from language corpus.*

## Guest Lectures & Technical Instruction

**Robotics (CSCI 545)**, University of Southern California. *Spring 2024, Fall 2023, Fall 2020*

Guest Lecturer

**Introduction to Machine Learning (CSCI 467)**, University of Southern California. *Fall 2022*

Discussion Lecturer

**Introduction to Artificial Intelligence (CSCI 360)**, University of Southern California. *Spring 2020*

Guest Lecturer

## Impact & Recognition

**Learning Collaborative Robot Plans from YouTube Videos: Paper of the Month** by Kinova Robotics.

**Robotic Hair Brushing:** Fortune.

## Professional Service & Peer Review

**Journal Article Reviewer:** ACM Transactions on Human-Robot Interaction (THRI), IEEE Robotics and Automation Letters (RA-L), IEEE Transactions on Robotics (T-RO), Autonomous Robots (AURO), ACM Transactions on Autonomous and Adaptive Systems (TAAS).

**Conference Article Reviewer:** International Symposium of Robotics Research (ISRR), IEEE International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Robotics and Automation (ICRA), IEEE International Conference on Automation Science and Engineering (CASE), ACM/IEEE International Conference on Human-Robot Interaction (HRI), Conference on Neural Information Processing Systems (NeurIPS) (Demo Track), International Conference on Automated Planning and Scheduling (ICAPS), Conference on Robot Learning (CoRL).

**Volunteer:** Conference on Robot Learning (CoRL), 2023.

## References

References available upon request.