

Pokuang Zhou

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Research background

Second-year Ph.D. student in Robotics at Purdue University, West Lafayette, USA, in the School of Industrial Engineering, with a GPA of 3.82/4.0. Previously earned Bachelor's and Master's degrees in Engineering from Huazhong University of Science and Technology (Top 10%). Research focuses on embodied AI, machine learning, robotic in-hand manipulation, control theory, and multi-modal robotic systems.

Publications During Ph.D.

First author

DartBot: Overhand Throwing of Deformable Objects with Tactile Sensing and Reinforcement Learning 2025

The IEEE Transactions on Automation Science and Engineering (T-ASE) doi: 10.1109/TASE.2025.3556875, jointly submitted to CASE.

- Designed a vision- and tactile-based reinforcement learning system enabling a UR5 robot to throw deformable darts overhand and accurately hit the target.

Safe Human-Robot Collaboration with Risk Tunable Control Barrier Functions 2025

The IEEE/ASME Transactions on Mechatronics (T-MECH) doi:10.1109/TMECH.2025.3572047, jointly submitted to AIM.

- Built a risk-tunable control system integrated with OptiTrack cameras to enable dynamic, collaborative tasks between humans and a Panda Franka robot.

In-Hand Singulation, Scooping, and Cable Untangling with a 5-DOF Tactile-Reactive Gripper 2025

Cover Article: Advanced Robotics Research (ADRR), doi:10.1002/adrr.202500020

- Designed a model-based framework for dexterous in-hand manipulation, achieving tasks including singulation, card flipping, and untangling.

ManiFeel: Benchmarking and Understanding Visuotactile Manipulation Policy Learning 2025

The Conference on Robot Learning (CoRL under review)

- Built an open-source platform for vision- and tactile-based robotic task execution in both Isaac Gym and the real world, enabling benchmarking of state-of-the-art machine learning methods.

Co-author

Stick Roller: Precise In-hand Stick Rolling with a Sample-Efficient Tactile Model 2024

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) doi: 10.1109/IROS58592.2024.10802003

In-Hand Singulation and Scooping Manipulation with a 5 DOF Tactile Gripper 2024

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) doi: 10.1109/IROS58592.2024.10801940

Robotic System with Tactile-Enabled High-Resolution Hyperspectral Imaging Device for Autonomous Corn Leaf Phenotyping in Controlled Environments 2025

Computers and Electronics in Agriculture: a special issue (COMPAG under review)

Technologies

Learning based: Reinforcement Learning, Imitation Learning

Model based: Robotics, Impedance Control, Motion Planning

Other: Sim2Real Transfer, Computer Vision, Python, C++, ROS, Isaac Gym