

Zhiyuan Chen

Robotics & Embodied AI Researcher | (765)-775-7724 | West Lafayette, IN, USA
Robot Manipulation | 3D Perception | Tactile Sensing | Learning-based Robotic Systems
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EDUCATION

Purdue University

West Lafayette, IN, United States

Ph.D. Student (Master's Degree Expected Aug. 2026), Agricultural and Biological Engineering

Aug. 2024 – Present

- Advisor: [Prof. Jian Jin](#), Lab: Purdue ABE Plant Sensor Lab [\[Link\]](#)
- GPA in Progress: 3.77/4.0
- Research: Robotic Manipulation and Active Perception for Agricultural Robotics, Tactile Gripper Design and Image Analysis, Vision-Guided Control, LLM-based Report Generation

Southern University of Science and Technology

Shenzhen, China

Master of Engineering, Electronics Science and Technology

Sep. 2021 – Jun. 2024

- Advisor: [Prof. Max Q.-H. Meng](#), Lab: Robotic Perception and Intelligence Lab [\[Link\]](#)
- Cumulative GPA: 3.59/4.0 — Rank: 12/52 (top 23%)
- Research: Robotic Manipulation, Deep Learning Model Design and Training, 3D Data Analysis and Reconstruction

Xidian University

Xi'an, China

Bachelor of Engineering, Electronic Information Engineering

Sep. 2017 – Jun. 2021

- Cumulative GPA: 3.7/4.0 — Rank: 27/226 (top 12%)
- Key courses: Data Structure and Algorithm Application, Deep Neural Networks, Modern Image Analysis

PUBLICATIONS

Closed-Loop Placement Planning for Regrasping and Reconstruction with Single-View RGB-D Images [\[Paper1\]](#)

[Zhiyuan Chen](#), Jianshan Liu, Ronghao Chen, and Jiankun Wang

IEEE Transactions on Automation Science and Engineering (**T-ASE**), 2025. JCR Q1, IF=5.9.

Learning to Predict Diverse Stable Placements for Extrinsic Manipulation on a Support Plane [\[Project\]](#) [\[DataSet\]](#) [\[Paper2\]](#)

Peng Xu, [Zhiyuan Chen](#) (Co-first author), Jiankun Wang, and Max Q.-H. Meng

IEEE Transactions on Cognitive and Developmental Systems (**TCDS**), 2024. JCR Q2, IF=5.

Learning the spectral language of leaves for plant health diagnosis

Kangyu Ji, [Zhiyuan Chen](#); Zhongzhong Niu; Alden Mo; Zhihao Qin; Katie DeCamp; Charles Wang; Weixuan Xu; Julie M. Young; Bryan G. Young; Jingqiu Chen; Anna O. Conrad; Jian Jin

Computers and Electronics in Agriculture, under review, 2026.

Advanced Plant Phenotyping Technologies for Enhanced Detection and Mode of Action Analysis of Herbicide Damage Management [\[Paper3\]](#)

Zhongzhong Niu, Xuan Li, Tianzhang Zhao, [Zhiyuan Chen](#), Jian Jin

Remote Sensing, 2025.

RESEARCH EXPERIENCE

Learning-based Closed-loop Object Manipulation and Reconstruction under Partial Observation | [\[Paper1\]](#) + [\[Paper2\]](#)

- Developed a unified research framework for robotic regrasping that enables object reorientation through **learning-based intermediate placement prediction and closed-loop perception–manipulation integration**.

- Proposed a deep learning pipeline for predicting **diverse stable placements** from point clouds, including orientation generation, placement refinement, and placement discrimination stages, achieving **90.4% placement accuracy** and **81.3% diversity** on unseen objects.
- Designed a **closed-loop placement planning system** using single-view RGB-D observations, jointly performing object reconstruction and manipulation planning under partial observations of unknown objects.

Active Tactile Perception for Deformable Surface Understanding via Vision-Guided Robotic Interaction

- Designed a robotic tactile sensing system for precise interaction with deformable biological surfaces, integrating a high-resolution GelSight tactile sensor, force sensing module, and a custom 3-DoF parallel positioning platform.
- Developed a vision-guided control framework enabling adaptive adjustment of contact angle and applied force, allowing stable and damage-free tactile exploration across objects with varying geometry and stiffness.
- Implemented closed-loop perception–action control using tactile image feedback and force measurements to maintain optimal contact conditions for high-quality tactile imaging.

Improving Generalization and Robustness of Uni-LoRA via Sharpness-Aware Optimization

- We investigate the integration of SAM and ASAM into Uni-LoRA fine-tuning to improve generalization under low-data and noisy-label settings.
- Building on adaptive sharpness theory, ASAM addresses the scale-dependency issue in SAM and provides a more reliable measure of generalization.
- Experimental results show that ASAM consistently enhances performance and robustness, especially in small-data regimes and under label noise, demonstrating its effectiveness for practical LLM fine-tuning.

WORKING EXPERIENCE

R&D Engineer Co-op, Leading Technology Company (China)

Research and Development Department

- * Conducted research on perception and manipulation of deformable linear objects for automated wire harness assembly in industrial production lines.
- * Developed vision-based detection and robotic manipulation strategies to improve robustness and efficiency in flexible object handling tasks.

RESEARCH SKILLS

Robotic Perception & Learning: Deep Learning, 3D Vision, Robotic Manipulation, RGB-D Reconstruction, Object Placement Learning

Robotic Systems: ROS1&2, PyBullet, MuJoCo, ORB_SLAM3

Hardware Platforms: Franka Panda, Kinova Gen2/Gen3, UR5/UR10, RealSense, Photoneo PhoXi, GelSight Mini Tactile Sensors

Programming: Python, C/C++, MATLAB, Linux-based Robotics Development

TEACHING ASSISTANT

ABE31400: Design of Electronic Systems

2025 Spring & 2026 Spring, Purdue

EEE5058: Foundation of Information Technology

2023 Fall, SUSTech

ACADEMIC SERVICE

Reviewer

- * IEEE International Conference on Robotics and Automation (**ICRA**)
- * IEEE International Conference on Intelligent Robots and Systems (**IROS**)
- * IEEE Transactions on Robotics (**T-RO**)
- * IEEE Robotics and Automation Letters (**RA-L**)
- * IEEE Transactions on Automation Science and Engineering (**T-ASE**)
- * IEEE Transactions on Instrumentation and Measurement (**TIM**)