

# Pengyuan Guo

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## Education

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### Purdue University, West Lafayette, USA

Sept 2024 – Dec 2025

*MS in Robotics*

- GPA: 3.87/4.0
- **Relevant Coursework:** Introduction to Robotic System, Robot Localization & Mapping, Industrial Robotics & Flexible Assembly, Reinforcement Learning, Lumped System Theory([Program Course List](#) 🔗)

### Purdue University, Indianapolis, USA

Sept 2015 – May 2018

*BS in Mechanical Engineering*

- GPA: 3.27/4.0
- **Relevant Coursework:** Control System Analysis and Design, Electrical and Electron circuits, Model and Analysis of Dynamic System

### Sun Yat-sen University, Guangzhou, China

Sept 2013 – May 2018

*BS in Theoretical and Applied Mechanics*

- Collaborative 2+2 Program with Purdue University

## Experience

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### AgenticLab: a Real-world Robot Agent Platform that Can See, Think, and Act

West Lafayette, IN  
May 2025 – Present

*Student Researcher*

*Supervisor:* [She Yu](#) 🔗

- Developed an embodied agent architecture integrating LLM + PDDL planner + VLM + Anygrasp + Execution module, enabling zero-shot manipulation through reasoning, tool use, and reflection—without policy training.
- Proposed an open-source, real-world testbed for VLMs and embodied agents, built from customized hardware and reproducible software.
- Designed benchmark tasks and metrics to assess spatial reasoning, grounding, and planning performance of VLM-based agents

### What Bimanuals Can Do Competition at ICRA 2025 🔗

Atlanta, GA  
Jan 2025 – May 2025

*Team Leader*

*Supervisor:* [She Yu](#) 🔗

- Proposed and led the accepted project “A Visuo-tactile Diffusion Policy Architecture for Multimodal Imitation Learning,” among 88 global submissions, with only 15 teams selected as finalists.
- Achieved **Third Prize (\$5,000 award)** in the Logistics Packing track.
- Coordinated overall team efforts, managed communication with competition organizers, and successfully applied for a travel grant to support team participation.
- Contributed to real-world bimanual manipulation dataset collection in Zarr format; validated data quality via Rerun visualization and trained diffusion policies on the Gilbreth cluster.
- Designed and prototyped custom mechanical connectors in CAD, facilitating modular integration of multiple robotic arms, cameras, and grippers of heterogeneous models.
- Developed a ROS 1 teleoperation interface for Meta Quest 3 → Galaxea A1 robotic arm, enabling teleoperation as a backup plan.

### U-eagleye Ltd. 🔗

Guangzhou, China  
Sept 2019 – June 2024

*Sales Engineer*

- Acted as a technical coordinator among mechanical engineers, motion-control programmers, and international clients in the development of the F5 flexographic inline press.
- Participated in the design of F5 model (adopted Beckhoff motion control system) particularly for film

printing which is dominant in China.

- Supported deployment and training for overseas plants; contributed to successful installation of 8 F5 units (5 Indonesia, 3 Turkey) with cumulative sales exceeding 7 million USD .

#### WestRock [🔗](#)

Guangzhou, China

Product Engineer for Gillette & Do Torra

Sept 2018 – June 2019

- Collaborated with WestRock engineers and designers on sustainable packaging initiatives on 3 major luxury boxes for Gillette
- Coordinated testing and iteration cycles between client and manufacturing teams, involving structural modifications, redesigns, and various strength tests, most of which were accepted and implemented by Gillette.

## Projects

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### Integrated Industrial & Vision-Guided Robotics

[Project Site](#) [🔗](#)

IE 574 – Industrial Robotics Course Project

- Programmed and integrated two collaborative manipulators and autonomous mobile robots (AMRs) to execute coordinated pick-and-place and material-handling tasks, forming a fully automated workflow.
- Developed a vision-guided manipulation pipeline in simulation (Isaac Sim / CoppeliaSim) and on real hardware, including object detection and localization, motion planning for grasping, and inverse kinematics-based target reaching with visual servoing for object tracking.
- Extended the system to a multimodal imitation learning framework for bimanual robotic manipulation, training policies in IsaacSim and deploying them on real robots to improve manipulation precision and generalization across diverse tasks and platforms.
- Tools Used: IsaacSim, CoppeliaSim, TMflow, Fetchcore

### Autonomous Navigation & Object Localization in ROS2

[Project Site](#) [🔗](#)

Developed a full autonomous navigation and object-localization system for a Turtlebot3 in a customized Gazebo/ROS2 environment.

- Designed an FSM-based wall-following exploration module using LiDAR perception and PI heading control to autonomously map unknown indoor spaces.
- Implemented a two-level navigation stack combining A\* global planning with RRT local replanning from real-time /scan data, supported by dual PID controllers for stable path tracking.
- Built a vision-LiDAR fusion pipeline for object localization: color-based contour detection, image-angle computation, LiDAR distance estimation, and world-coordinate triangulation with RViz visualization.
- Tools Used: Turtlebot3, Gazebo, ROS2, Python

## Publications

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**AgenticLab: a Real-world Robot Agent Platform that Can See, Think, and Act**

Jan 2026

Pengyuan Guo, Zhonghao Mai, Zhengtong Xu, Zichen Miao, Qiang Qiu, She Yu

In Preparation, target venue: RSS 2026 [🔗](#)

## Skills

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|---|---|
| ◦ <b>Computer Languages</b>                 | Python   MATLAB   C++ & CMake   |
| ◦ <b>Robotics</b>                           | ROS 1&2   Gazebo   Isaac Gym   PyTorch   TensorFlow   OpenCV                                    |
| ◦ <b>Mechanical Design &amp; Simulation</b> | CAD: OnShape   SolidWorks   CATIA v4-5<br>Modelling: ANSYS   COMSOL Multiphysics                |
| ◦ <b>Language Proficiency</b>               | Chinese (Native)<br>English (Advanced)<br>TOEFL: Total 102<br>GRE: Quantitative 170, Verbal 155 |