# Yujie Pang

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*Robot Learning · Dexterous Manipulation · Embodied Agents*

## Education

**Southern University of Science and Technology (SUSTech)** **Shenzhen, China**
*B.Eng. in Mechanical Engineering* *Sep. 2023 – Jun. 2027 (expected)*
**Cumulative GPA: 3.66/4.00 Major GPA: 3.76/4.00**
**Selected Coursework:** Robot Operating System (95), Ordinary Differential Equations (93), Advanced Mechanisms and Applications (91), Engineering Machine Learning (87), Probability and Statistics (87).

## Publications & Preprints

**Yujie Pang**, Zudong Li, Leran Chen, Yongsheng Ma. **"PAC-ACT: Post-training Actor-Critic for Action Chunking Transformers."** *6th International Symposium on Artificial Intelligence and Intelligent Manufacturing (AIIM 2026)* (accepted; publication forthcoming). [arXiv] **[First author]**

**Yujie Pang**, Sadman Sakib, Mohammad Abdullah Al Faruque. **"A Direct Rigid Transmission 2-DoF Wrist Extension for Tendon-Driven Hand."** *IROS 2026 Sensors and Actuators for Dexterous Manipulation Workshop* (accepted). [arXiv] **[First author]**

Sadman Sakib, Zhangyi Peng, **Yujie Pang**, Yu Otsuki, Mohammad Abdullah Al Faruque. **"A Taxonomy of Construction Task Activities for Robot Workers."** *IROS 2026 5th Workshop on Future of Construction* (accepted). [arXiv] **[Third author]**

Leran Chen, Zudong Li, **Yujie Pang**, Yongsheng Ma. **"A Lightweight Defect Detection Transformer for Distinguishing Industrial Surface Defects."** *SSRN preprint*, 2026. [SSRN] **[Third author]**

## Research Experience

**MENS Lab, SUSTech** **Shenzhen, China**
*Research Assistant, Embodied AI* *Sep. 2026 – Present*

- Develop **agent harnesses for embodied AI applications**.
- Study **vision-language models (VLMs)** and **world models** as part of ongoing research in embodied intelligence.

**University of California, Irvine (UC Irvine)** **Irvine, CA, USA**
*Visiting Undergraduate Researcher; Advisor: Prof. Mohammad Al Faruque* *Jun. 2026 – Sep. 2026*
**CRAFT-Hand & CRAFT-Wrist: Dexterous Manipulation Hardware and Control**

- Designed and prototyped **CRAFT-Wrist**, a compact 2-DoF wrist extension using short rigid transmissions. The resulting prototype demonstrated $\pm 20°$ radial–ulnar deviation and $+80°/-18°$ flexion–extension.
- Developed an **optimization-based hand-retargeting pipeline** to map human hand motion to robot joints under kinematic constraints and motion regularization.
- Integrated the **15-actuator CRAFT-Hand** across URDF/MJCF, MuJoCo, and Dynamixel hardware communication for teleoperation and simulation-to-real testing. [Project]

**Prof. Yongsheng Ma's Lab, SUSTech** **Shenzhen, China**
*Undergraduate Researcher* *Sep. 2025 – Jun. 2026*
**PAC-ACT: Reinforcement Learning for Action Chunking Policies** *Jan. 2026 – Jun. 2026*

- Proposed **PAC-ACT** for post-training pretrained Action Chunking Transformer policies on contact-rich manipulation tasks. Formulated a **chunk-level MDP** and developed an ACT-initialized actor–critic architecture for PPO-based online improvement.
- Introduced **hybrid behavior-prior regularization** to preserve the pretrained behavior distribution while enabling online exploration under pose perturbations and force constraints.
- Improved task success over ACT from **50.0% to 100.0%** on Contour and **51.2% to 98.2%** on robomimic Square in simulation; reduced the proportion of successful Contour rollouts with recorded force above 60 N from **84% to 8%**, and the fraction of retained readings above 60 N from **3.60% to 0.12%** (first up to 300 samples per successful rollout). This work was accepted at **AIIM 2026**.

**Lightweight Industrial Surface Defect Detection** *Sep. 2025 – Dec. 2025*

- Developed and evaluated lightweight architectures for multi-scale surface defects, investigating shallow semantic enhancement and efficient attention; conducted training, quantitative evaluation, and ablation studies.

## Industrial Experience

**Dongguan Fuying Electronic Technology Co., Ltd.** **Dongguan, China**
*Summer Research Developer, AI-Based Industrial Inspection* *Jul. 2025 – Aug. 2025*

- Developed a teacher–student visual anomaly-detection pipeline for semiconductor silicone-encapsulation inspection, adapting pretrained CNN features to production-line images.
- Implemented synthetic anomaly-feature generation and pixel-level anomaly scoring for defect localization without exhaustive pixel-wise annotations.

## Selected Engineering Projects

**Integrated Book Classification & Recycling Robot** *Sep. 2025 – Dec. 2025*

- Led development of a mobile manipulation system combining a Mecanum-wheel base, 6-DoF arm, depth camera, and ROS 2. Integrated YOLOv8 detection, 3D target localization, coordinate transforms, and motion planning for grasping and sorting, with Gazebo simulation and hardware deployment.

**Autonomous Mobile Robot & Robotic Arm System** *Sep. 2025 – Dec. 2025*

- Built a 4-DoF arm and mobile platform; integrated SLAM Toolbox, LiDAR, Nav2, and AMCL for mapping and navigation, with MediaPipe-based gesture interaction.

**Design and Manufacturing of a CoreXY 3D Printer** *Sep. 2025 – Dec. 2025*

- Designed and fabricated a CoreXY printer with a four-lead-screw synchronous Z-axis lift; achieved approximately $\pm 0.5$ mm positioning accuracy in a $250 \times 250 \times 250$ mm working envelope.

## Technical Skills

**Embodied AI & Agents:** Agent harness development for embodied applications; foundational knowledge of vision-language models (VLMs) and world models.
**Robot Learning:** ACT, behavior cloning, PPO-based policy post-training, LeRobot, robomimic, policy evaluation and ablation studies.
**Robotics & Simulation:** MuJoCo, ROS 2, Gazebo, URDF/MJCF, Nav2, hand retargeting, teleoperation, Dynamixel hardware integration.
**Programming & ML:** Python, C/C++, MATLAB, PyTorch, OpenCV, YOLOv8, Linux, Git.
**Mechanical Design:** SolidWorks, AutoCAD, CAD drawings, 3D printing, mechanical prototyping.

## Languages

**English:** TOEFL iBT 5.0/6 (100/120; Mar. 2026). **Chinese:** Mandarin and Cantonese.