# Litian Gong

Riverside, CA

## Education

**University of California, Riverside** — *Sep 2026 - Present*
**Ph.D.** | *Electrical Engineering* — *Riverside, CA, USA*
***Advisor: Prof. Jiachen Li***

**University of California, Riverside** | *GPA: 3.93* — *Sep 2024 - Jun 2026*
**M.S.** | *Electrical Engineering* — *Riverside, CA, USA*
***Advisor: Prof. Jiachen Li***

**Huazhong University of Science and Technology (HUST)** — *Sep 2020 - Jun 2024*
**B.E.** | *Electrical Engineering* — *Wuhan, China*

## Research Interest

My research focuses on building **embodied intelligent agents** capable of learning robust, generalizable behaviors from data and interaction. I work at the intersection of **(1) scalable robot learning frameworks**, **(2) imitation and reinforcement learning**, and **(3) visual-language models** for long-horizon decision making. Ultimately, my goal is to enable agents to **reason over multimodal observations**, **acquire manipulation and navigation skills efficiently**, and **bridge the sim-to-real gap** for deployment in real-world autonomous systems, and develop, data-efficient, and generalizable learning algorithms.

## Publications & Preprints

[7] **Litian Gong***, Shiting Gong*, Jianpeng Yao*, Hefeifei Jiang, Huaide Jiang, Jinfeng Wang, Zheyu Lin, Zhaoyang Li, Yang Zhou, Ye Zhao, Mingyu Ding, Jiachen Li, "Closed-Loop Customizable Human Following via Distilling Distance-Ordered Constrained Policies", *In submission to ICRA 2027.*

[6] Mingxuan Yan*, **Litian Gong***, Dihong Huang*, Zhixu Li, Tianyu Zhang, Wenqian Zhang, Hefeifei Jiang, Peihao Li, Mengfei Zhao, Yikai Tang, Hai Zhai, Zehao Wang, Kaiyu Hang, Minghui Zheng, Zhiwen Fan, Masayoshi Tomizuka, Jianfei Yang, Jiachen Li, "What Matters in Quality-Aware VLA Pretraining: A Benchmark and Empirical Study", *In submission to ICRA 2027.*

[5] Zhixu Li*, **Litian Gong***, Keqian Tang, Jingyu Yao, Wenqian Zhang, Tianze Xu, Zehao Wang, Yuping Wang, Junge Zhang, Jiachen Li, "LIBERO-PeRM: Benchmarking Personalized Robotic Manipulation", *In submission to NeurIPS 2026.*

[4] Chang Liu, Sibo Tian, **Litian Gong**, Zhiwen Fan, Jiachen Li, Xiao Liang, Minghui Zheng, "PACER: Process-Aware VLA Policy Learning from Human Corrections for Robotic Disassembly", *Conference on Robot Learning (CoRL)*, 2026.

[3] **Litian Gong**, Fatemeh Bahrani, Yutai Zhou, Amin Banayeeanzade, Jiachen Li, Erdem Bıyık, "AutoFocus-IL: VLM-based Saliency Maps for Data-Efficient Visual Imitation Learning without Extra Human Annotations", *IEEE International Conference on Robotics and Automation (ICRA)*, 2026.

[2] Zhaoyang Li*, Zhan Ling*, Yuchen Zhou, **Litian Gong**, Erdem Bıyık, Hao Su, "ORIC: Benchmarking Object Recognition in Incongruous Context for Large Vision-Language Models", *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2026.

[1] **Litian Gong**, Jiaxuan Ren, Shuoyu Jin, Shaorong Wang, "A Friendly Grid-connected Distribution System with PV and ESS for Remote Rural Residential Family", *IEEE International Conference on New Energy and Power Engineering (ICNEPE)*, 2023.

## Research Experience

**Learning and Interactive Robot Autonomy Lab** — *Jun 2025 - Present*
*Advisor: Prof. Erdem Bıyık, USC* — *Los Angeles, CA, USA*

- **AutoFocus-IL: VLM-based Saliency Maps for Data-Efficient Visual Imitation Learning**
  - Built a VLM-guided saliency framework for data-efficient visual imitation learning that produces task-relevant visual cues without human gaze annotation, using VLM and visual grounding model for context-aware object filtering and temporal saliency tracking, with saliency-guided regularization integrated into behavior cloning and validated on CARLA and a real world robot arm.
- **ORIC: Benchmarking Object Recognition in Incongruous Context for Large Vision-Language Models**
  Co-advisor: Prof. Hao Su, UCSD
  - Contributed to a benchmark for object recognition under contextual incongruity in large VLMs, implementing VLM fine-tuning and reward shaping to improve robustness of visual grounding.

**Trustworthy Autonomous Systems Lab** — *Nov 2024 - Present*
*Advisor: Prof. Jiachen Li, UC Riverside* — *Riverside, CA, USA*

- **LIBERO-PeRM: Benchmarking Personalized Robotic Manipulation**

- Co-built a benchmark for personalized robotic manipulation that scores task success and preference satisfaction separately, with a VLM-guided data generation pipeline editing BDDL scene layouts and synthesizing preference-conditioned trajectories via OMPL motion planning, and zero-shot evaluation of six VLA policies (OpenVLA-OFT, π0.5, GR00T, SmolVLA, UniVLA) alongside LoRA fine-tuning baselines.

- **AXIS-Bench: What Matters in Quality-Aware VLA Pretraining**
  - Co-developed a sim-and-real benchmark for quality-aware VLA pretraining that compares advantage-weighted reweighting, data filtering and quality-tag conditioning across π0.5, SmolVLA and X-VLA backbones, with a pipeline deriving episode- and chunk-level quality labels from recorded object and contact states and a robosuite/MuJoCo re-rendering pipeline aligning simulated cameras and workspace to a real Franka FR3.
- **PACER: Process-Aware VLA Policy Learning from Human Corrections for Robotic Disassembly**
  - Contributed to a process-aware VLA post-training framework that converts operator correction trajectories and in-process robot evidence into bounded sample weights over a flow-matching VLA's native action loss, and built the correction-collection and evaluation pipeline for real UR5e motherboard disassembly covering operator outcome labeling, case-group data splits, eligibility gating and validation-based evidence-to-weight selection.
- **Closed-Loop Customizable Human Following via Distilling Distance-Ordered Constrained Policies**
  - Built a customizable human-following framework that trains distance-ordered guiding policies with constrained reinforcement learning (CMDP, equality cost constraints) and distills them via KL-regularized policy distillation into a single preference-conditioned meta-policy with a closed-loop preference selector, deployed zero-shot on a ROSMASTER X3 mobile robot with LiDAR occupancy-grid observations in an ORCA-based crowd simulator.
- **Real-to-Sim-to-Real Regrasp Policy Learning by High-Fidelity Simulator Data Pipeline**
  - Reconstructed real scenes in IsaacLab for large-scale parallel sampling of robot-arm regrasp trajectories, with a data synthesis pipeline using stochastic sampling, cuRobo motion planning and graph search, training VLA policies purely in simulation for zero-shot sim-to-real transfer.
- **Simulation Environment and Hardware Development for Embodied AI**
  - Built embodied-AI simulation and hardware infrastructure: an indoor navigation framework with path planning, trajectory tracking, crowd simulation and ORCA collision avoidance; VLM-based grasping in cluttered desktop scenes; and Hesai LiDAR hardware configuration.

**Smart Grid Operation & Control Group** *Sep 2021 - Jun 2024*
*Advisor: Prof. Shaorong Wang, HUST* *Wuhan, China*

- **Intelligent Inspection Algorithm for Substation Robots**
  - Designed a DQN-based autonomous control policy for substation inspection robots, modeling two-wheel-drive kinematics and validating robust localization and trajectory tracking in Webots.

## Academic Service

**Journal Reviewer**
- IEEE Robotics and Automation Letters (RA-L)
- IEEE Transactions on Robotics (T-RO)

**Conference Reviewer**
- IEEE International Conference on Robotics and Automation (ICRA), 2026
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2026

## Industry Experience

**Intern Engineer** *Jun 2022 - Sep 2022*
*Sifang Electric Co., Ltd* *Wuhan, China*

- Engineered electrical equipment layouts and computed line parameters for power substations.
- Developed single-line diagrams and schematic drawings using CAD software.
- Modeled and optimized photovoltaic systems for renewable energy substations.

## Honors & Awards

- **Dean's Distinguished Award, UC Riverside** 2026
- **Outstanding Undergraduate Graduate, HUST** 2024

## Skills

**Programming & ML:** Python, C/C++, Bash, Docker, Git, LaTeX, CUDA, PyTorch, JAX
**Robotics & Simulation:** IsaacSimIsaacLab, MuJoCo, ROS1/ROS2, Gazebo, CARLA
**Hardware & Embedded:** WidowX, TIAGo, Franka, Microcontrollers, PCB design
**Language:** English (Fluent), Chinese (Native)