Litian Gong

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EDUCATION

University of California, Riverside — **Riverside, CA, USA**
Master of Science in Electrical Engineering; GPA: 3.95/4.00 — *Sept 2024 – present*

Huazhong University of Science and Technology (HUST) — **Wuhan, China**
Bachelor of Engineering in Electrical Engineering — *Sept 2020 – June 2024*

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 trustworthy, data-efficient, and generalizable learning algorithms.

PUBLICATIONS & PREPRINTS

1. **L. Gong**, F. Bahrani, A. Banayeeanzade, Y. Zhou, J. Li and E. Bıyık, "**AutoFocus-IL: VLM-based Saliency Maps for Data-Efficient Visual Imitation Learning without Extra Human Annotations**", in submission, 2026.
2. Z. Li*, Z. Ling*, Y. Zhou, **L. Gong**, E. Bıyık and H. Su, "**ORIC: Benchmarking Object Recognition in Incongruous Context for Large Vision-Language Models**", in submission, 2026.
3. **L. Gong**, J. Ren, S. Jin, and S. Wang, "**A friendly grid-connected distribution system with PV and ESS for remote rural residential family**", in *IEEE International Conference New Energy Power Engineering (ICNEPE)*, Hangzhou, China, 2023.

PATENTS

1. **L. Gong**, S. Jin, and S. Wang,"**A friendly grid-connected Grid-PV-ESS remote residential home power supply system and its working method**", in application.
2. S. Jin, **L. Gong** and S. Wang, "**Image recognition method and system based on network state index convolutional neural network set**", CN 116612338A, 2023.
3. S. Jin, S. Wang and **L. Gong**, "**Variable activation function convolutional neural network and training method thereof**", CN 114662678A, 2023.

RESEARCH EXPERIENCE

Learning and Interactive Robot Autonomy Lab — **Los Angeles, CA, USA**
Advisor: Prof. Erdem Bıyık, USC — *June 2025 – present*

- **Augmented Visual Imitation Learning with Saliency Maps (Led project)**
  - Developed AutoFocus-IL, a VLM-guided saliency framework that enhances data efficiency and generalization in visual imitation learning without human gaze supervision.
  - Implemented context-aware object filtering and temporal saliency modeling using Qwen2.5-VL and Grounding DINO to identify and track task-relevant visual cues.
  - Integrated saliency-guided regularization into behavior cloning, improving policy robustness in CARLA simulation and real-robot (WidowX) experiments.

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

- **Real-to-Sim-to-Real Regrasp Policy Learning by High-Fidelity Simulator Data Pipeline (Co-leading project)**
  - Reconstructed real scenes in IsaacLab for large-scale parallel sampling of robot-arm regrasp trajectories.
  - Designed data synthesis pipeline using stochastic sampling, Curobo motion planning, and graph algorithm.
  - Trained VLA policies purely from simulation for zero-shot sim-to-real transfer; aiming RSS 2026.

- **VLM-guided Desktop Disassembly Planning with Multi-turn RFT and Error-aware Feedback (Leading project)**
  Co-advisor: Prof. Minghui Zheng, TAMU
  - Built VLM framework generating desktop disassembly sequences from multi-view images and state.
  - Implemented multi-turn RFT and error-aware feedback for self-correcting disassembly planning.
- **Simulation Environment and Hardware Development for Embodied AI (Led project)**
  - A modular IsaacSim indoor navigation framework integrating path planning, pure-pursuit control, and real-time occupancy-grid mapping into a unified, configurable system.code
  - Built framework for human-computer interactive navigation research. code
  - Developed VLM-based object grasping in cluttered desktop environments. code
  - ROS1/2 Lidar driver configuration. code
- **Adaptive Entropy Regularization for VLM Multi-turn Reinforcement Fine-tuning**
  - Designed an adaptive entropy regularization method for GRPO multi-turn VLM reinforcement learining.
  - Implemented a LoRA-based high-efficiency RFT pipeline by improving VeRL framework.
  - Improved Sokoban success rate from 54% to 98% with faster convergence; targeting ICML 2026.

Smart Grid Operation & Control Group **Wuhan, China**
Advisor: Prof. Shaorong Wang, HUST *Sept 2021 – present*

- **Intelligent Inspection Algorithm for Substation Robots (Led project)**
  - 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.
- **PV + Energy Storage Grid-Connected System for Remote Rural Homes (Led project)**
  - Developed a Simulink-based control and planning framework for a modular PV–ESS hybrid distribution system with real-time PV optimization and phase-imbalance-tolerant three-phase inverter control.
- **Adaptive Neural Network Optimization for Image Recognition (Co-leading project)**
  - Built an entropy-driven adaptive-depth CNN framework in PyTorch that selects network depth by image complexity and optimizes the accuracy–efficiency trade-off via genetic-algorithm-tuned polynomial heads.

ACADEMIC SERVICE

Conference Reviewer

- IEEE International Conferenceon Robotics and Automation (ICRA) *2025 – present*
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) *2025 – present*

INDUSTRY EXPERIENCE

Sifang Electric Co., Ltd **Wuhan, China**
Intern Engineer *June 2022 – Sept 2022*

- 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

- **Outstanding Undergraduate Graduate, HUST** *June 2024*
- **Honorable Prize, Mathematical Contest In Modeling** *Oct 2023*
- **Second Prize, China Undergraduate Mathematical Contest in Modeling** *Feb 2022*

SKILLS

Programming & ML: Python, C/C++, CUDA, PyTorch, JAX, VeRL, MMCV
Systems & Tools: Linux/Bash, Docker, Git, LaTeX
Robotics & Simulation: ROS1/ROS2, IsaacLab, CARLA, ManiSkill, Habitat, MuJoCo, Gazebo, Webots
Hardware & Embedded Systems: WidowX, TIAGo, Arduino, ARM-based MCUs, ESP-series SoCs, LiDAR driver configuration, Altium Designer (PCB design)
Language: English (Fluent), Chinese (Native)