

# LU ZHUOYI

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## EDUCATION

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Aug 2022 – Jun 2026	<b>Nanyang Technological University, Singapore</b> Bachelor of Mechanical Engineering Robotics and Mechatronics Stream, Minor in Mathematics	(CGPA: 4.64/5.00, Top 5%)
Jun 2025 – Aug 2025	<b>Rice University, Houston, Texas, United States of America</b>	
Sep 2016 – Jun 2022	<b>Desheng School, Guangdong, China</b> Summer Research Intern @RobotPI Lab under Prof. Kaiyu Hang	International Baccalaureate Diploma (IBDP): 41/45

## SKILLS

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**Programming & Tools** Python, Anaconda/Conda, MATLAB, C/C++ , Linux Bash

**Robotics & Middleware** ROS1/2, MuJoCo, Maniskill

**Hardware & Embedded** Arduino, SolidWorks, Autodesk Fusion, CAN protocol

## RESEARCH EXPERIENCE

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### **Robotics Research Centre (RRC), NTU Singapore**

May 2024 – Present

- Research on Series-Elastic Actuator model of HEBI motor. Designed experiments for motor parameter estimation e.g., Armature (Torque-Current), Velocity Constant (Voltage-Velocity) with PWM and PID control.
- Built dual planar system consisting of two 2DOF robots and 6DOF arms with HEBI motors. Establish Tele-operation based Impedance control through Forward Kinematics and Jacobian.
- Research on Motion Planning based on Manipulation Potential under Quasi-Static Assumption. Trajectory/DMP Optimization based on Black-Box Optimization (BBO).

### **Rice University, Houston, Texas, United States of America**

Jun 2025 – Aug 2025

- Develop the codebase (e.g., Keyboard, XBOX joystick and VR Teleoperation Control) for XLeRobot: Fully Autonomous Household Dual-Arm Mobile Robot for \$660 (<https://github.com/Vector-Wangel/XLeRobot>).
- RGB/Semantic Segmentation based Reinforcement Learning (PPO) via ManiSkill and zero-shot real-world deployment. Developed based on Stones's LeRobot Sim2Real codebase.

### **Delta Electronics, Singapore**

Jan 2025 – May 2025

- Gazebo and Mujoco Simulation of quadruped jumping using virtual spring-damper system in each leg' hip and foot frame. Real World Deployment through Unitree Mujoco and ROS2.
- Integrate Mujoco with Pinocchio Library for a basic simulation framework in C++ for Manipulation/Locomotion Tasks.

## PROJECTS

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### **Undergraduate Research Program (URECA) under Prof. K Jimmy Hsia**

Jul 2023 – Jun 2024

- Developed a new frontal photopolymerization strategy for functionally-graded materials based on UV attenuation. Published in URECA Papers and Posters.

### **Kaggle Competition in Modeling earthquake richter and impacts**

Aug 2023 – Dec 2023

- Model earthquake damage grades in Nepal using location and construction data from Kaggle Dataset.
- Data cleaning, one-hot encoding, visualization, Random Forest, Logistic Regression, and KNN applied.

## PUBLICATIONS

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- Yang, L., Turlapati, S. H., **Lu, Z.**, Lv, C., & Campolo, D., “A Planning Framework for Stable Robust Multi-Contact Manipulation,” in \*Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)\*, Hangzhou, China, Oct. 2025.

## EXTRACURRICULAR ACTIVITIES

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- Xinyuan Charity Center, Guangdong, China** Aug 2020 – Aug 2021
- Organized drawing lessons for autistic children to help them adapt to school and build social relationships.

- Residential Hall Garden Leader, NTU Singapore** Aug 2023 – Present
- Led weekly gardening activities, including seed germination, watering, and tool maintenance.

## HONORS AND AWARDS

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- Dean’s List Certificate AY2023/24 (Top 5%), Mechanical Engineering, NTU Singapore
- Dean’s List Certificate AY2024/25 (Top 5%), Mechanical Engineering, NTU Singapore
- URECA Undergraduate Research Program 2023/2024 Certificate