LU ZHUOYI | Mobile No.: 88649946 | Email: lzhuoyi001@e.ntu.edu.sg

EDUCATION

Nanyang Technological University, Singapore   Aug 2022 – Jun 2026
Bachelor of Mechanical Engineering, CGPA: 4.64/5.00, top 5% First Class Honor.
Desheng School, Guangdong China: International Baccalaureate Diploma Program (IBDP): 41/45   Sep 2016 – Jun 2026

EXPERTISES:

Specializing in <u>Robotics and Mechatronics</u> Stream, with a <u>minor</u> in Mathematics
Data Analysis and Machine Learning: Object-Oriented Programming in Python, Anaconda
Robotics: C/C++, Arduino, PCAN Api, SolidWorks, Robot Operating System (ROS), MATLAB.
Languages: IELTS: Band 7. Proficient in English and Chinese (Mandarin). Native speaker of Cantonese.

PROJECTS

Undergraduate Research Program (URECA) under Prof. K Jimmy Hsia   Jul 2023 – June 2024
URECA student
- Aiming to develop a new frontal photopolymerization strategy for fabricating functionally-graded material based on UV light attenuation within the resin. The result is published in form of URECA Papers and Posters.
- Familiarized with Linux OS and ROS-noetic for Unitree Go1 Robot simulation through Gazebo. Sending control command to real robot from ROS to do low-level and high-level control through Unitree packages.

MA2012 Arduino Group Project on Defensive castle
Aug 2023 – Dec 2023
Leader and Programmer
- Led a team to design and program a defensive castle system integrating a lidar sensor for 360° cyclic detection, triggering interrupts for laser to locate and shoot incomers upon object detection.
- Developed a double-validation security system using keypad and potentiometer inputs, with feedback on an LCD screen.

MA0218 Data analysis & Machine learning Project   Aug 2023 – Dec 2023
Leader and Programmer
- Predicting damage grade (low/medium/almost complete destruction) to buildings caused by "The 2015 Gorkha earthquake in Nepal" based on aspects of building location and construction.
- Beginning with data cleaning, One-Hot encoding and data visualization. Random forest, logistic regression and K-Nearest Neighbors algorithms are then used for training and prediction, with overall accuracies analyzed.

WORK EXPERIENCE

Robotics Research Centre (RRC) | NTU Singapore   May 2024 – Present
Internship – Motor Drive and Impedance Control
- Research on the Electromechanical model of a Series-Elastic Actuator. By direct PWM and PID control, several experiments were designed to estimate the motor parameters through MATLAB.
- Build a dual planar arm and a 6DOF arm using HEBI motors. Test and validate Impedance Control with joystick inputs on 2D planar space using a dual-arm and 3D space using a 6DOF arm setup, through Teleoperation.

Delta Electronics | Singapore   Jan 2025 – Present
Internship – Mobile Robot
- Familiarized with Can Protocol and PCAN Api to set communication between wireless charger and the AGV.
- 3D and 2D map construction and cleaning using 3D Lidar, and learning ROS Nav2 for AGV SLAM and navigation.
- Simulate Quadruple jumping in Mujoco, by a virtual spring-damper system attached between the hip and foot frame.

EXTRACURRICULAR ACTIVITIES

Xinyuan Charity Center | Guangdong, China

Aug 2020 – Aug 2021

- Organizing drawing lessons for autistic children, to help these kids adapt school life and construct social relationships.

Residential Hall Garden Leader | NTU, Singapore

Aug 2023 – Present

- Led weekly gardening activities, including seed germination, watering schedules, and tool maintenance

HONORS AND AWARDS

- Dean's list certificate in AY2023/24, for excellent achievements in Mechanical Engineering programme, NTU Singapore.
- URECA Undergraduate Research Program 2023/2024 certificate awarded for commendable research accomplishments.