Leong Ko Ryan Jasper

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Singapore Citizen — eligible for H-1B1 (US–Singapore FTA), a no-lottery work visa similar to TN

Education

National University of Singapore Aug 2023 – Aug 2026
Bachelor of Engineering (Honors), Major in Computer Engineering *Singapore*

- GPA: 4.88/5.0 | Dean's List; Enrolled under the Engineering Scholars Program

Stanford University Apr 2025 – Jun 2025
Visiting Student, Spring Quarter (Exchange) *Stanford, CA*

Experience

Embedded / Robotics SWE Jan 2025 – Present
ZeroshotData *San Francisco, CA*

- Designed and assembled PCBs for EMF tracking emitter/receiver system using KiCad, programming STM32 microcontrollers; designed Helmholtz cage in OnShape/CAD with SCPI automation on OrangePi
- Achieved 1cm positional and 5-degree angular precision for 6-DOF tracking system through custom hardware design and machine learning model training
- Optimized ORB-SLAM3 for stereo camera setups, implementing sensor fusion with IMU data to enable robust real-time localization on embedded platforms
- Set up Piper 6 DOF robotic arms and Raspberry Pi Zeros for automated training data collection and puppet gripper control, enabling large-scale dataset generation for deep learning models
- Integrated OAK-D-WIDE stereo cameras with DepthAI C++ bindings, implementing timestamp drift correction and container lifecycle management for high-bitrate H.264 streams
- Performed multi-camera intrinsic calibration and joint calibration with sensor integration using Kalibr to ensure high-fidelity stereo vision for the OAK-D system
- Built battery monitoring service in C++ with I²C debugging and MQTT publishing; developed OTA firmware update framework for Wi-Fi-based microcontroller updates

Embedded Engineer Intern May 2024 – Aug 2024
*A*STAR — National Metrology Centre* *Singapore*

- Engineered frequency synthesizer using Verilog and GOWIN IP cores on Tang Nano 20K, achieving 6.5–9.0 ns precision; developed autonomous data-measurement web server using Python on OrangePi 3B+
- Resolved Linux kernel driver compatibility issues for NI-USB-HS GPIB interface on OrangePi architecture; built robust Python middleware for instrument control

Projects

Flair AI | *Next.js, Python, OpenAI API* 2025

- Developed AI writing assistant for non-profit 826 Valencia, winning 1st place ($1,500) at AI for Good Hackathon; provides automated grading and feedback to support 400 students

Remote-controlled Robot with SLAM | *Bare-metal Programming, C++, ROS2* Mar 2024 – Apr 2024

- Designed ROS 2-based robotic system integrating LiDAR, motor control, and real-time mapping with sensor fusion for autonomous navigation

RTX RTOS Car | *Real-Time OS, C, FRDM KL25Z, ESP32, KEIL RTX* 2024

- Developed multi-threaded real-time control system for robotic car using **KEIL RTX RTOS** with priority-based scheduling for deterministic motor control
- Integrated **ESP32** via UART for Bluetooth communication, enabling low-latency remote control with a PS4 controller

FPGA Street Fighter | *Verilog, Basys 3 FPGA, Digital Design* 2024

- Architected 2-player arcade game on **Basys 3 FPGA** using **Verilog**; implemented custom drivers for OLED display, audio PWM generation, and UART-based multiplayer synchronization

Skills

Embedded & Hardware: Verilog/SystemVerilog, FPGA (Basys-3, Tang Nano), Microcontrollers (STM32, ESP32, Arduino, Raspberry Pi, Raspberry Pi Zero, OrangePi), FreeRTOS, I²C, SPI, CAN, UVC, RTL design, KiCad, PCB design
Robotics & Systems: C/C++, ROS 2, SLAM, LiDAR, Linux, Docker, Git, Real-time systems, MQTT, DepthAI, 6 DOF arms
Test & Instrumentation: SCPI, GPIB/VISA, lab automation, measurement pipelines
CAD & Simulation: OnShape, CAD, Electromagnetic simulation
Computer Vision & Cloud: OpenCV, FFmpeg, Python, Kalibr, GCP, Kubernetes, Terraform