Kyle Hu

San Diego, CA · kylehu2000@gmail.com · kshu082 · falafel72 · https://falafel72.github.io

Education

University of California, San Diego — San Diego, CA
MS, Intelligent Systems, Robotics and Control — Sep 2022 - Jun 2024
BS, Computer Engineering — Sep 2018 - Jun 2022

Work Experience

Engineers for Exploration — San Diego, CA
Research Assistant, Project Co-lead — February 2022 - June 2024
- Managed team of 10 engineers to design the first citizen science platform for gathering fish population data using off-the-shelf components
- Pivoted from stereo-camera approach to single camera and laser system calibrated with **Gauss Newton** optimization
- Architected and developed software pipeline in **Python** to automate image processing and sensor calibration

MaXentric Technologies — San Diego, CA
Engineering Intern — June 2022 - September 2022
- Implemented high-level digital signal processing algorithms in **C** for a radar-based non-contact vitals monitor
- Increased speed of convergence for estimate of heart and respiration rate to ground truth by 50% by heavily refactoring existing radar codebase to be modular and extensible with extensive unit tests
- Collaborated with algorithms, GUI and radar teams to ensure efficiency of the data processing pipeline

Amazon — San Diego, CA
Software Development Engineering Intern — June 2021 - September 2021
- End-to-end design and implementation of a favorites list widget on the grocery cart page (**AWS** and **Spring**)
- Led cost/benefit analysis to identify appropriate **AWS** services (Lambda w/ Dynamo DB Table), collaborated with team members to modify owned microservices
- Allows users to save commonly bought items, reducing time to cart for repeat purchases by 70%

HP — San Diego, CA
Software Engineering Intern — June 2020 - September 2020
- Built an internal 3D measurement tool for foot measurements in **C++** using **CGAL**, **VTK** and **Qt**
- Owned multi-threaded geodesic path searching, and Levenberg-Marquardt approach for model alignment
- Digitized the measurement pipeline for custom 3D insoles, reducing time from several hours to several minutes

Projects

Serial Driver
Firmware — February 2022 - June 2022
- Implemented a serial driver for an **STM32** chip to facilitate communication over **UART**
- Ring buffer memory updated using **DMA** triggered by **UART** interrupt to store data as quickly as possible
- Part of sleep timer firmware to drive a low power radio telemetry system for tracking collared lizards

Robomaster
Firmware, Circuit Design — July 2017 - August 2019
- Implemented control firmware on **STM32** chip for a 2-DOF turret mounted on a 4-wheel robot
- Angle control of motors achieved using sensor data from **encoders** and **IMU** over **UART** and **I2C** with **PID**
- Designed and soldered power circuit with supercaps in parallel with battery to circumvent power restrictions

Leadership and Communication

ECE 15 (Engineering Computation)
Teaching Assistant — September 2022 - March 2024
- Guided students through fundamentals of **C**, including variables, control flow, pointers, and process memory
- Held office hours, provided assistance with assignments, and graded exams for up to 250 students per class

ACM UCSD
Cofounder & Technical Director — May 2019 - June 2021
- Co-founded the largest engineering organization at UCSD, currently at over 800 members
- Hosted technical workshops on topics including web development (**React**, **Node.js**, **MongoDB**), **ROS**, and **Haskell**

Skills

Programming Languages:	C/C++, Python, Java, MATLAB, JavaScript, Haskell, Rust
Software Tools:	Git, Bash, Linux, NumPy, Jupyter, AWS, DynamoDB, CUDA, ROS, OpenCV, CGAL, Qt
Embedded Skills:	STM32, STM32CubeIDE, SystemVerilog, I2C, UART, SPI, DMA
Hardware Tools:	Multimeter, Oscilloscope, Soldering, Solidworks, 3D Printing, Laser Cutting