OLIVIA LOH

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EDUCATION

University of California, Los Angeles (UCLA) Expected Graduation: 06/2022
B.S. Computer Engineering, Minor in Film, Television, Digital Media (FTVDM) GPA: 3.641
Academic Memberships: IEEE – Eta Kappa Nu (HKN) Honor Society, Upsilon Pi Epsilon (UPE) Honor Society

AREAS OF INTEREST

Controls and Optimization, Robotics, Machine Learning, Embedded Systems, Internet of Things, Film and Digital Media

TECHNICAL SKILLS

Programming Languages: C/C++, Python, Java, HTML, CSS, Javascript, Verilog, Bash, x86-64 Assembly Language, SQL, PHP
Software/Dev Tools: Git, Arduino, Raspberry Pi, MATLAB, LTSpice, Eagle (EDA), Cadence Virtuoso (EDA), Solidworks (CAD)

RELEVANT COURSEWORK

Principles of Feedback Control, Applied & Interactive Machine Learning, Fundamentals of Artificial Intelligence, Systems Design, Fundamentals of Embedded Networked Systems, Data Communications & Telecommunication Networks

RESEARCH EXPERIENCE

UCLA Connection Lab, *Internet Research Initiative Undergraduate Researcher* 9/2021-present

- Awarded $7500 grant as **Internet Research Initiative Prize Winner**
- Research the applications of gesture-controlled automation as a new form of teleoperation for remote filmmaking to help mitigate the effects of social distancing on film production
- Investigate optimal vision-based hand gesture recognition models for specific filmmaking gestures
- Develop a prototype for an embedded filmmaking system that can automate equipment on a film set remotely as indicated by a filmmaker's hand gestures through a PC webcam

PROFESSIONAL EXPERIENCE

Medtronic, *Software Engineering Summer Intern* 6/2021-8/2021

- Designed and implemented a Python-based QView GUI for debugging insulin-delivery pump's firmware
- Collaborated with co-workers from various sub-teams to customize an appropriate front-end for the GUI
- Researched software profiling tools to provide performance metrics for QP Real-Time Embedded Framework

Outcome Driven Innovation (ODI), *Student Intern* 8/2020-10/2020

- Implemented bad pixels algorithms to improve video quality of existing thermal imaging software (Python)
- Programmed GUI for auto-data collection on QT desktop app (C++) for research and analysis purposes

6/2017-5/2018

- Utilized Linux commands to flash firmware image into enterprise water leak detection IoT router and test the internet communication through Ethernet, cell-modem, public switched telephone network modem
- Soldered electronics components on printed circuit board (PCB), and assembled electronics product

TEACHING AND MENTORING EXPERIENCE

ECE 3 (Intro to Electrical Engineering Course), *Mentor* 3/2021-6/2021, 9/2020-12/2020, 3/2020-6/2020

- Guided students through weekly labs and operating oscilloscopes, multimeters, and fundamental lab equipment
- Facilitated students' development of the course's final project, a PID-controlled line-following car
- Aided Professor Dennis Briggs in pioneering new lab experiments and curriculum changes to ECE 3 Lab Manual and capstone project with other mentors

Transfer Bridge to UCLA Samueli Engineering, *Undergraduate Mentor* 6/2020-9/2020, 6/2019-9/2019

- Coached incoming transfer students in a rigorous engineering bootcamp and two-day hackathon designed to help them adjust to academics and life as an UCLA engineering student

- Led CS Mentor Team in preparing curriculum and lesson plans for 6 three-hour weekly review workshops on data structures and object-oriented programming in C++
- Planned for and conducted 2 two-hour Arduino workshops with hardware-setup and programming instructions for 5 projects to prepare students with microcontroller, electronics, and IoT knowledge for a culminating hackathon
- Designed hack prototypes and hack judging rubric for 2 hackathons (2019: Bluetooth-controlled robotic arm, 2020: Autonomous object-detection and mapping car)

EXTRACURRICULAR ACTIVITIES

UCLA IEEE (Institute of Electrical and Electronics Engineers) Chapter, *Member* 9/2018-present

Aircopter Project (9/2020-6/2021):
- Researched electronics components for sensors and motors used in building a mini quadcopter
- Designed schematic and PCB layout for a quadcopter in Eagle EDA with three other team members
- Programmed PID control algorithm for quadcopter using IMU readings in the STM32Cube platform (C/C++)

Micromouse Project (9/2019-3/2020):
- Developed a Micromouse, an automated car that solves a 16X16 maze, with two other teammates
- Implemented PID control algorithm for IR sensors on Micromouse using STM32Cube platform (C/C++)

Open Project Space (9/2018-6/2019):
- Formulated feedback loop algorithm for IMU gyroscope sensors to tilt-control a car using Arduino
- Solved electrical engineering design challenges with Arduino microcontroller, hardware components (such as the 555 timer, H-bridge, radio, and IMU) and circuit theory knowledge

ENGINEERING PROJECTS

ReadMe, *ECE 180DA: Systems Design Group Project* 9/2021-12/2021
- Developed a text reader that robotically flips through textbooks and reads it to visually impaired people
- Trained and deployed a Tensorflow Lite model that classifies hand gestures using IMU values, and advertised gestures to page-flipper through BLE, so users can flip pages forward and backwards remotely with gestures

MaskBot, *ECE M119: Fundamentals of Embedded Networked Systems Group Project* 12/2021
- Built an autonomous robot that tracks down unmasked users and dispenses a mask to them
- Designed an algorithm that enables the robot to pan towards and approach an unmasked user with a camera sensor by utilizing pixel distance from the bounding box of unmasked face to the center of OpenCV video frame.

Sourdough Tracker, *ECE 118: Applied and Interactive Machine Learning Group Project* 6/2021
- Implemented a sourdough tracker that employs a Tensorflow model to determine the right amount of flour, water, starter for growing user's sourdough starter
- Created an explainable web app using HTML/CSS and Javascript, applying Explainable AI (XAI) principles
- Sampled real-time humidity and rise sensor readings using Arduino to update ML model with more training data

Fast Tool Servo System, *ECE 141: Principles of Feedback Control Project* 3/2021
- Applied control theories to design a Fast Tool Servo system's position controller that reduces steady-state tracking errors in the presence of sensor noise using MATLAB's Control System Toolbox
- Designed a cascaded PI and lag compensator that achieved 0.2nm and 0.5nm steady state error for project-specified step and sinusoidal inputs respectively, surpassing project requirements

myPlantMonitor, *IDEA Hacks 2021 Project,* ***First Place Hackathon Winner in TI-Kit Category*** 1/2021
- Developed a fully autonomous plant monitoring system that moves user's plant towards sunlight and regulates soil moisture levels within 36 hours
- Employed a feedback control loop using light sensors to move plant closer towards sunlight and created an IoT app using a TI Launchpad hosted web server to remind users to water plant when moisture sensor readings are low

Line Follower Car, *ECE 3: Intro to Electrical Engineering Group Project* 6/2019
- Programmed PID control algorithms in Energia (C++ based) for a line-following car, which traversed a curved 2.5-meter race track under 35 seconds, utilizing IR sensor feedback and encoder feedback values