Karthik Dharmarajan

kdharmarajan@berkeley.edu | kdharmarajandev.github.io | LinkedIn: https://www.linkedin.com/in/karthik-dharmarajan/
GitHub: https://github.com/KDharmarajanDev

EDUCATION

University of California, Berkeley **Expected May 2023**
Bachelor's of Science in Electrical Engineering and Computer Sciences
GPA: 3.96

Related Coursework: Efficient Algorithms and Intractable Problems, Data Structures, Intro to Robotics, Machine Structures, Structure and Interpretation of Computer Programs, Discrete Mathematics and Probability Theory

TECHNICAL SKILLS

Programming: Java (4 years), Python (3 years), MATLAB (2 years), C++ (2 years), JavaScript (2 years)
Technologies: OpenCV (2 years), ROS (1 year), NodeJS (1 year), React/React-Native (1 year), MongoDB (1 year)

EXPERIENCE

UC Berkeley Automation Laboratory, Undergraduate Student Researcher **August 2021 - Present**
• Integrating H.264 codec for video transmission with FogROS, a framework that seamlessly provides existing local ROS applications with computational resources in the cloud

Hybrid Systems Laboratory, Undergraduate Student Researcher **July 2021 - Present**
• Implemented core functionality for shadow prediction in Recon, a C++ based ground station that guides multiple drones for shadow-free field imaging
• Ported Pytorch trained LSTM network into C++ for cloud shadow prediction
• Integrated DARP (multi-agent area division algorithm) with an individual coverage path planning algorithm to create drone paths that cover an entire field

UC Berkeley | Lawrence Berkeley National Laboratory, Undergrad Software Researcher **September 2020 - Present**
• Created powerful abstractions on a server to interface and control multiple different drones with different virtual reality interfaces using roslibpy and websockets
• Extended project support for PX4 and ArduPilot based drones by creating a hexacopter simulation in Gazebo in conjunction with MAVROS
• Integrated custom drone software onto DJI M210's for beyond line of sight control using a VR interface and a server

UC Berkeley Department of Plant and Microbial Biology, Software Researcher **February 2021 - May 2021**
• Improved an automated plant imaging system that detects plant immune response to Pseudomonas syringae
• Programmed motor movement calibration by using onboard cameras and ArUco Markers

PROJECTS

Cornucopia - Grocery Expiration Notification App (Summer 2021)
• Cornucopia is a full stack React Native grocery expiration notification app that supports both iOS and Android
• Node.JS backend is deployed using Docker and AWS ECS to AWS EC2 instances
• AWS S3 stores grocery images and MongoDB stores general grocery data
• User authentication is handled via AWS Cognito

Gitlet (Spring 2021)
• A custom version control system similar to Git that allows staging, committing, and checking out of files using blobs
• Creating and merging branches are supported by using BFS to find the split point of two branches in its commit history