KARAN MAHESH

100 Jersey Street Apt. 103, Boston, MA 02215

908-512-2070 ⋄ maheshk@berkeley.edu ⋄ www.linkedin.com/in/karan-mahesh/

EDUCATION

University of California, Berkeley

Bachelor of Science, Major: Mechanical Engineering, Minor: Aerospace Engineering

GPA: 3.8/4.0

Relevant Coursework: Linear Algebra and Differential Equations, Dynamic Systems and Feedback, Introduction to Machine Learning, Control of Unmanned Aerial Vehicles, Model Predictive Control, Stochastic Estimation and Control, Engineering Aerodynamics, Introduction to Analysis, Nonlinear Control

WORK AND RESEARCH EXPERIENCE

High Performance Robotics Lab, UC Berkeley　　　　　　　　　　April 2021 - May 2022

Undergraduate Robotics Researcher

· Developed a Bayesian Optimization algorithm to optimize speed and sideslip for efficient trajectory generation
· Studied the effect of Gaussian Process hyperparameters on the algorithms ability to explore, exploit, and optimize an unknown battery consumption function

Intel Corporation, Internet of Things Group　　　　　　　　　June 2021 - December 2021

Deep Learning Engineering Intern

· Developed a drone application of Intel's OpenVINO model optimizer
· Developed a vision-based UAV object tracking system based on a YOLOv2 object detection model

Computational Biology Group, University of Oxford　　　　　　June 2020 - December 2020

Undergraduate Machine Learning Researcher

· Studying the effect of ODE integrator inaccuracies on parameter inference biases for time-series models
· Analyzing the Johns Hopkins University COVID-19 dataset to assess the accuracy of current statistical and machine learning models in their prediction of the infectious nature of the coronavirus

Theoretical and Applied Fluid Dynamics Lab, UC Berkeley　　　September 2019 - May 2020

Undergraduate Robotics Researcher

· Using model-free reinforcement learning to autonomously operate a swarm of underwater drones with the goal of improving high-speed communication in underwater applications
· Developed proficiency in electronics integration, signal theory, controls, dynamics, manufacturing, and fabrication to create the prototype and integrate it into the reinforcement learning workflow

Intel Corporation, Artificial Intelligence Products Group　　　June 2019 - August 2019

Artificial Intelligence Intern

· Optimized various deep learning models with Intel's Neural Network Distiller, specifically designed to handle the workloads for image classification and natural language processing
· Developed a reinforcement learning framework to quantize models based on hardware feedback such as latency, memory used, and accuracy

NASA Ames Research Center　　　　　　　　　　　　　　　June 2019 - August 2019

Machine Learning Research Mentor

· Mentor as a part of NASA Frontier Development Lab, researching artificial intelligence in space science with PhD students and industry professionals from NASA, Intel AI, and Google Cloud
· Working to expand the capabilities of the Solar Dynamics Observatory (SDO) by developing neural networks to model the degradation of imaging technology aboard the SDO satellite

PROJECTS

Machine Learning for Atmospheric Parameter Extraction
The goal of this project was to train data on planetary spectra information from NASA's Planetary Spectra Generator and train a neural network to predict atmospheric parameters.

Unmanned Aerial Vehicle
In this project, I designed the controls required to autonomously navigate a quadcopter to a specified point. This project required a thorough understanding of aerodynamics, controls systems, software development, and engineering design.

Rocket Model Predictive Control
Here, I am designing a model predictive controller that controls the landing of an under-actuated rocket to a specified landing zone. Special focus is given to tuning controller parameters for optimal performance and bounding final position error.

Bicycle State Estimation
In my stochastic estimation class, I developed a particle filter to estimate the position and heading of a bicycle fitted with noisy sensors. I leveraged my knowledge of Kalman Filters and other state estimation techniques to design and implement a top-performing algorithm.

Biometric Door Lock
As part of my mechatronics design class, I developed a door lock attachment with keypad integration and a facial recognition system to provide security to a standard bedroom lock.

TECHNICAL SKILLS

Modeling and Simulation	AutoCad, SolidWorks, Fusion360, Simulink
Software and Tools	C/C++, Python, TensorFlow, PyTorch, Java, MATLAB, Linux

AWARDS AND HONORS

Jeopardy! National College Championship Participant   Early 2022

Selected as 1 of 3 alternates from over 26,000 college students for the new primetime edition of _Jeopardy!_

Intel Internet of Things Group Excellence Award   Summer 2021

Recognized as top contributor for development of novel use cases of Intel's OpenVINO software

Pi Tau Sigma Member   Fall 2019

Chosen as a member of the UC Berkeley chapter of the International Mechanical Engineering Honor Society due to high academic standing

H.U. Lee Memorial Foundation Scholarship   Fall 2018

Granted scholarship for high educational achievement and excellence in martial arts. Recognized for earning 3rd place at American Taekwondo Association World Championships