KARAN MAHESH

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EDUCATION

University of California, Berkeley **2018-2022**
Bachelor of Science, Major: Mechanical Engineering, Minor: Aerospace Engineering
GPA: 3.75/4.00
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

RESEARCH EXPERIENCE

Aurora Flight Sciences, Cambridge MA August 2022 - Present
AI/ML Research Scientist

- Working in the Robotics group on innovative autonomous flight technologies at the junction of industry and research.
- Developed high-speed LIDAR processing and visualization algorithms for Wisk Aero's Landing Hazard Avoidance effort, concluding in successful flight tests with our algorithms onboard
- Researching and testing an introspective learning and control framework in a combined effort with MIT's Aerospace Controls Lab and Marine Autonomy Lab, with funding from DARPA

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

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

WORK EXPERIENCE

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

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

TECHNICAL PRESENTATIONS

Boeing Technical Excellence Conference, Virtual Presentation: Fast Adaptive Learning and Control Online (FALCON), May 2023.

PREPRINTS AND MANUSCRIPTS IN PROGRESS

Conference Papers

C1. N. Rober*, **K. Mahesh***, T. M. Paine, M. L. Greene, S. Lee, S. T. Monteiro, M. R. Benjamin, and J. P. How. "Online Data-Driven Safety Certification for Systems with Uncertain Dynamics." *Submitted to International Conference on Robotics and Automation (ICRA)*, Yokohama, Japan, May 2024.

Journal Articles

J1. M. L. Greene*, **K. Mahesh***, T. M. Paine*, N. Rober, S. Lee, S. T. Monteiro, M. R. Benjamin, and J. P. How. "Adaptive Control and Online Forward Reachability for Autonomous Marine Vehicles with Unmodeled Disturbances." *In preparation for Journal of Field Robotics (JFR)*, 2024.

* indicates equal contribution

AWARDS AND HONORS

Dean's List, UC Berkeley College of Engineering Spring 2022

University of Oxford Summer Internship Grant Summer 2020

Awarded competitive research grant for COVID-19 machine learning research due to its high applicability and novel research methods

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

DIVERSITY, EQUITY, AND INCLUSION INITIATIVES

Boeing Employee Ability Awareness Association (BEAAA)
As a founding member of Aurora Flight Sciences' chapter of BEAAA, I aim to create an inclusive workplace environment for people with disabilities through education and service initiatives.

Disability Rights, Education, Activism, and Mentoring (DREAM) at UC Berkeley
Duirng my time at Berkeley, I was involved with DREAM to provide mentoring to people with disabilities in the UC Berkeley community and the larger Berkeley community, as well as learning from speakers and disability rights activists.