Karthik Dharmarajan

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Education

University of California, Berkeley   **Aug. 2020 – May 2023**
Bachelor's of Science in Electrical Engineering and Computer Sciences   *Berkeley, CA*
GPA 3.96

Experience

AUTOLab - University of California, Berkeley   **August 2021 – Present**
Undergraduate Research Assistant   *Berkeley, CA*
- Reduced image transfer round trip latency by 97% for robot to cloud video streaming at 29 FPS using H.264
- Integrated digital twin simulator with surgical robot to perform block transfers with a 90% transfer success rate
- Tested digital twin under 1-100s+ latencies and 10-25% packet loss, resulting in a transfer success rate of 86% (Paper accepted to IEEE CASE 2022 conference as a first co-author)
- Implemented method of sending actions and receiving camera images over SSH for assisting robot fleet learning (Paper accepted to CoRL 2022)

Amazon Web Services   **September 2022 – December 2022**
Software Development Engineering Intern   *Remote*
- Developed a business intelligence pipeline for understanding AWS Glue Data Catalog usage on a per customer basis
- Deployed AWS Lambdas for extracting metrics from 10,000,000+ API calls a day across 25+ regions

Roblox   **May 2022 – August 2022**
Software Engineering Intern   *San Mateo, CA*
- Spearheaded development of Python tool that audits 1000+ sets of AWS firewall rules for network security
- Developed intuitive dashboard in Kibana to visualize 10000+ audit records stored in Elasticsearch
- Implemented program that examines network security of 10000+ AWS EC2 instances across 59+ accounts in a SIEM

Hybrid Systems Lab - University of California, Berkeley   **June 2021 – June 2022**
Undergraduate Research Assistant   *Berkeley, CA*
- Decreased CPU usage of a Pytorch shadow prediction LSTM model by 250% when porting it to a C++ CUDA version
- Integrated an area division algorithm with an individual coverage planning algorithm for multiple drones in C++

Projects

Shipmate | *Go, Docker, AWS, Git*   **May 2022 – Present**
- Architected entire backend system for a yacht service lookup app in AWS using microservices
- Deployed Golang microservices with Github actions, Docker containers, and ECS, reducing commands by 40%
- Secured backend by giving least privilege access for resources using AWS IAM policies, VPC ACLs, and security groups
- Implemented user accounts with AWS Cognito for authentication, S3, DynamoDB for information persistence

Cornucopia | *AWS, React Native, MongoDB, Git, Docker, Node.js*   **June 2021 – December 2021**
- Constructed a full stack React Native app that notifies users when groceries are about to expire
- Secured user authentication by integrating AWS Cognito and federated identity providers such as Google
- Instituted efficient pipelines for storing and retrieving data from AWS S3 and MongoDB

Technical Skills

Languages: Java, Python, C/C++, Go, JavaScript, HTML/CSS
Frameworks/Technologies: AWS, Elasticsearch, Kentik, Lacework, NetBox, ROS, ROS2, Node.js, React, MongoDB
Developer Tools: Git, Docker, VS Code, Confluence, Jira
Libraries: Pytorch, Numpy, Matplotlib, OpenCV

Relevant Coursework

- Operating Systems
- Data Structures
- Computer Security
- Secure Systems from Decentralized Trust
- Machine Structures
- Efficient Algorithms and Intractable Problems
- Machine Learning
- Deep Reinforcement Learning
- Neural Networks
- Artificial Intelligence
- Intro to Robotics