Karen Mkrtchyan

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Skills

Programming Languages: C/C++, Python, JavaScript/TypeScript, MATLAB

Web Stack: React, Firebase, Webpack, Node.js, docker

Micro-controllers and Integrated Circuits: Arduino, Robotics, ROS2, Raspberry PI

Experience

Fermi National Accelerator Lab Chicago, IL

Software engineering Intern *Jun 2024 – Aug 2024, Full Time*

- Simulated Neutrino interactions inside a Liquid Argon Time Projection Chamber (LArTPC) with C++ using LArSoft and Root frameworks.
- Used Root framework to compare simulation to data and modified simulated LArTPC wire signals to decrease simulation error by 8%
- Summarized findings in a research paper and poster presentation to panel of scientists.

Bionaut Labs Culver City, CA

Systems Engineering Intern *Dec 2023 – Present, Full-time*

- Designed, developed, and executed system tests for a magnetic propulsion system wirelessly controlling a surgical microbot, increasing the number of tests completed and passed by 40% each month
- Programmed test automation, data analysis and visualization in Python using Numpy, Matplotlib and SciPy, decreasing validation testing time by 30% and communicating data with investors, executives and the FDA
- Developed, trained, and tested a neural network machine vision model with ROS2 and Python used for detecting and tracking the microbot inside a patient's brain, decreasing orientation detection error by 30%

StandardVision Glendale, CA

Mechanical Engineering Intern *June 2023 – Sept. 2023, Full-time*

- Developed intricate 3D models of mechanical components and assemblies using Solid Works, streamlining product development process and reducing prototyping time by 40%
- Generated detailed engineering drawings, including assembly instructions, GD&T, and material speciations resulting in a 20% reduction in manufacturing time and scrap parts
- Design and install multi-ton LED screens on buildings in LA

Projects

RoadSpice (Live Link)

- Build an app that generates perfect road trips by integrating Google Maps and Gemini AI to find hidden gems. Programmed communication between the application front end, the Gemini API, and the Google Maps API using React.

2023 FRC Robot

- Brainstormed, designed, manufactured, and tested a telescoping arm with a rotating end effector used to manipulate game pieces. Integrated arm with base of robot giving it 160 rotation degrees of freedom. Designed innovative propulsion system to allow one motor to telescope the arm out by 5 feet in under 1 second.

Robotic Dog

- Designed, manufactured, and programmed a quadrupedal robot with 12 degrees of freedom. Integrated an esp 32 microprocessor to control 12 servos to enable walking using a custom walking algorithm in C++.

Education

University of Southern California Los Angeles, USA

BS. in Electrical and Computer Engineering; Minor in Computer Science ***GPA: 3.8/4.00*** *Sep 2023 – Jun 2027*

Relevant coursework: Calculus I-II-III, Physics I-II-III, Chem I, Linear Alg. and Diff. Eq, Advanced OOP in C++, Data Structures and Algorithms, Program structures

Relevant Certificates: CS50-Harvard, Full stack open-Univ. of Helsinki, Algorithms: Design and Analysis-Stanford