Sudharshan Kannan

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EDUCATION

University of British Columbia | Sep. 2021 – Apr. 2026 (Expected)
Bachelor of Applied Science in Engineering Physics | *Vancouver, BC*

EXPERIENCE

Electrical Division Member | Sept 2023 – August 2024
UBC Supermileage | *Vancouver, BC*
- Used KiCAD and Git to design and spec a Safety PCB on a Hydrogen Fuel Cell powered vehicle, ensuring that the driver remains unharmed in case of equipment failure.
- PCB responsible for ensuring safety of the driver by cutting off the power supply from the fuel cell if any spikes in power are detected, or if it receives a signal from a separate control board.

Manufacturing and Production Co-op | Jan 2023 – May 2023
Moment Energy | *Coquitlam, BC*
- Efficiently and accurately produced electrical assemblies for second-life energy storage systems, and supported development of test benches.
- Performed hands-on work soldering and harnessing electrical systems and PCBs, with all finished harnesses passing QA.

PROJECTS

Portfolio | *HTML, CSS, JavaScript, Github Pages* | 2024
- Created a personal portfolio from scratch using HTML, CSS, and JavaScript to display my various projects.
- Created listeners with JavaScript to respond to user input, such as scrolling, and to create moving buttons.

Simulated Driving Detective | *AI, Machine Learning, Computer Vision, Python, ROS, Gazebo, CNNs* | 2024
- Programmed a simulated car driving on a competition course in Gazebo, using ROS nodes to communicate with the simulation with the car placing in the top 3 vehicles in competition.
- Created a Convolutional Neural Network (CNN) using TensorFlow in order to recognize letters on signposts throughout the track, which worked with 100% accuracy during the competition.
- Used image processing and computer vision techniques from OpenCV to process camera input in order to stay on the track, read signs, and avoid obstacles.

Mario Kart Robot | *Circuit Design, Microcontrollers, CAD, Soldering* | 2023
- In a group, built an autonomous robot that would follow electrical tape to compete in a head to head race.
- Designed, implemented, and debugged all circuits and harnesses in the robot, including H-bridges, power distribution, and signal sensing and processing circuits.
- Controlled circuits and sensors through use of a STM-32 microcontroller.

Servo Control Loop Circuit | *Circuit Analysis, Circuit Design, Lab Equipment* | 2022
- Designed, implemented, and debugged a servo control loop circuit that used feedback to precisely control the speed of a servo motor.
- Circuit featured various components such as Schmitt-Trigger Inverters, D-Latches, Op-Amps, counter chips, and various types of transistors.
- Performed debugging and analysis through the use of oscilloscopes, function generators, and multimeters.

Cardboard Claw | *Arduino, CAD, Sonar, Servos* | 2022
- Played an integral part of a team in order to design and build an automated mechatronic claw capable of lifting various small objects using cardboard, arduino boards, sensors, and servo motors.
- Claw was able to lift items with diverse shapes, from a golf ball to a piece of paper.
- Used an Arduino for automation, with the sonar sensor detecting when the claw has grasped the object.

TECHNICAL SKILLS

Languages: Python, C++, JavaScript, Java, HTML, CSS, Git
Software: Scripting, Machine Learning, Testing, Computer Vision
Electrical: KiCad, LTSpice, Circuit Design, Soldering, Harnessing