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*

- Designed and specced Safety PCB on a Hydrogen Fuel Cell powered vehicle.
- 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.
- Gained familiarity with KiCAD.
- Version control and file sharing performed through Git.

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.
- Performed hands-on work soldering and harnessing electrical systems, with all finished harnesses passing QA.
- Built and debugged various PCBs that were incorporated into test benches and final products.
- Supported development of test benches and helped perform quality control on manufactured parts.

Projects

Simulated Driving Detective | *AI, Machine Learning, Linux, Python, ROS, Gazebo, CNN* | 2024

- Programmed a simulated car driving on a competition course in Gazebo, 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.

Autonomous Racing Robot | *Circuit Design, Microcontrollers, H-Bridges, Motors, ICs, Harnessing* | 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 | *Schmitt-Trigger Inverters, D-Latches, Op-Amps, Servos* | 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 servos to control the opening and closing mechanisms in the claw.
- 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
Mechanical: CAD, Machine Design