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*

PROFESSIONAL EXPERIENCE

Electrical Division Member | Sept 2023 – August 2024
UBC Supermileage | *Vancouver, BC*
- Designed and specced a safety PCB using KiCAD and Git for a hydrogen fuel cell–powered vehicle, ensuring driver safety by automatically cutting off power during anomalies.
- Collaborated with team members to integrate control systems that monitor power spikes and prevent equipment failure.

Manufacturing and Production Co-op | Jan 2023 – May 2023
Moment Energy | *Coquitlam, BC*
- Produced precise electrical assemblies for second-life energy storage systems, contributing to enhanced product reliability.
- Developed test benches and executed hands-on soldering and harnessing of PCBs, consistently meeting quality assurance standards.

PROJECTS

Haptic-VR Surgery Simulator | *Unity, C#, OpenHaptics, Oculus* | 2025
- Integrated Haptic and VR technologies to create a surgery simulator for the Digital Lab at the BC Children's Hospital.
- Efficiently employed the OpenXR API for VR location tracking, the OpenHaptics and iMSTK libraries for physics processing and haptic device integration, and Unity to render and script behaviour.
- Professionally navigated the engineering design process, including consulting with sponsors, literature review, and creating project proposals.

Simulated Driving Detective | *AI, Machine Learning, Computer Vision, Python, ROS, Gazebo, CNNs* | 2024
- Programmed a simulated autonomous vehicle that placed in the top 3 of a competitive course using ROS nodes for real-time communication.
- Developed a convolutional neural network achieving 100% accuracy in recognizing track signposts, integrating computer vision techniques for optimal navigation.
- Used image processing and computer vision techniques from the OpenCV Python library 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
- Led circuit design and debugging for an autonomous robot competing in a head-to-head race, including the development of H-bridges and sensor circuits.
- Collaborated in a team to implement precise sensor control using a STM-32 microcontroller for effective navigation along electrical tape.

Servo Control Loop Circuit | *Circuit Analysis, Circuit Design, Lab Equipment* | 2022
- Engineered and refined a servo control loop circuit employing feedback mechanisms to control motor speed, using oscilloscopes and function generators for testing.
- Integrated components such as op-amps, Schmitt-trigger inverters, and transistor arrays to ensure precise control.

Cardboard Claw | *Arduino, CAD, Sonar, Servos* | 2022
- Collaborated in designing an automated mechatronic claw capable of lifting varied objects, using Arduino-based control and sonar sensors for precise operation.

TECHNICAL SKILLS

Languages: Python, C++, JavaScript, Java, HTML, CSS, Git
Software: Pandas, scikit-learn, TensorFlow, Computer Vision
Electrical: KiCad, LTSpice, Circuit Design, Soldering, Harnessing