

ANUBHAV SAINI

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Education

4th Year Engineering Physics Undergrad: University of British Columbia
Specialized in Electrical Engineering and Robotics

September 2021 – Present
Vancouver, BC

Technical Skills

Software: Python, Java, C/C++, MATLAB, CNNs, Tensorflow, ROS, OpenCV, Linux, Assembly, Tera Term (TTL)

Electrical: Systems Design, PCB Design, Sensor Design, Altium, STM32, ADC, UART, I2C, SPI, CAN

Experience

Hardware Engineering Intern

May 2025 – Present

Arlo Technologies

Vancouver, BC

- **Led R&D of a new solar-powered security camera with an embedded solar panel**, defined system architecture (configuration of multiple power inputs, finding Boost/charger/fuel gauge ICs), conducted competitive benchmarking, and validated design through comprehensive voltage, power, and battery charge/discharge testing.
- Investigated and eliminated PIR noise induced by RF radiation from 2.4 GHz Wifi, **cutting yield loss from 30% to less than 1%** and ensuring reliable motion detection during all camera states (idle, streaming, recording).
- Increased hardware test coverage for Ambient Light Sensor **from 70% to 100%** to build a coexistence test suite.
- **Modified hardware** for in-development devices (**separated PSUs on interconnected PCBs**) to acquire robust power consumption and efficiency data for multiple ICs.

Electrical Engineering Intern

September 2024 – December 2024

Sarcomere Dynamics Inc.

Vancouver, BC

- Expedited firmware development an in-house magnet-based Force Sensor **5-10 times cheaper** than on-shelf solutions.
- Reconstructed sensor output by creating a linear data mapping scheme to output Normal Force and Shear Direction from raw magnet data with **more than 90% accuracy**.
- Designed a Motor Driver PCB in **Altium Designer** implementing SPI, I2C, and CAN communication between ICs.

Product Engineering Intern

May 2024 – August 2024

Microchip Technology

Burnaby, BC

- Programmed Python test scripts and custom firmware to test SERDES I3C Pad against performance requirements.
- Formulated and deployed Multi-threaded testing procedure to **reduce testing time by more than 40%**.
- **Reduced power consumption by 15%** via systematic voltage/temperature regularization scheme.
- Successfully characterized SERDES's I3C Pad, gaining experience in the testing and analysis of mixed-signal ICs.

Robotics Engineering Intern

January 2023 – April 2023

Cloverdale Robotics Inc.

Surrey, BC

- Directed a **team of 3** in building and testing two prototypes of a self-watering Hydroponics Plant system, achieving comprehensive control of system's water level based on sensor data.
- Wrote code to analyze data outputs and enhanced apparatus design to **successfully attain system repeatability**.

Personal Projects

UBC Uncrewed Aircraft - Electrical Engineer | *Altium, PCB Design, RF*

- Reshaped power distribution via a central Buck Converter (Altium) to step down **60V input to 5V/5A** output.

Machine Learning Detective Robot | *Python, Linux, OpenVC, ROS*

- Employed Convolution Neural Networks and Computer Vision to train an autonomous rule-abiding car in Gazebo sim.
- Trained and tuned a CNN to achieve **Character Recognition** with more than **98% accuracy**.
- Utilized ROS Publisher/Subscriber Framework to create communication protocols between Gazebo and AI Model.

Automated Robot Race-Car | *C/C++, Embedded Systems, Analog Circuit Design, PID*

- Designed and built circuitry to integrate sensors (IMU, Magenetometer, self-made rotary encoder) with STM32 to obtain real-time orientation and global location data with **more than 85% accuracy**.
- Applied PID to ensure autonomous navigation along optimal path acheiving **fastest lap time by 4 seconds**.
- Implemented robust recalibration methods and compartmentalized when debugging elec, firmware, and software issues.

Motor Control Feedback Circuit | *Control Loop Design, Circuit Testing/Debugging*

- Latch/Reset: Detected and stored motor RPM Values on an 8-Bit counter (74HC393) and sent timed reset signals.
- Error Signal Amplifier/Buffer: Converted digital speed data into analog data using a R2R ladder (DAC), compared speed to desired value, and controlled current going to motor.

UBC Science Co-op



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