# AMAN NIJJAR

**Fourth Year Computer Engineering Undergraduate**

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## SUMMARY OF QUALIFICATIONS

- President of AUVIC: Leading a 15-member team to build an autonomous underwater vehicle (AUV) called Trident.
- Integrated SocketCAN drivers for ROS from ros_canopen and built a C++ message handler to link the AUV embedded system to the ROS framework during the workterm with AUVIC.
- Created sprints and assigned issues to members of AUVIC using Jira.

## RELEVANT COMPETENCIES

### Robotics

- Compiled a list of mechanical constraints for an AUV such as keeping all high power hardware in the same CNC enclosure, adding bouyancy devices to ensure positive bouyancy, material selection, etc.
- Used multiple programming languages (C/C++/Python) to link ROS noetic on Ubuntu Focal with the AUV embedded system at AUVIC to send messages over a CAN bus.
- Programmed C I2C firmware on a FreeRTOS device to program a temperature sensor and a humidity sensor.

### Electrical Design

- Built Symbols and Footprints for integrated circuits on Altium Designer.
- Created Schematic capture of a pinging circuit on Altium Designer.
- Created a layout of a pinging circuit on Altium Designer.

### Quality Assurance/Control

- Unit Testing: Used gunit and unittest to confirm if my C++ methods are giving the expected output.
- Integration Testing: Introduced Travis CI to AUVIC to run build tests on ros nodes, C++ methods, and Python scripts before merging pull requests.
- Created an electrical overview to show the power requirements and communication buses of AUVIC's embedded system to members.

## PROJECTS

### Haze Removal - C++ Image Processing

This command line application removes fog and haze in images by using dark channel prior and several other filters. This is based on a Matlab script from Rachel Yuen at UW-Madison. ROS lacks Matlab support, so I rewrote the script in C++ to test it on AUVIC's AUV.

### Aircraft Weight Shifter - Electrical Drive Systems

Presented a weight shifting solution for an aircraft using requirements my professor was given. Its purpose was to adjust an aircrafts centre of gravity to reduce its pitching moment.

## WORK/VOLUNTEER EXPERIENCE

### Junior Electronics Engineer Intern

**Autonomous Underwater Vehicle Interdisciplinary Club (AUVIC)**

May 2020 – Ongoing Victoria, BC

- Used Altium Designer and LTspice to design a pinging circuit to operate underwater for validating an AUV Hydrophone system.
- Introduced continuous integration with Travis CI and agile workflows with Jira.
- Developed a ROS package using ros_canopen that sends frames to the CAN bus.

### Ship2Shore/Science-Symposium

**Ocean Networks Canada (ONC)**

May 2019 Victoria, BC

Ran an activity for middle school students who are interested in engineering.

## SKILLS

**C/C++/Python**
**Altium Designer**
**FreeRTOS**

## EDUCATION

### Bachelor of Computer Engineering

**University of Victoria**

Sept. 2016 - Ongoing Victoria, BC

Relevant courses: CSC 111/115 (C/C++ programming with Engineering applications), ECE 458 (Communication Networks), ECE 255 (Computer Architecture), ECE 241 (Digital Design)

## MY QUALITIES

**Persistence**
I went from a substitute basketball player in my highschool freshman year to a starter by sophmore year.

**Bilingual**
Fluent in English and Punjabi.