Axel Jacobsen

axel-jacobsen.github.io | linkedin.com/in/Axel-Jacobsen
axelnjacobsen@gmail.com

PROJECTS

ROBOT COMPETITION | Engineering Physics — May 2018 – Aug 2018

Designed and built a robot to autonomously retrieve objects on an obstacle course

- First team in the history of the competition to use a neural network; used for locating objects on the course
- Used the Goertzel Algorithm to quickly and accurately identify 10 kHz IR signals from noisy real-time data
- Wrote main control software in C on an ARM STM32 to control the robot
- Designed and created circuits and software to control mechanical arm/claw
  See axel-jacobsen.github.io/ENPHRobot/

SENSOR TEAM LEAD | UBC Subbots — Sept 2018 – Present

Constructing an autonomous robotic submarine to compete in the 22nd International RoboSub Competition

- Using Matlab to calibrate fisheye cameras for a computer vision algorithm used to navigate the course
- Designing the motor controlling system for 6 independently controlled thrusters to minimize cost and power consumption
- Leading and teaching junior engineering students in best practices, design methodologies, leadership

EXPERIENCE

ENGINEERING INTERN | Wildlife Computers — May 2019 – Aug 2019

Wildlife Computers is the leading provider of advanced wildlife telemetry solutions

- Wrote C++ firmware to test PCBs that arrive from fabrication - autonomously confirms correct placement of components which allows for identification of faulty boards, improving production throughput
- Designed and created a digital isolator PCB to isolate the companys hardware from measurement devices, allowing for low-noise and accurate voltage measurements
- Wrote highly efficient post-processing software for a Joulescope (high precision DC energy analyzer) - calculates the Cumulative Distribution Function, Histogram, and “Max Window” of a set of data.

DATA SCIENCE CO-OP | Control Mobile — Jan 2018 – Apr 2018

Control Mobile aggregated and displayed transaction data for over 100 companies that used Stripe/Square/Paypal

- Wrote Python scripts to analyze and rank order over 300 individual SQL queries by their runtime in order to systematically optimize the SQL database; reduced the runtime to fetch and display customer data by 65%
- Worked with the agile backend team to fix existing bugs, write new code, and to refactor current code
- Fixed security issues that would leave the website vulnerable to SQL injection attacks

VOLUNTEER EXPERIENCE

ENGINEERING PHYSICS MENTOR | UBC — Sept 2018 – Present

- Mentor of five 2nd year Engineering Physics Students

SQUADRON COMMANDER | 103 Thunderbird Squadron, Royal Canadian Air Cadets — Apr 2015 – July 2016

- Leader of a squadron of 80 cadets
- In charge of weekly squadron meetings, mentoring senior cadets and enforcing standards of leadership and citizenship of the squadron

EDUCATION

UNIVERSITY OF BRITISH COLUMBIA — Expected May 2021

- Bachelor of Applied Science, Engineering Physics

ABOUT ME

PROGRAMMING LANGUAGES
Python • C • Java
JavaScript • MATLAB
LaTeX

SUMMARY
I am an enthusiastic Engineering Physics Student at the University of British Columbia, with a passion for mathematics, physics, and robotics. I spend my free time working on my personal projects, climbing, biking, or skiing.