Axel Jacobsen

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EDUCATION

UNIVERSITY OF BRITISH COLUMBIA Expected May 2021

Bachelor of Applied Science, Engineering Physics

Select Courses
Applied Quantum Mechanics, Discrete Mathematics (Proofs), Complex Analysis,
Applied Linear Algebra, Partial Differential Equations, Digital Systems and Microcomputers,
Principles of Software Construction

TECHNICAL UNIVERSITY OF DENMARK Sept 2019 - Dec 2019

Exchange Student

Select Courses
Operating Systems, Deep Learning, Robotics, Introduction to Spacecraft Design

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

JUNIOR SOFTWARE DEVELOPER | ubyssey.ca May 2017 – Aug 2017

The Ubyssey is the campus newspaper for the University of British Columbia

- Wrote Python/Javascript code for Dispatch, the publishing platform for The Ubyssey
- Created Django and React UI for Dispatch that allows content to be written and uploaded to the website by non-technical users such as editors, writers
- Refactored old Django code to current best practices for security, readability and reliability

SELECT 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

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

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.