

# Axel Jacobsen

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## 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 company's 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 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

## PROJECTS

### DEEP REINFORCEMENT LEARNING | DENMARK TECHNICAL UNIVERSITY

- Writing a Deep Q-Network with PyTorch to play Atari's Pong
- Applying image analysis and parallel reinforcement learning to train the network quickly

### SUCCOTASH | BASIC FEED-FORWARD NEURAL NET

- Written in Python with the intention of learning the math behind Back Propagation
- Implemented to train quickly on a CPU by using Numpy vectorization

### AUTONOMOUS ROBOT COMPETITION | ENGINEERING PHYSICS

- Deployed a real-time object detection algorithm on Raspberry Pi
- Created signal processing software to quickly and accurately detect certain IR signals
- Wrote C control software and created circuits to control the mechanical subsystems

## EDUCATION

### UNIVERSITY OF BRITISH COLUMBIA | EXPECTED MAY 2021

#### B.ASc Engineering Physics, GPA 3.25

*Coursework includes* Object-Oriented Programming; Signals and Systems; Applied Quantum Mechanics; Mechanical Design; Digital Systems and Microcomputers; Linear Algebra; Honours Multivariable and Vector Calculus; Complex Analysis

### DENMARK TECHNICAL UNIVERSITY | WINTER 2019

#### Exchange Semester

*Coursework includes* Operating Systems, Deep Learning, Robotics, Computationally Hard Problems

## ABOUT ME

### PROGRAMMING LANGUAGES

Python • C/C++ • Java  
JavaScript • MATLAB

### 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, running, biking, or skiing.