

# Axel Jacobsen

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## EXPERIENCE

### **R&D ENGINEERING INTERN** | CHAN-ZUCKERBERG BIOHUB | JUN 2020 - DEC 2020

*Reprogrammed the Opentrons OT-2, an open source pipetting robot for lab automation*

- Rewrote almost all the software for the robot with focus on speeding up epithelial cell growth protocols
- Redesigned the robot's architecture so arbitrary instruments can be used during protocols
- Optimized robot software for high accuracy, fast protocol execution, and protocol reproducibility

### **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 a digital isolator PCB to isolate the company's hardware from measurement devices, allowing for low-noise and accurate voltage measurements

### **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 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

## PROJECTS

### **DEEP LEARNING** | VARIOUS DEEP LEARNING PROJECTS

- Deep Q-Network in PyTorch to play Atari's Pong, project at the Denmark Technical University
- Feed-forward neural net written with Numpy, solves MNIST with 97.2% accuracy

### **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 2022

**B.ASc Engineering Physics, GPA 3.70**

*Coursework includes* Object-Oriented Programming, Digital Systems and Microcomputers, Signals and Systems, Applied Quantum Mechanics, Linear Algebra, Honours Multivariable and Vector Calculus, Complex Analysis, Optics, Statistical Mechanics

### **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 projects, climbing, running, or skiing.