Axel Jacobsen

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EXPERIENCE

R&D ENGINEERING INTERN | Chan-Zuckerberg Biohub | Jun 2020 - Dec 2020

Reprogrammed the Opentrons OT-2, an opensource pipetting robot for lab automation

- Rewrote almost all the software for the robot, focused 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

- Asynchronous Advantages Actor-Critic model for solving cartpole
- Deep Q-Network in PyTorch to play Atari's Pong, Denmark Technical University project
- Feed-forward neural net written with Numpy to solve 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.