Axel Jacobsen

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ubc science co-op

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PROJECTS

SENSOR TEAM LEAD | UBC SUBBOTS — SEPT 2018 – PRESENT

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

- Used Matlab to calibrate cameras for a computer vision algorithm to navigate the course
- Researched and tested the viability of pressure sensors and motor controllers for the robot
- Designed and created signal filtering and amplification circuits to prepare sensor data for further analysis

ROBOT COMPETITION | ENGINEERING PHYSICS — MAY 2018 – AUG 2018

Designed and built a robot to autonomously retrieve objects on a pre-built course

- First team in the history of the competition to use a neural network; used for locating objects on the course
- Designed and tested a custom IR distance sensor, servo control circuits, and an IR signal circuit
- Wrote main control software in C on an ARM STM32 to control the robot
- Wrote C software to digitally filter IR sine waves for 10 kHz frequency
  See axel-jacobsen.github.io/ENPHRobot/

EXPERIENCE

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 Reach 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

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.