Derek Bell

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EDUCATION

University of Victoria - *Biomedical Engineering* September 2015 - Present

- Specialty in Mechanical Engineering

RELEVANT SOFTWARE EXPERIENCE

- **Programming Languages** - HTML, CSS, JavaScript, Ruby, Python, Swift, C, C#
- **Frameworks** - ReactJS, Ruby on Rails, Django (learning)

WORK EXPERIENCE

Senior Engineering Assistant - *Victoria Hand Project - Python, Ruby* January - April 2019

- Designed a trans-humeral socket system using AutoDesk Fusion 360 to run the file through a Python script to create over a thousand variants of sizes to accomodate for any sized patient
- Collaborated and helped refresh the design of the desktop website for the project using WIX
- Used photogrammetry software to create 3D scans of patient's limbs, accurate to the millimeter
- Created an elbow socket through rapid prototyping using 3D printing (*patent pending*)
- Currently deployed in 7 developing countries worldwide, with over 105 amputees fit with the device

VR Concussion Rehab App Developer - *Entrepreneurial Internship - C#* May - August 2018

- Developed a VR mobile app prototype using Unity, with C# and visual scripting for automation
- Designed to aid in concussion rehabilitation using multiple object tracking
- Tested and debugged on a Google Daydream device using a Google Pixel 2
- Successfully presented to an investor, receiving $10,000 funding to complete the prototype

Junior Engineering Assistant - *Victoria Hand Project* September - December 2017

- Designed and manufactured custom 3D printed upper-limb prosthetic devices for amputees in developing countries using SolidWorks
- Collaborated on the design of other prosthetic devices offered, such as a club-foot brace, scoliosis brace and children's prosthetic arm
- Wrote and produced assembly manuals for global technician use in operating countries
- Presented the project numerous times to local high school classrooms and industry professionals
- Worked directly with amputees through the fitting process, quickly iterating the design if adjustments had to be made

PROGRAMMING PROJECTS

LimbForge Socket Creation - *ReactJS, JavaScript, Ruby on Rails, Ruby* Present

- Collaborating with a small team to create a web application for patients to enter their limb measurements and receive a 3D . STL file render of the custom prosthesis they are about to receive
- Using Ruby on Rails for the backend with ReactJS on the front end

Todo List Web App - *ReactJS, JavaScript, CSS, HTML* March 2019

- Created a fully functional todo list web application using React and JavaScript to learn the fundamentals of ReactJS and web communication in a development setting

Personal Website - *HTML, CSS/Bootstrap* March 2019

- Designing and creating a personal website to showcase past and future projects I have worked on

Battlesnake AI - *Python* March 2019

- Collaboratively developed the AI for a snake game using Python to compete against other snakes
- Hosted the AI of the snake on a Heroku server, along with the use of JSON and Flask to communicate with the server to determine available moves to defend, survive and attack
- Competed in the intermediate category, winning against 48 snakes out of 64

Cylinder Sorting Conveyor Belt - *C* November - December 2018

- Programmed an AVR microchip in C to communicate with a conveyor belt and sensors to sort 48 cylinders consisting of 4 different materials in under a minute
- Pieces were sorted in a rotating tray powered by a stepper motor
- Used interrupts to communicate software with hardware components, such as stepper motor, DC motor, and reflective sensor
- Calibrated a reflective sensor to read ADC values to determine what material was passing through, which would instruct the stepper motor to rotate the sorted tray to the proper location
- Presented with a final run of 1 error in 42 seconds

EXTRA CURRICULAR EXPERIENCE

Mentor - *The Victoria Health Hackathon* September 2018

- Mentored a team of engineering students to complete a design challenge of creating an eating utensil to be placed on the end of a prosthetic arm using SolidWorks
- Through teaching, the team was able to successfully learn SolidWorks and how to 3D print their design to present to the judges

Assembly Volunteer - *Victoria Hand Project* May - August 2017

- Wrote and produced assembly manuals for global technician use in operating countries
- Trained new undergrad volunteers how to properly assemble the prosthesis along with how to fit a patient with the harnessing system

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REFERENCES

1. **Michael Peirone**
   COO at the Victoria Hand Project
   Phone: (250) - 580 - 2410
   Email: m.peirone1@gmail.com

2. **Rebecca Kenny**
   Collaborator on the concussion rehabilitation application
   Phone: (250) - 538 - 7277
   Email: becskenny@gmail.com