ANDREW WOODWARD

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EDUCATION

B.Eng. Biomedical Engineering   Graduated *May 2019*
Minor in Computer Science
University of Victoria

PROFESSIONAL EXPERIENCE

Project Engineer   *May 2019 – present*
FLIR Systems - Victoria BC

- Travelled internationally (UAE, Saudi Arabia, USA) to facilitate multi-million-dollar system configuration and acceptance with customers
- Managed developer efforts and tested various 3rd party devices and systems including radars, cameras, fiber optic fences, and access control systems
- Worked closely with software development, Q/A, and support teams to ensure customer requirements were met and project deliverables were on time and within budget
- Developed .NET WPF/Winforms GUI Windows utilities to assist colleagues with tasks such as drop file management and radar device simulation
- Wrote functional specification documents outlining new features and training documentation

Research Programmer Intern   *Sept 2018 – Mar 2019*
The Advanced Materials and Healthcare Technologies Division - University of Nottingham

- Developing MATLAB software for the analysis of digital holographic microscopy data and tracking individual bacteria cell motility on various biomaterials
- Wrote an accompanying MATLAB graphical user interface to simplify the user interaction with the tracking software and improve workflow
- Characterized bacteria species motility through quantitative analysis and created a classification function to sort unknown sample sets

Research Assistant   *Jan 2016 – Aug 2018*
Rehabilitation Neuroscience Laboratory - University of Victoria

- Developed instrumentation devices including a custom designed needle insertion detection system designed in SolidWorks and 3D-printed. The device housed a microcontroller that was programmed and debugged using C++ and the Arduino IDE
- Wrote LabVIEW code used for real-time EMG signal analysis and muscle stimulation
- Improved participant data workflow by developing various automated scripts in Python that could perform tedious steps on large data-sets
- Performed equipment design, maintenance, troubleshooting, and circuit modification
- Assisted with experiment setup, data collection, analysis, and writing

EXTRACURRICULARS

Big Brother Mentor   *June 2020-present*
Big Brother Big Sister Victoria – Victoria BC

- Matched with a local youth to act as a role model and friend
- Weekly hangouts range from video games, basketball, cooking, video editing, etc

Science Coordinator

Robotics Student Team – University of Victoria

Sept 2017 – May 2018

- Developing a Mars rover for competition in the Canadian International Rover Challenge
- Lead the development of the various science collection systems on the rover
- Designed an auger soil collection apparatus in SolidWorks

Project Team Lead

Biodev Student Team – University of Victoria

July 2016 – June 2017

- Creating an Emergency Vitals Cuff that can read heart rate, oxygen saturation, and blood pressure
- Developed C++ code used with an ATmega32u4 microprocessor for processing data from a MAX30100 heart rate sensor
- Maintained clear communication and delegated tasks to members of the team
- Took initiative to ramp up speed of project development

TECHNICAL SKILLS

Programming Languages: C, C#, Python, MATLAB, Java

Software: Microsoft Office, SolidWorks, LabVIEW, Visual Studio, Git

Mechanical: rapid prototyping, CAD, FEA, CFD, additive manufacturing, microfluidics

Electrical: embedded systems, sensor integration, circuit prototyping/diagnosis/troubleshooting

Equipment: 3D printers, EMG, ECG, stimulators, IMUs, Raspberry Pi, Arduino

Transferable: Customer relations, writing reports, public speaking, communication, leadership experience

MAJOR PROJECTS

Achilles Tendon Biofeedback Device

May 2018 – Aug 2018

- Designed from the bottom-up to assist patients with adhering to rehabilitation protocols
- Incorporated a range of sensors to measure in real-time: ankle flexion, weight bearing, muscle activity
- Developed the microcontroller code in C for processing the incoming data streams and transmitting over Bluetooth to a Raspberry Pi running a custom interface written in Python

Automated Conveyor Belt Sorting System

Sept 2017 – Dec 2017

- Main project in 4th year mechatronic course that required C code to be developed for an existing conveyor belt system
- System used a variety of sensors including: hall effect, optical, reflectivity sensor, and a photo-transistor to correctly identify 4 different object types
- A stepper motor was also controlled using a custom ramping profile developed alongside a robust interrupt code structure that ensured the system could properly manage the various inputs occurring nearly simultaneously

Microfluidic Device for Separating Microbeads

Jan 2017 – Apr 2017

- A microfluidic device was designed and developed that could separate magnetic Dynabeads from a solution and produce a "cleaned" final solution
- The channel designs were first validated using a variety of methods including computational fluid dynamics and characterizing the chosen magnets influence on the microbeads
- The device was fabricated using soft lithography and PDMS

References available upon request