# YOUSIF **EL-WISHAHY**

yel.wishahy@gmail.com | LinkedIn | GitHub UBC Engineering Physics

## Skills

- **Software:** Excel, Word, Java, C, C++, C#, Python, Git, LaTex, firmware programming, signal processing
- **Mechanical:** SolidWorks, Fusion360, laser cutting, 3D printing, PDM, FEA, ANSYS, machine shop, hand tools, BOMs, P&IDs, engineering drawings
- **Electrical:** Circuit analysis, electrical design, Fritzing, Eagle, microcontrollers, soldering, reflowing, communication protocols, oscilloscope, DMM, AWG

## Work Experience

**Hardware and Firmware Engineer Internship, Brave Cooperative** **Jan 2021 – May 2021**

- Worked with a team of engineers to upgrade modules in a radar based human detection system
- Developed software utility with **python** to acquire and decode data from radar modules during testing
- Processed radar signals for human motion data by developing efficient digital filtering algorithms
- Developed electrical circuit schematics in **Eagle** and C/C++ firmware for a prototype alarm system that alerts a remote server and powers an electronic alarm
- Utilized **laser cutter**, **soldering** and **reflowing** tools to assemble radar device and enclosure

**Tutor, Oxford Learning Centre** **Oct 2021 – Present**

- Helped students from grade 1 to 12 with schoolwork and learning curriculums by teaching core concepts, grading work, and strengthening motivation and diligence
- Assisted in the development of tailored learning plans for each student by evaluating learning process

**Restaurant Host** **Sep 2018 – Feb 2020**

**Cora Breakfast and Lunch**

- Greeted and seated guests as well as served food and drinks
- Cleared and wiped tables and swept and mopped front of house before closing

## Student Engineering Teams

**Mechanical Subteam, Sabatier Methane Reactor (Portfolio)** **Sep 2019 – Apr 2021**

**UBC Mars Colony**

- Streamlined the build process of a **chemical reactor** that produces methane fuel by prototyping the reactor design in **SolidWorks**, and managing the team's **PDM** vault
- Assembled reactor modules by compression fitting piping to components with **wrenches and ferrules**, and utilizing an **industrial pipe bender** to fit the steel pipes to the reactor frame
- Reduced project costs by $300 by designing an automated **liquid output measuring system** with solenoid valves to replace a mass flow meter
- Documented reactor parts in **BOM**, and assembly procedures in **professional design reports**
- Designed reactor **wiring schematics** with **Fritzing software**

## Technical Projects

**Autonomous Retrieval Robot (**insert portfolio here) **May 2021 – Aug 2021**

- Developed an autonomous can retrieval robot with 3 engineering students and achieved top score when competing with 15 other teams
- Designed and fabricated robot electronics including power, sensor, motor, and processing circuits
- Implemented and optimized PID control navigation algorithm that processes IR sensor readings to determine optimal motor input parameters to accurately follow a tape path
- Programmed state machine and startup sequence for 7 subsystems of the robot in C/C++

**Electrical Circuit Design and Analysis (Portfolio)** **Sep 2020 - Present**

- Designed and assembled analog and digital circuits including operational amplifiers and counters

- Produced large data sets of electrical circuit measurements by utilizing an **oscilloscope** and **AWG**
- Developed a **Python** script utilizing numpy library to compute switch latency of logic gates
- Created professional lab reports in Jupyter with **Python** and **LaTeX**

**AI Virtual World Algorithm (**Portfolio**)** **Oct 2020 – Nov 2020**

- In a team of three, developed a virtual area world in **Java** with characters governed by an AI
- Implemented a complex AI behavior through graphs to link numerous character interactions
- Implemented a graph interface in Java, and recursion algorithms to conduct DF and BF traversal
- Decreased look-up times by over 3000% by utilizing hashing data structures to reduce time complexity

**Autonomous Robotic Claw (**Portfolio**)** **Feb 2020**

- Designed an autonomous claw by programming a vision algorithm in **C** with live sonar data to operate a servo motor through an **Arduino**
- Modelled claw in **Solidworks** and improved structural integrity of claw design through **FEA**
- Produced **engineering drawings** of claw design to present to stakeholders
- Fabricated claw frame by **hand-tooling** aluminum sheet metal, and **soldering** electrical components

**Image Processing Software (**Portfolio**)** **Sep 2020**

- Implemented Java algorithms to de-noise, weather, compression, and align images
- Aligned skewed text images over a range of 360 degrees by implementing pixel intensity and vector analysis algorithms
- Achieved 100% branch and statement coverage by writing a test suite with JUnit

## Education

**B.A.Sc. Engineering Physics - University of British Columbia** **Graduating in June 2024**

- Cumulative GPA: 86% (A)
- Completed up to third year courses in math, physics, chemistry, and engineering

## Awards and Scholarships

- Top mathematics student (12$^{th}$ grade, HJ Cambie Secondary)
- Top academic student (12$^{th}$ grade, HJ Cambie Secondary)
- Top physics student (12$^{th}$ grade, HJ Cambie Secondary)
- Dean's Honor List (1$^{st}$ - 3$^{rd}$ year, UBC)
- McEwen Family Scholarship
- BC Provincial Scholarship

## Volunteer Experience

**Leader - Brothers Helping Others Club (HJ Cambie Secondary)** **Sep 2017 – June 2019**

- Managed a group of over 40 students in organizing multiple school fundraisers in order to raise over $1000 to help foodbanks and children's hospitals
- Raised over $500 to create and deliver care packages of necessities to homeless in Vancouver

**Tutor – Richmond Canaan Church Sep 2018-Jun 2019**

- Tutored elementary level students after school hours in math and English
- Supervised children for a few hours until their parents arrived to pick them up

**Day Camp Volunteer – Sep 2017 – Aug 2018**

- Assisted in setup, supervision, and cleanup at a children's day camp
- Led activities and small groups of children during field trips

**Cat Sanctuary Volunteer – RAPS Cat Sanctuary Sep 2017 – Aug 2018**

- Cleaned and disinfected cat cages, litter boxes, and floors
- Replaced cat food, water, and bedding

**School Leader – Cambie Student Leadership Sep 2017 – Jun 2019**

- As a member of the school leadership group at Cambie secondary, I planned and led field trips, fundraisers, and other school wide events
- Mentored younger students about academics, social conduct, and decision making

## About Me

- I enjoy science, sci-fi, and fantasy in any form (novels, shows, movies & video games)
- I frequently jog, bike, and hike with friends
- I enjoy playing badminton and tennis on weekends
- I like to tinker with electronics and program software in my free time