Taim Al-Dabbagh

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Education

University of Waterloo — Waterloo, ON
Candidate for Bachelor of Applied Science in Mechatronics Engineering — *Sept. 2021 – Present*

Technical Skills

Languages: Python, C++, HTML, CSS, JavaScript
Tools, Frameworks, Libraries: Linux, Arduino, Git, GitHub, VS Code, Excel, LaTeX
Mechanical: AutoCAD, Fusion 360, Inventor, Solidworks, GD&T, Machining, Welding, 3D-Printing
Electrical: KiCad, Schematic Design, PCB Layout, Soldering, Prototyping, Digital Multimeter, Logic Analyzer

Experience

Electronics Circuit Design and Software Engineering — Remote
Surfclean Inc — *May 2022 – Present*

- Developing firmware code in **C++** to control a magnetometer and run the system prototype using **SPI** protocol
- Designing schematics and routing PCBs for prototyping and production using **KiCad** to miniaturize the prototype
- Performing design rule checks, and providing Gerber and BOM files to vendors for PCB fabrication and assembly

Firmware Subteam Member — Waterloo, Ontario
Waterloo Aerial Robotics Group — *June 2022 – Present*

- Using **C++** and STM32 Cube IDE to configure a STM32 Nucleo board for generating **PWM signals**
- Controlling motor speed with **PWM signals** and a potentiometer by using **SPI protocol** for communication

Engineering Project Archiving Assistant — Stoney Creek, Ontario
ARC Engineering Inc. — *November 2020 – January 2021*

- Archived Mechanical, Electrical, Plumbing engineering projects and drawings independently and in a team
- Actively learned various engineering topics, including HVAC systems and energy modelling
- Analyzed guidelines, codes and standards, such as OBC, CSA, ASHRAE, ASPE

Projects

Vertap — *November 2021 – Present*

- Designing a tap wrench attachment to help align tap to holes for accuracy during manual tapping
- Collecting and analyzing data from a 9 D.O.F MPU-9250 connected to an Arduino Nano to graph angular velocities over time and calculate gyroscope biases on **Excel** to reduce gyro drift
- Prototyping and testing the circuit by using a breadboard and serial monitor to read the data output of a MPU-6050 sensor equipped with a Kalman filter to ensure orientation accuracy

BallTrack — *January 2022*

- Worked in a team of 3 to design, create, and develop a web application using **HTML and CSS** within 40 hours for locating nearby basketball courts to give information on court availability
- Constantly communicated with the team and used **Git** to create branches for organization and individual features, resulting in winning the "Best Development Practices" award out of 24 teams
- Used **JavaScript** and documentation to learn and implement Google Maps JS API within the web application to create a customized map and integrate with the features developed by other teammates

Automated Indoor Greenhouse — *January 2020 – June 2021*

- Designed and built an automated indoor greenhouse system to efficiently grow plants through automatic watering and LED lighting features along with reading temperature and humidity values
- Tested, prototyped, and programmed electrical components with an Arduino Uno, **C++**, and breadboards
- Created a website with a team of 3 using **HTML, CSS, JS, and Git** to implement greenhouse controls, sensor data outputs, and to keep individual feature branches organized prior to merging all branches together

Deflection Tester — *November 2020 – December 2020*

- Discussed and planned with a supervisor to create a deflection tester for a Popsicle bridge durability competition
- 3D-designed and revised the deflection tester design using **Fusion 360** to ensure feasibility and efficiency
- Produced concise and detailed engineering drawings for a team of manufacturing students for fabrication