Kabeer Cheema

Mechatronics Engineering Student

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LinkedIn

Skills

Languages: *VHDL, Python, C++, C, HTML/CSS, XML/XSLT*
Proficiencies: *Quartus Prime, Altium Designer, LTspice, SolidWorks, AutoCAD, Excel, Word*

Work Experience

Software QA Engineer – i4i – Toronto, ON *Jan 2024 – Apr 2024, Sept 2024 - Dec 2024*

- Developed an internal **automation software tool** using **Python** and **XSLT** to convert metadata in Excel to Word documents. Tool increased productivity of the document conversion team by over **90%**.
- **Led testing** of company software and directed several quality control members to conduct **functional**, **regression**, and **performance** testing for multiple customers and worked closely with documentation and development teams to track and fix issues as needed.
- Utilized **technical writing** skills within Microsoft **Office** to create release notes for the automation tool and created other documentation for test scripts while adhering to guidelines of the FDA and Health Canada. Work done in testing directly contributed to products sold to clients.

Design Teams

University of Waterloo Baja SAE - University of Waterloo *Aug 2024 - Present*

- Member of the **Electrical** and **Powertrain** sub-teams.
- Designed and tested **PCB** buck converter circuits and boards using **Altium Designer**, ensuring high reliability and efficiency for vehicle electrical systems, as well as conducting comprehensive assembly and functional testing.
- Enhanced continuously variable transmission (CVT) performance through **research and design** by investigating innovative methods to optimize the CVT for improved power delivery and contributed to development of detailed 3D models in **SolidWorks** to implement design improvements and support thermal management solutions.

University of Waterloo Formula Electric (FSAE) - University of Waterloo *Apr 2024 - Aug 2024*

- Assisted in the 2025 redesign of the cooling system, testing motor and inverter performance.
- Participated and assisted in 2024 post-competition adjustments and **mechanical troubleshooting**, such as adjusting the placement and adding a shim barrier to the motor mount to mitigate unwanted friction.

Projects & Extracurriculars

RC Formula 1 Car - In Progress

- Integrating a high-performance drivetrain within a **3D printed** chassis featuring a motor-driven gear system with a **differential**, optimizing torque distribution to the rear wheels for improved efficiency, durability, and performance
- Engineering an RC-controlled electronic system, integrating an **Arduino**-based microcontroller with an electronic speed controller (ESC) and servo system to process real-time signals, enabling precise throttle and steering actuation for responsive vehicle dynamics.
- Assembling and wiring key hardware components, ensuring seamless integration between the **microcontroller**, ESC, servo, and power supply to achieve reliable and efficient operation.

Autonomous Garbage Collector

- Created an autonomous garbage collecting vehicle prototype that navigates a specified area to effectively address litter issues.
- Programmed Lego EV3 and TETRIX controllers in **C** and **Python**, as well as designed and assembled the mechanical body, enabling precise navigation and efficient garbage collection and delivery to designated disposal zones.
- Conducted extensive **testing and iteration** to optimize the vehicle's navigation algorithms, improving its efficiency in identifying and collecting litter in varied environments.

Lead Tutor - Bluevale Collegiate Institute – Waterloo, ON *Sept 2022 – June 2023*

- Provided Mathematics, Physics, English, and Chemistry tutoring to underclassmen via school's tutoring system.
- Explained concepts in a clear and concise manner, ensuring all students understood the material.
- Provided 1 on 1 tutoring for students several times a week that resulted in an average **22%** grade boost for all students.

Education

University of Waterloo *Sept 2023 - Present*

Candidate for BASc. in Mechatronics Engineering - GPA: 3.9/4.0