Donna Kim

2A Candidate for BASc in Honours Mechatronics Engineering,
University of Waterloo
Winter 2024 Co-op

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SKILLS

- **Mechanical:** SOLIDWORKS, AutoCAD, Fusion360, GD&T, 3D printing, machine operating, spot welding
- **Software:** C++, C, Python, HTML, Figma
- **Hardware:** Altium, Arduino, soldering
- **General:** Office365 proficiency, WHMIS 2015, Communication, Leadership

WORK EXPERIENCE

Robotic Operations Testing & Maintenance Co-op **May 2023 – Present**
Swap Robotics – Kitchener, Ont.

- Responsible for overseeing fleet of 20+ autonomous robots and to troubleshoot robotic faults by working and reporting to autonomy, electrical and mechanical departments
- Designed and developed 3+ sticker jigs using SolidWorks and 3D printing, optimizing alignment and precision for sticker application processes on robotic fleet
- Constructed robotic modules to be integrated into robot assembly based on mechanical drawings and STL files for production of 15+ designs
- Utilized woodworking machinery and fusion deposition modelling (FDM) technologies to design 4+ robotic controller mounts used in multiple international offices, optimizing operations by 30%

Battery Box Systems: Junior Lead **Sept. 2022 – Present**
Midnight Sun Solar Car Team – University of Waterloo

- Experience working with high voltage/current systems, E-loads, power supplies and machinery
- Constructed a 21700 Li-ion 4S8P battery module prototype; designing busbars in AutoCAD, modelling busbar connectors in SOLIDWORKS, and assembling using spotwelding and 3D printing
- Conducted thermal testing on modules to retain temperature data, using power supplies and E-loads for module charge and discharge
- Well versed in preparing DXF, SOLDIWORKS and STL documents for waterjet, CNC and 3D printing processes

PROJECTS

Battery Box Enclosure – SOLIDWORKS

- Synthesized a battery enclosure design in SOLIDWORKS to enclose a 36S8P, 151.2V battery pack, 4 cooling fans, and required PCBs for the Midnight Sun Solar Rayce Car
- Features a releasable handle system to account for racing operations, safety release and module repairs
- Constructed a prototype model with carbon fiber, steel brackets and epoxy for analyzing sizing allotments, accessibility and manufacturing processes

1P5S 20-Volt Battery Pack – Fusion360, 3D Printing, Spotwelding

- Utilized 18650 Li-ion cells to manufacture a 1 parallel-5 series 20V battery module
- Measured nominal voltage of 20+ cells using a multimeter to select appropriate cells for production
- Used Fusion360 to model module plates to hold cells, designing with spot welding allowances in mind
- Spotwelded nickel strips to create series cell connections, transforming five 4V cells into a single 20V module

Mechatronics Keychain Project – Machinery, SOLIDWORKS

- Created a 7-component keychain using a milling machine, lathe, drill bit, tap and dye, deburring tools and belt grinders
- Modelled keychain assembly in SOLIDWORKS to imitate physical keychain with moving components
- Produced a mechanical assembly drawing using SOLIDWORKS, including a Bill of Materials (BOM), GD&T annotation, and section views of all machined components

Awards & Honours

Professional Engineers Ontario (PEO) Scholarship, London Chapter **Sept. 2022**
University of Waterloo President's Scholarship of Distinction, Waterloo, Ont. **Sept. 2022**
Valedictorian, Graduating Class of 2022, Central Catholic High School – London, Ont. **June 2022**