HI! I'M KIRA SCHLEI

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TECHNICAL SKILLS & CERTIFICATIONS

Software Proficiency: SolidWorks, AutoCAD, Creo, Siemens NX, Altium, Ansys, PLM/PDM (Upchain, Windchill), Jira
Programming Languages: C/C++, Python, VBA, VHDL

EDUCATION

Mechatronics Engineering, BASc | University of Waterloo 2023-2028

WORK EXPERIENCE

Electromechanical Battery Engineer Co-op | Generac Industrial Energy May 2025 – Aug 2025

- Designed four **high-voltage** DC combiners (**CSA certified** under UL 891) for various **BESS battery pack** configurations, integrating pre-charge circuits and fault isolation using **Creo**, **AutoCAD, Ansys**, for modelling, documentation, thermal simulation.
- Performed **30+ high voltage insulation integrity tests** (hipot, dielectric, grounding/bonding, IR) under UL 9540 standards.
- Conducted system-level testing of a **microgrid controller** integrated with a BESS, demonstrating black-start functionality, load-following, and frequency/voltage support under variable renewable generation.
- Created **HV wiring schematics**, **bus bar** layouts and **thermal optimization** strategies for BESS (400A continuous current @1500VDC), ensuring efficient current handling and heat dissipation under continuous load.

Automation Design Co-op | ATS Corporation - Life Sciences Sep 2024 - Dec 2024

- Designed and validated automated **servo-driven**, **pneumatic**, and **electromagnetic motion** systems for high precision assembly.
- Developed three specialized **machine vision** inspection systems (IFR cameras, proximity sensors, **SolidWorks** modelling) to perform precision quality checks, integrating validation into assembly processes.
- Collaborated with cross-functional teams to integrate **vision tools**, **sensors**, and mechanical subsystems, improving overall system reliability and repeatability.

Mechanical Engineer Co-op | Vibro-Acoustics Feb 2024 - May 2024

- Re-engineered 50+ seismic isolator assemblies from AutoCAD to SolidWorks with GD&T, improving manufacturability for high-vibration environments.
- Performed **FEA** in SolidWorks, evaluating stress, static, thermal performance in harsh environments to drive optimization strategies.
- Designed 5 spring housing concepts tailored based on FEA results, enhancing the performance and reliability of SCSR concepts.

Automotive Repair Assistant | NAPA AutoPro June 2023 – Sept 2023

- Gained experience in diagnosing, repairing, and performing maintenance on various **vehicle systems**.
- Performed complex repairs and part installations, including handling sensitive machinery components.
- Took on advanced tasks for custom projects under mentorship, from headlight installs to engine bay redesigns for custom builds.

PROJECTS & DESIGN TEAMS

UWaterloo Alternate Fuels Team (EcoCAR) | Core Systems Design & Integration Member June 2025 - Present

- Redesigned **CAN wiring** architecture for trunk-mounted aftermarket controllers (motor controls, power distribution systems, HMI), optimizing splice points and connection locations for robust communication within the car.
- Created system-wide CAN bus documentation in **AutoCAD Electrica**l for 20+ modules, ensuring accurate electrical routing and integration with mechanical packaging.
- Modelled **harness layout** and 3-axis splice locations in **Siemens NX** to optimize wiring paths and physical accessibility in the confined trunk system architecture.

University of Waterloo Baja SAE | Powertrain & Electrical Sept 2024 - June 2025

- Completed a detailed technical report on **Continuously Variable Transmission (CVT)** tuning focusing on **torque and power transfer**, implementing resulting prototypes in **SolidWorks** and mechanical implementation of fly weight swaps and belt testing.
- Created **PCB** layouts using **Altium** & assembled for buck converters and a GoPro RC system.

1/10 Scale Formula 1 RC Car | Personal (See portfolio) May 2024 - Present

- Designed a 1/10 Formula 1 **chassis** & **drive system** in **SolidWorks**, optimized for **3D printing** & aerodynamics with **CFD** simulations.
- Integrated an Arduino Uno with an RC system, seamlessly connecting a transmitter, receiver, and servo motor for precision front-wheel steering, while controlling a brushless motor-powered rear-wheel-drive system for enhanced acceleration and speed.
- Currently integrating the RC receiver (RX/TX) interfacing to **Arduino** and verifying repeatable control response under load.