ALEXANDER KIRCHBERGER

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EDUCATION

Western University May 2023 - August 2025
M.E.Sc in Electrical and Computer Engineering *London, ON*

- Developed a novel multiport formulation and regularization technique for the Delayed Vector Fitting technique, to find efficient macromodels of electrically long multiport systems and improve convergance (in review).
- Developed and published a novel multiport formaulation and method to create instruments for the Vector Fitting-Instrumental Varible technique to find efficient macromodels of systems characterized by noisy frequency responses.
- Developed, published and presented research at the EPEPS 2024 conference in Toronto, ON.
- Instructed and marked course assessments, such as laboratories project reports and exams as a graduate teaching assistant for ECE 2277 Digital Logic Systems and ECE 3375 Microcontrollers.

Western University September 2018 - April 2023
B.E.Sc in Electrical Engineering - With Co-op and Distinction *London, ON*

WORK EXPERIENCE

General Dynamics Land Systems - Canada May 2021 - August 2022
Electrical Design Specialist (Internship) *London, ON*

- Design lead of 3 subsystems of a prototype light armored vehicle.
- Designed 138 wiring harnesses and cables, circuit protection, grounding schemes, and component selection.
- Reviewed networking architectures for issues related to hardware compatibility.
- Performed testing for MIL-STD-461 testing with at the device and vehicle level.

Western University May 2020 - August 2020
Undergraduate Summer Research Internship *London,ON*

- Developed a high impedance fault detection scheme using Mathematical Morphology.

ENGINEERING EXPERIENCE

Western University - Western Formula Racing May 2023 - April 2025
Grounded Low Voltage Lead *London, ON*

- Led the design assembly and validation of grounded low voltage system, and supported design and assembly of the high voltage system of an Formula SAE car.
- Designed and validated system arcitectures, PCBs, wiring harnesses, and high voltage components
- Work was performed under intense time and resource constraints.

Western University - Western Engineering Build Team September 2022 - April 2025
Electrical Team *London, ON*

- Designed and assembled professional light shows for prop structures under intense time and resource constraints.
- Designed, troubleshot, and repaired legacy systems for orientation week.

PROJECTS

WFR-24E ECU

- Main controller for the Western Formula Racing Formula SAE car, based on a Teensy 4.1 development board.
- The controller interfaces with all the components within the car, such as the motor inverter over CAN.
- For this year the car was converted from a one controller system to a 2 controller sysyem to reduce overall wiring harness complexity and specifically the wiring from front to rear.

WLED Light Controller

- ESP32 based light controller, utilizing open source WLED software used for light shows.
- The controller contains 4 powered pixel outputs capable of controlling up to 4048 pixels.

TECHNICAL SKILLS

Circuit Design	HSPICE, LTSPICE, Altium, KiCAD, PCB Design, RF Design, Signal Integrity Design
Model Generation	Vector Fitting, Transient Simulation, Electromagnetic Simulation
Software	C, Python, MATLAB, RTOS, Linux, Vim, Git, Docker