YIWEN (CHRIS) LIU

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EDUCATION

Master of Science, Civil Engineering Thesis Program **September 2025 – May 2027**
McGill University, Montreal, Canada
- FRQNT Master's Scholarship, MEUSMA Award recipient

Bachelor of Engineering, Mechanical Engineering Program **September 2020 – May 2025**
McGill University, Montreal, Canada
- CGPA: 3.99/4.0, Dean's Honour List
- CSME Gold Medal, McGill Alumnae Society Prize, 3-year Merit Scholarship recipient

SKILLS

- **Software:** MS Office Suite, SOLIDWORKS, Autodesk Fusion and CFD, Mastercam, Abaqus, Zotero, OpenLCA, Brightway
- **Operating Systems:** Windows 2000/XP/Vista
- **Programming:** Python, MATLAB, R language
- **Technical:** CAD, 3D printing, machining, life cycle assessment, techno-economic analysis, FEA analysis, CFD simulation
- **Languages: English** (Fluent), **Chinese** (Fluent) **French** (Elementary)
- **Others:** Class 5 (Class G) driver.

EXPERIENCES

Undergraduate Research Trainee at McGill – ETAPA **July 2025 – September 2025**
- Conducted battery degradation research with Prof. Sarah Jordaan in the Energy Technology and Policy Assessment (ETAPA) research group, in collaboration with EVLO Energy.
- Analyzed large-scale operational datasets from real-world grid-scale lithium iron phosphate battery storage systems to identify degradation patterns in preparation for subsequent modelling.
- Performed literature review on battery degradation modeling, to support the selection of modelling approaches.

Mitacs Accelerate Internship – Schneider Electric **October 2024 – June 2025**
- Developed machine learning based tools to streamline and scale the application of life cycle assessment (LCA) across Schneider Electric's global product portfolio.
- Applied transformer-based and traditional natural language processing (NLP) models to address text-based data gaps in life cycle inventory datasets for diverse product categories. Achieved an average prediction accuracy of 87%.
- Delivered monthly presentations to school and company supervisors and produced technical reports on model performance. Currently preparing manuscripts for publication.

Undergraduate Research Assistant at McGill (NSERC Alliance) – AFL **May 2023 – May 2024**
- Conducted sustainability research under the supervision of Prof. Jeffrey Bergthorson and Prof. Sarah M. Jordaan in the Alternative Fuels Lab (AFL).
- Performed techno-economic analysis and carbon footprint study on energy storage and generation technologies using OpenLCA and self-developed Python and Excel models.
- Co-composed a research article on long-term energy storage for Canadian (Nova Scotia) electrical power system. The article was presented in the MeCRE conference in Germany in November 2024.

Tomlinson Engagement Award for Mentoring (TEAM) Recipient **January 2023 – May 2023**
- Nominated by previous professor as an undergraduate teaching assistant for MATH 263: ODE for Engineers.
- Delivered weekly, hour-long in-person tutorial sessions to over 20 undergraduate students.
- Prepared practice problems and illustrated step-by-step solutions. Participated in the grading of course assignments.

PROJECTS

Mechanical Engineering Capstone Design Project **September 2024 – May 2025**

- Designed and fabricated a passive-dynamic, modular, affordable, and biomimetic water quality monitoring system tailored for freshwater applications in Northern Quebec's Indigenous communities.
- Collaborated with Communautique, a local non-profit Eco-fab Lab, to enhance accessibility, manufacturability, and community engagement by developing an open-source design.
- Led project management, interpersonal communication, hydrodynamic simulations, dimensional optimization, and 3D printing and testing of the flexible rubber mounts for the system's mechanical structure.
- Awarded 1st Place in the 2025 Mechanical Engineering Capstone Design Competition with a CAD 400 prize.

Hydroelectric Power Plant System Optimization Project **September 2024 – December 2024**

- Conducted a multidisciplinary design optimization (MDO) study for a small-scale run-of-river hydropower plant to maximize power generation under various physical and design constraints.
- Developed coupled computational models to capture subsystem interactions. Performed parametric and sensitivity analyses to evaluate the effects of design variables on system efficiency.
- Achieved significant performance improvements over baseline designs while enhancing proficiency in renewable energy system optimization and computational modeling.

How to Change the World: Interdisciplinary Sustainability Design Project **January 2024 – May 2024**

- Developed a systems-level sustainability solution addressing plastic waste mismanagement in Metro Manila, focused on the rehabilitation of the San Juan River.
- Proposed an integrated waste interception and recovery system, combining a hydro powered "Trash Wheel," a manual material recovery facility (MRF), and community engagement programs.
- Conducted stakeholder, feasibility, and environmental impact analyses within a multidisciplinary team to evaluate environmental, social, and economic outcomes aligned with UN SDGs and circular economy principles.
- Received the Teaching Team Selection Award for team collaboration, project excellence, and innovation.

Aluminum–Water Power Plant Design and Energy Carrier Feasibility Study **January 2024 – May 2024**

- Designed a 100-MW aluminum–water power plant with a combined Rankine and Brayton cycles. Achieved an efficiency of 3,480 kWh per ton of aluminum through detailed heat and mass balance analysis.
- Evaluated the technical and economic feasibility of aluminum vs. liquid hydrogen as energy carriers for long-duration energy storage in remote communities.
- Analyzed cycle efficiency, levelized cost of electricity (LCOE), and environmental impacts to determine optimal configurations for carbon-free power generation in remote communities in Northern Canada.

LEADERSHIP AND EXTRACURRICULAR ACTIVITIES

Sustainability in Engineering at McGill (SEAM) VP Academic **June 2023 – May 2024**

- Organized and presented multiple academic events in collaboration with the Trottier Institute for Sustainability in Engineering and Design (TISED) to advocate for sustainability in the McGill engineering community.
- Promoted sustainability courses and introduced sustainability research opportunities to undergraduate students.
- Participated in biweekly executive meetings and bi-semesterly SEAM advisory board with McGill faculty members.

Sustainability Ambassador at McGill **September 2022 – May 2023**

- Promoted the concept of Zero-Waste at various on-campus locations.
- Facilitated proper waste sorting and disposal and debunked common waste myths.
- Delivered weekly presentations to educate students and staff on different waste streams and sustainability tips.

Campus Life and Engagement (CL&E) Outreach Agent at McGill **January 2023 – May 2023**

- Facilitated first-year students' transition and integration into university through orientation events.
- Sought, planned, and delivered on-campus events to promote opportunities and services offered by CL&E.
- Reviewed student services offered by CL&E and provided constructive feedback for improvements.