SARAH-GRACE LI

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EDUCATION

University of British Columbia Sep 2025 – Present
Bachelor of Applied Science, Mechanical Engineering

Simon Fraser University Sep 2024 – Present
Bachelor of Applied Science, Engineering Science

Memorial University of Newfoundland and Labrador Sep 2023 – May 2024
High School Concurrent Studies

TECHNICAL SKILLS

Programming: C/C++, Python, JavaScript, HTML, CSS, React, Flask
Mechanical & CAD: SolidWorks, Siemens STAR-CCM+, 3D printing, GD&T, DFM, Mechanical Assemblies
Embedded & Electronics: Arduino, ESP32, Raspberry Pi, TFT_eSPI, UART/USB, HTTP, sensors, stepper motors
Software & Research: Electron, SQLite, Cloudflare, Gemini API, laboratory safety, tissue culture, infrared spectroscopy

EXPERIENCE

Formula UBC SAE Racing Team — Aerodynamics Team Member Sep 2026 – Present
- Designed and optimized the middle section of the 2026-2027 Formula SAE front wing.
- Developed wing geometries in SolidWorks
- Evaluated aerodynamic performance using Siemens STAR-CCM+

LED Smart Inc. — Mechanical Engineering Intern Jan 2026 – Aug 2026
- Designed production-ready enclosures, housings, brackets, and assemblies in SolidWorks.
- Created manufacturing drawings, documentation, and SOPs following GD&T and ASME Y14.5 standards.
- Collaborated with cross-functional teams to integrate PCBs, batteries, and electronic components.
- Incorporated UL requirements and ISO 9001 quality standards into mechanical designs.

The Aroid Affair — Digital Media & Technical Director March 2026 – Sep 2026
- Developed and maintained the event website; created social media content and promoted vendors and event updates.
- Coordinated with vendors and handled digital and technical event logistics.

Skate Canada — CanSkate Coach Sep 2017 – Present
- Coach fundamental skating skills and technique through Skate Canada's CanSkate program.

Simon Fraser University — Calculus & Physics Tutor Sep 2025 – Dec 2025
- Tutored calculus (MATH 150/151, 152, 251) covering derivatives, integrals, and multivariable calculus.
- Tutored PHYS 120 mechanics and PHYS 121 electromagnetism.

Memorial University of Newfoundland and Labrador —Student Researcher Jan 2024 – May 2024
- Conducted research at Memorial University; Focusing on the reaction of cellulose hydrolysis.

ENGINEERING & SOFTWARE PROJECTS

Formula UBC Aerodynamics — Front Wing 2026 – Present
- Developed and analyzed front-wing middle-section concepts in SolidWorks and STAR-CCM+
- Investigated airfoil profiles, chord lengths, and angles of attack.

SoupPLY — Restaurant Inventory Tracking Application March 2026
- Built a React frontend for inventory predictions, checkout management, and food waste logging.
- Integrated order predictions, editable ingredient quantities, and order review workflows.
- Used React hooks and Electron IPC to communicate with application services; SQLite to store inventory, orders, and waste.

Gotcha B.A.C. — Multiplayer Drinking Game November 2026
- Built ESP32 CYD player modules with MQ-3 sensors and 3.7 V batteries; programmed sensor processing with TFT_eSPI.
- Developed a local Python Flask server and HTTP/Wi-Fi communication for player data, game settings, and timers.

- Created an HTML/CSS/JavaScript host dashboard with polling for player statistics and game state.

Trash Royale — AI Waste Sorting City-Building Game October 2026

- Developed an automated waste sorter integrating Raspberry Pi, ESP32, camera, sensors, and stepper motors.
- Integrated Gemini API for image-based waste classification and UART/USB communication between devices.
- Built a city-building game front-end with procedurally generated maps, resource management and quests.
- Connected sorting system to Python backend through Cloudflare, converting classified waste into in-game resources.

PotRider x7 — Automated Cooking Robot Sep 2024 – Dec 2024

- Built with a wooden chassis, extruded aluminum legs, ABS 3D-printed adapters, springs, and screw-tightened C-clamps.
- Implemented an offset spoon attachment, Arduino motor control, battery power, IR receiver/remote, and master switch.
- Redesigned loose adapters to improve fit and stability; successfully tested the assembled prototype with heat.

Camp-a-Cook — Modular Mechanical Kitchen

- Designed a portable mechanical base with interchangeable cheese grater, apple peeler, and meat grinder attachments.
- Modelled the assembly in SolidWorks, developing gear meshing, folding mechanisms, and attachment interfaces.

Dual-Motor Hydroelectric Generator

- Designed a waterwheel with two opposing motors and a water-containing enclosure.
- Achieved zero water loss in testing and placed 2nd in the Senior Design category.

RESEARCH PROJECTS

From Old Panties to Delicious Candies — Textile Recycling Manuscript Sep 2024 – Dec 2024

- Expanded prior cellulose recycling research into a manuscript discussing polymer decomposition, experimental results, infrared spectroscopy, and large scale/future research directions.
- In progress toward publication

Turning Old Underwear into Candy — Cellulose Hydrolysis Feb 2024 – May 2024

- Studied conversion of cotton textile cellulose to glucose via acid hydrolysis.
- Explored chemical recycling and the use of textile waste as a feedstock for value-added products.

HONOURS & AWARDS

SFU Undergraduate Scholars Entrance Scholarship — $40,000 2024
Cenovus Energy Eastern Newfoundland Science and Technology Fair — Chemistry, 1st Place 2024
Cenovus Energy Eastern Newfoundland Science and Technology Fair — Biochemistry, 1st Place 2024
Cenovus Energy Eastern Newfoundland Science and Technology Fair — Chemistry Scholarship 2024
Cenovus Energy Eastern Newfoundland Science and Technology Fair — Biochemistry Scholarship 2024
NAPE Scholar — $500 scholarship 2023

CERTIFICATIONS

Violin Level 9 — Royal Conservatory of
Piano Level 10 — Royal Conservatory of Music
History Level 10 — Royal Conservatory of Music
History Level 9 — Royal Conservatory of Music
Laboratory Safety Certification — Memorial University
MEDIC Emergency First Aid — Canadian Red Cross
NCCP In Training — Coaching Association of Canada

LANGUAGES & INTERESTS

Languages: English and Chinese (native or bilingual); French (limited working proficiency)
Interests: Hackathons, Robotics, Aviation, Aerodynamics, Figure skating