Lacie D. Firth

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EDUCATION

University of Toronto Sept. 2024 – Present

Bachelor of Applied Science, Electrical Engineering + PEY Co-op

Relevant Coursework: Control Systems, Probability & Applications, Operating Systems, Robot Modeling and Control, Neural Bioelectricity (EEG/EMG), Fundamentals of Optics, Digital Systems (Verilog, FPGA), Hardware Design & Communication (ECE295, Altium PCB design)

Certifications: MYFab Safety Certification (University of Toronto); MathWorks, Introduction to Linear Algebra with MATLAB

TECHNICAL SKILLS

Languages: C/C++, Python (NI-DAQmx, signal processing), MATLAB, Verilog, JavaScript/TypeScript

Hardware & Design: National Instruments DAQ (USB-6366), piezoelectric actuators/sensors, EMG sensors, Arduino, Raspberry Pi, FPGA (Quartus), soldering & PCB assembly, SolidWorks, Altium Designer, LTspice, Abaqus (FEM material inputs), Instron mechanical testing, mechanical prototyping, 3D printing

Tools: Docker, Git/GitHub, Linux, Microsoft Office

Spoken Languages: English (native), French (B1, technical/lab fluency)

RESEARCH & ENGINEERING EXPERIENCE

Research Intern, Piezoelectric Acoustic De-Icing May – Aug. 2026

PIMM Laboratory, Arts et Métiers ParisTech, Paris, France

- Investigated piezoelectric-driven vibration as a lightweight alternative to thermal and pneumatic aircraft de-icing systems, building and instrumenting a physical test rig to validate the concept experimentally
- Developed a Python-based piezoelectric sweep on the NI DAQ to characterize the test structure's natural frequencies and damping to optimize actuator placement
- Cross-validated experimental modal results against an Abaqus finite-element model and identified discrepancies that guided refinements to the simulation
- Screened candidate ice-substitute materials, then created test specimens and mechanically characterized the proxy on an Instron testing machine with camera and force-displacement data logging

Hardware Subsystem Member, Neurotech UofT Jan. 2025 – May 2026

- Ran actuator tests and analyzed EMG sensor data for a wearable exoskeleton addressing Parkinson's symptom mitigation, supporting integration between EMG and mechanical subsystems
- Modeled components in SolidWorks and built Raspberry Pi prototypes for NeuronMove V2 hardware development
- Designed technical sketches used in the NeuronMove V2 redesign, creating a reduction in bulk and advancement in ergonomics across the second-generation platform

Team Member, Subsystem F, Hardware Design & Communication (ECE295) Jan. – Apr. 2026

University of Toronto

- Designed and laid out a printed circuit board in Altium Designer for the team's FM radio receiver subsystem, then soldered and assembled the physical board
- Tested the assembled subsystem against system specifications alongside a cross-functional team and delivered a final oral presentation on the design and results

Team Leader, Engineering Strategies & Practice II Jan. – May 2025

University of Toronto

- Led a multidisciplinary design team to develop a wearable smart-glasses concept for a student with ADHD, integrating behavioural research with user-centred engineering principles

- Directed domain research across behavioural modification, wearable devices, and assistive biotech to guide design direction
- Delivered a working text-to-speech prototype and presented system architecture and implementation strategy to the client and engineering manager

PROFESSIONAL EXPERIENCE

Digital Technologies Intern June – Aug. 2025
Scholarly Elite Tutoring, Barrie, ON

- Designed and developed STEM learning materials, applying UX and instructional design principles to translate technical topics into clear, curriculum-aligned worksheets
- Streamlined content-creation workflows using Canva and automation tools to deliver brand-consistent materials across classrooms

Equine Behaviourist Sept. 2018 – Jan. 2024
Self-Employed, Innisfil, ON

- Applied biomechanical analysis and behavioural conditioning to rehabilitate 10+ horses, designing individualized programs and adapting them through iterative testing and data-driven observation
- Studied and implemented the Balanced Through Movement Method (BTMM) to build posture-correction strategies that reduced stress responses in traumatized or aggressive animals
- Managed the full project lifecycle, including assessment, documentation, client communication, marketing, and sales, for a diverse client base
- Negotiated high-value sales with professionalism, generating up to $5,000 profit per project
- Wrote sales ads and produced visuals, selling 5+ horses

LEADERSHIP & EXTRACURRICULAR

Team Captain, AAA Varsity Girls Rugby Apr. 2022 – Jun. 2024

- Led varsity team through two consecutive O.F.S.A.A. appearances and earned MVP four consecutive years, reflecting sustained high performance and leadership under pressure
- Communicated clearly and confidently with teammates during high-pressure situations, ensuring coordination, focus, and consistent execution
- Designed and executed team training programs, showing initiative, attention to detail, and a results-oriented mindset
- Developed strong emotional control and decision-making in high-stress environments

Participant, Neurotech × iGEM × CUBE "Mind Mesh" Workshop Series Jan. – Feb. 2025

- Built a prototype prosthetic arm using Arduino and motors, and designed an app-interface mockup for a rehabilitation system integrating sensor data and recovery journaling
- Presented a working UI prototype to judges at Canada's largest biomedical hackathon; awarded "Most Out-of-the-Box Design"

HONOURS & AWARDS

Dean's Merit Award, University of Toronto 2024
Schulich Leader Nominee 2024