Ashlyn Lee

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Education

University of Toronto — Toronto, ON
Bachelor of Applied Science, Engineering Science — *Sep. 2025 - May 2030*

Experience

Student Researcher at UTIAS (Flight Systems + Control Lab) — May 2025 – Present
University of Toronto Institute for Aerospace Studies — *Toronto, ON*

- Collaborated with MSc Kevin Chen at UTIAS on **advancing neural contraction metrics** for quadrotor with slung payload
- Designed and implemented PyTorch models to certify **stability via learned contraction metrics**
- Derived **Jacobians and stability proofs** to extend contraction analysis to quadrotor–payload dynamics

Bishop Strachan Rocketry Team — Sep. 2023 – Aug 2025
The Bishop Strachan School — *Toronto, ON*

- Lead 14-member avionics subteam; **engineered custom flight computers and pyrotechnic systems** for two supersonic rockets competing at Launch Canada 2025
- Co-led telemetry (ground control) and established collaborations with university rocketry teams for SRAD avionics guidance
- Outsourced all hardware and lead rigorous prototyping process with documentation
- Team became the first high school team to compete at Launch Canada

Split Elements Boutique — Sep. 2023 – May 2024
Virtual – –

- Developed blockchain ticketing system features by streamlining backend API endpoints in Next.js and building front-end request interfaces in React + Tailwind

Eclipse Expositions — Oct. 2023 – Aug 2024
Virtual – –

- Collaborated and developed authentication and dashboard page for a **1000+ student conference platform** using Next.js, TypeScript, and Tailwind

Projects

Stochastic Neural Contraction Metrics Paper | *Stochastic Calculus, PyTorch, LaTEX* — June 2025 – Present

- Wrote a paper on an unguided learning approach to deriving contraction metrics for stochastic pendulum systems
- Coded a neural network using PyTorch for metric formulation
- Coded a CCM loop utilizing the derived contraction metric to exponentially decrease stability curve

VRC Competition Robot | *Fusion360, C++* — Sept 2021 – May 2025

- Captain of 5298C VRC Team, head programmer, designer and driver
- Lead 8-member team in designing and engineering an award-winning robot, qualified for provincials
- Modelled robot prototypes in Fusion360 prior to implementation

Technical Skills

Languages: Java, Python, C/C++, SQL (Postgres), JavaScript, HTML/CSS
Frameworks: Next, React, Node.js, Flask, JUnit, WordPress, Material-UI, FastAPI
Developer Tools: Git, Docker, Google Cloud Platform, VSCode, Visual Studio, PyCharm, Eclipse
Libraries: pandas, NumPy, Matplotlib, PyTorch