

# Zaid Lateef

Ottawa, ON

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## Education

### University of Ottawa

Sep. 2024 – June 2028

Bachelor of Applied Science (BASC), Mechanical Engineering

Ottawa, ON

- **Awards:** Entrance Scholarship (\$3,000) | 1st Place Eng Design '25 (Accessibility, \$250) | '24 (Ethics, \$250)
- **Courses:** Thermodynamics, Engineering Materials, Fluid Mechanics, System Dynamics, Product Development for Engineers, Electric Circuits, Calculus, Differential Equations, Linear Algebra
- **Leadership:** Team Lead & Pilot (uOttawa Aeronautics) | Lead Designer (uOttawa Eng Comp)

## Experience

### uOttawa Aeronautics

Sep. 2024 – Present

Co-Captain & Pilot

Ottawa, ON

- Serve as Co-Captain & Pilot leading aircraft design, manufacturing, and flight operations for SAE Aero Design teams.
- Led airframe design (structure, materials, aerodynamics) while coordinating subsystem integration and manufacturing.
- Directed **20+ flight tests** as competition pilot, validating aircraft performance, reliability, and flight readiness.
- Managed team workflow, timelines, and coordination across a multi-subsystem aircraft build, improving consistency.
- Contributed to team success achieving **3rd place in Presentation** and **6th place Overall (SAE Aero Micro Class)** in first international competition cycle.

### TilTop Roofing

May 2024 – Sep. 2025

RPAS Roof Inspection Technician

Mississauga, ON

- Conducted **500+ drone inspections**, capturing high-res imagery to assess damage and support repair planning.
- Inspected over **1.1M+ sq. ft.** of roof area, translating imagery into material quantities and cost estimates.
- Collected and organized **15,000+ inspection images**, maintaining complete flight logs and traceable documentation.
- Supported repair quotations valued between **\$8k–\$18k** by delivering accurate inspection data and roof measurements.
- Analyzed roof geometry (planes, ridges, valleys, penetrations) using aerial imagery and pitch adjustments to enable precise area calculations.

## Projects

### Carbon Fiber Bobbin Assembly System | Mechanical Design, System Integration

Mar. 2026

- Designed a robotic-compatible bobbin system enabling controlled carbon fiber winding and reliable handling under  **$\pm 10$  mm** positional and  **$\pm 10^\circ$**  angular misalignment.
- Integrated multiple subsystems (handling, rotation control, yarn guidance) into a compact  **$\leq 30 \times 30 \times 30$  cm** assembly for constrained robotic environments.
- Developed twist-lock interface mechanism enabling stable, unidirectional rotation and secure robotic engagement.
- Delivered a **fully integrated and manufacturable system**, validated through prototyping and recognized as effective.

### CNC Hot Wire Cutter Design & Build | Fusion 360, CNC Systems, GRBL

Dec. 2025

- Designed and built a **4-axis CNC hot wire cutting system** for precision foam cutting and airfoil fabrication.
- Engineered mechanical structure and motion system to improve cutting accuracy and repeatability across complex profiles.
- Enabled rapid prototyping of aerodynamic components through automated toolpaths and iterative manufacturing workflow.

### SAE Advanced Class VTOL Aircraft | SolidWorks, Fusion 360, System Integration

Jan. 2025

- Developed a tilt-rotor VTOL aircraft capable of vertical takeoff and transition to fixed-wing flight for SAE Aero Design.
- Led **fuselage design and CAD development**, implementing a semi-monocoque structure for efficiency and strength.
- Integrated propulsion, avionics, and structure within a compact **1.2 m wingspan** airframe using hybrid manufacturing.
- Delivered a fully integrated platform supporting successful hover and transition flight testing.

## Technical Skills

**Analysis & Simulation:** ANSYS (CFD), Aerodynamics, Structural Analysis

**Design & Manufacturing:** SolidWorks, Fusion 360, CNC Machining, 3D Printing (FDM), Laser Cutting

**Controls & Mechatronics:** Arduino, ArduPilot, Betaflight, Servo & ESC Integration, PID Control

**Programming & Software:** C/C++, Python, MATLAB, G-code, CNC Software

**Engineering Tools:** Microsoft Excel, Word, PowerPoint