

Andrii Zolotai

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Fourth-year Mechanical and Materials Engineering student with extensive hands-on experience in composite fabrication across the automotive, marine, and aerospace industries. CSWP-certified with strong capabilities in CAD, prototyping, manufacturing, and structural design. Particularly interested in aerospace engineering, turbomachinery, machine design, and structural analysis, with a strong focus on practical problem-solving and hands-on engineering development.

PROJECTS

External Fuel Tank for Amphibious Aircraft • 10/2025 - Present

Designed an external fuel tank system for an amphibious aircraft to increase fuel capacity and operational range around the flight envelope of the airplane. Developed detailed CAD models and performed FEA to evaluate structural integrity and mounting loads. Conducted aerodynamic analysis using both analytical methods and CFD to assess drag, flow behavior, and interference effects. Designed the tank structure and mounting hardware with consideration for aerodynamic, structural, and water-operation requirements. Significant emphasis was placed on manufacturability, ease of integration, and adaptability across different aircraft configurations. The design phase has been completed, and the prototype is currently being fabricated, with structural, functional testing and certification planned upon completion.

VTOL UAV • 04/2025 - 08/2025

Pelican Autonomy

Joined a newly founded aerospace startup and helped establish its engineering and manufacturing capabilities from the ground up. Designed molds, programmed CAM, and machined composite tooling using CNC equipment. Built two preliminary UAV prototypes of different scales, along with risk-reduction models used to validate design and manufacturing concepts before full-scale development. Designed mechanical systems for control-surface actuation and performed structural analysis of the airframe. Assisted in organizing the production shop and contributing to motor test equipment design and technical documentation for future development.

Electric Hydrofoil Board • 07/2020 - 05/2023

Established the operating envelope and designed the hydrofoil's hydrodynamic systems to meet performance requirements using computational fluid dynamics. Designed and iterated a several electric hydrofoil prototypes, including the hydrofoil wing, propulsion system, composite structure, and production tooling. Developed a unique split-board composite design and manufacturing process that simplified production and enabled each board to be assembled in under three days. Developed the composite laminate schedule and performed finite element analysis and structural testing to verify structural performance.

Upside-down 3D printer • 06/2020 - 09/2021

Designed and fabricated an inverted 3D printer to reduce frame vibration, improve print quality, and lower production costs while maintaining high printing speeds. The optimized configuration isolated dynamic forces from the frame, achieving a 70% reduction in vibration amplitude and a noticeable decrease in material and assembly costs compared to conventional print

EDUCATION

Bachelor of Applied Science (BASc), Mechanical Engineering

Queen's University
Kingston, ON
04/2027

Mechanical Engineering Tech.

Canadore College
North Bay, ON
04/2021

Bachelor of Applied Science (BASc), Mechanical Engineering (2 years)

West Pomeranian University
Of Technology
Szczecin, WP
04/2018

CERTIFICATIONS

CSWP, CSWP-DT, CSWP-WD, CSWP-SM, CSWP-MM, C.Tech

VOLUNTEERING & LEADERSHIP

QFSAE

09/2023 - Present

Composite Team Member

OACETT

10/2021 - Present

Near North Chapter
Executive Member

OACETT

04/2021 - 10/2021

Student Representative

SKILLS

Software: AutoCAD, C++, CATIA, MATLAB, Microsoft Office, Python, SolidWorks

WORK EXPERIENCE

Royal Military College • Kingston, ON • 07/2026 - 11/2026

Research Assistant • Internship

- Developed Standard Operating Procedures for data acquisition and processing in a supersonic wind tunnel laboratory.
- Operated the supersonic wind tunnel and instrumentation systems to conduct experiments and collect aerodynamic data.
- Processed and analyzed experimental data for a supersonic inlet, including uncertainty analysis and evaluation of flow behavior and test performance.

ING Robotic Aviation • 05/2021 - 06/2023

R&D Technician • Full-time

- Engineered a simple, cost-effective mold-less composite fabrication method, reducing material and setup costs while allowing prototype completion in less than one week.
- Designed and implemented a comprehensive manufacturing plan that enabled the production of a low-cost, full-scale prototype within 90 days.
- Performed on-site composite repairs on flight-test prototypes under varying conditions, maintaining airworthiness and test continuity.
- Maintained CNC and 3D printing systems, improved shop efficiency, and secured top cost-to-quality materials through supplier analysis.

Carbon Fox • 05/2016 - 03/2018

Engineer in Training • Part-time

Balanced hands-on engineering work with full-time undergraduate studies.

- Led end-to-end product development, from 3D scanning client parts to CAD modeling, CNC mold fabrication, and production support.
- Developed detailed lamination instructions for technicians, ensuring correct layup sequences and material use

3DMind • 11/2019 - 09/2020

Owner

Managed a small business alongside full-time employment and studies.

- Completed R&D projects involving reverse engineering and rapid prototyping for client-specific applications.
- Developed cost estimation and quoting templates in Excel to streamline project planning and improve pricing accuracy
- Established and maintained client relationships.
- Promoted brand visibility by leveraging social media platforms to showcase projects and attract new clients.

Wrmth • 05/2024 - 09/2024

Mechanical Engineering Intern • Internship

- Optimized CNC setup parameters and workflow, boosting manufacturing capacity by 30% within 3 months while lowering cycle times and operational costs.
- Continuously improved SOPs to standardize manufacturing processes, ensuring consistent product quality and compliance with engineering best practices.

Hobby: Fabrication and prototyping , Personal Engineering projects, Travel

Languages: English, Polish, Russian, Ukrainian