

# JAMES MAKHLOUF

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## EDUCATION

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### Bachelor of Aerospace Engineering, Space Systems Design

*Sept 2021 – Present*

Carleton University, Ottawa, ON

GPA: 11.94 / 12.0

Expected Graduation: May 2026

Relevant Courses: Spacecraft Design, Orbital Mechanics, Feedback Control Systems, Fluid Mechanics

## RESEARCH INTERESTS

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Robotics, Mechatronics, Aerospace Structures/Materials, Spacecraft Controls, Simulations

## RESEARCH EXPERIENCE

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### Undergraduate Research Assistant (Co-op)

*May 2024 – CUR*

Aerospace Research Centre - National Research Council of Canada, Ottawa, ON

- Designed and conducted experimental mechanics testing of aerospace materials & structures via Digital Image Correlation techniques
- Built an automated robotic microscope imaging system using Python and NI DAQ hardware with subpixel image registration workflows
- Co-author on internal reports and publication (in preparation)

### NSERC USRA Award Recipient (Co-op)

*May 2023 – May 2024*

Carleton University – Impact Dynamics Research Lab, Ottawa, ON

- Developed a finite element model to simulate blunt thoracic injury in LS-DYNA; incorporated smoothed-particle hydrodynamics to model viscoelastic high-strain rate tissue deformation
- Awarded a Carleton I-CUREUS grant to continue research into the school year

## TECHNICAL SKILLS

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**Programming:** Python, MATLAB (Simulink, Simscape, Image Processing Toolbox)

**Software:** SolidWorks, LS-DYNA, ImageJ, Inventor NASTRAN, Systems Tool Kit

**Hardware:** DAQ Systems, Oscilloscopes, Robotic Stages, Stepper Motors, MTS Frames, IR Cameras

**Techniques & Applications:** Digital Image Correlation, Thermoelastic Stress Analysis, Smoothed Particle Hydrodynamics (SPH), X-Ray Diffraction, Uniaxial/Biaxial Testing, Orbital Simulations, Nonlinear Fluid Modelling, Image Registration and Correlation

## SCHOLARSHIPS & AWARDS

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- NRC Aerospace Student Competition – 2nd Place *2025*
- PEO Foundation for Education Award *2024*
- Ann and Bernie MacIsaac Engineering Scholarship *2024*
- NSERC Undergraduate Student Research Award (USRA) *2023*
- I-CUREUS Research Grant, Carleton University *2023*
- Carleton Faculty Scholarships *2021, 2022, 2023, 2024*
- Dean's Honor List *2022, 2023, 2024*