Jared Crebo

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EDUCATION

University of Calgary **2019 – 2025**
Bachelor of Science, Mechanical Engineering, Minor in Astrophysics **Cum GPA: 3.51 / 4.00**

TECHNICAL COURSES

Technical Electives: Aerodynamics, Computational Fluid Dynamics, Propulsion, Renewable Energy Systems
Upper Year: Vibrations, Control Systems, Materials I, Thermo II, Fluids II, Solids II
Math: Calculus III, Linear Algebra II, Ordinary Differential Equations, Partial Differential Equations
Astrophysics: Computational Physics, Astrophysics, Galactic Astrophysics, Stellar Structure and Evolution

TECHNICAL SKILLS

Coding Languages: MATLAB, Python, Java, HTML/CSS, JavaScript, Bash/Batch scripting
Software Programs: SolidWorks, Excel, Femap/Nastran, OpenFOAM, ANSA, Pointwise
Mechanical Skills: CAD, FEA, CFD, composite manufacturing, project management

EXTRACURRICULAR EXPERIENCE

Schulich Unmanned Aerial Vehicles, Calgary, AB **2019 – 2023**

President

- Spearheaded new sponsorships with Lockheed Martin, Textreme, Dassault Systemes, Hexagon, Siemens, resulting in funding, materials, and engineering software for the team worth over $30,000
- Initiated partnership with Airdrie Flying Club for a runway and legal airspace for flight testing
- Coordinated new marketing initiatives through social media and in-person events, resulting in team roster doubling over two years
- Led the team of 50 students to the AUVSI Student Unmanned Aerial Systems 2023 competition, placing 25th overall and 1st in Canada

Mechanical Team Lead

- Led 15 students to design and manufacture of *Hammerhead UAV* for AUVSI Student Unmanned Aerial Systems 2023 competition, placing 25th overall and 1st in Canada
- Led the design of a VTOL-capable UAS for the SAE Aeroconnect Competition in 2022, placing 1st overall for the third consecutive year

Mechanical Team Member

- Participated in the designing of VTOL-capable UAS' for the SAE Aeroconnect Competitions in 2020 and 2021, placing 1st overall in both years consecutively
- Participated in the development of a UAV for the SAE Aerodesign West Advanced Class in 2020

PROFESSIONAL EXPERIENCE

Canadian Armed Forces, Calgary, AB **Feb 2023 – Present**

Combat Engineer

- Successfully completed basic training over 5 weeks, being one of 24 candidates to graduate out of 32
- Developed skills in leadership, decision-making under pressure, teamwork, and conflict resolution

Wildland Firefighter

- Deployed to Jasper, AB as part of a 3 week wildfire response operation specializing in identifying and extinguishing hotspots to prevent wildfire resurgence, resulting in successfully extinguishing the 33,000 hectare wildfire and allowing citizens to return to their homes

Imperial Oil (ExxonMobil), Calgary, AB **Jan 2022 – April 2023**

Kearl Mine Engineering Business Intern

- Managed the renewable diesel experiment on haul trucks and excavators at the Kearl Oil Sands Project, resulting in a 6% reduction in carbon emissions from the mine. Mine productivity impact was assessed through statistical analysis in JMP and Power BI
- Conducted comprehensive Weibull failure analysis on excavator parts in Python, extending equipment lifespan by up to 30% through data-driven insights

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TECHNICAL PROJECTS

Aero-Analysis for UAV Dynamics and Control Law Synthesis, Capstone ***OpenFOAM, MATLAB***

- Investigated the efficacy of developing a dynamic model and control system using computational methods with a comparison to experimental flight tests, achieving 3rd place overall in capstone fair
- Conducted OpenFOAM simulations of UAV 3D model with varying control surface deflections to obtain aerodynamic coefficients and control derivatives, using HPC with parallel computing
- 6-DoF dynamic model of aircraft developed and simulated in MATLAB Simulink

Hammerhead UAV, Schulich UAV ***Solidworks, Femap/Nastran, XFLR5, MATLAB***

- Led a team of 50 students as President to develop and fly a UAV for the AUVSI Student Unmanned Aerial Systems competition in Maryland, USA in 2023, placing 25th overall and 1st in Canada
- Successfully met requirements to fly 12mi endurance with 2.5kg payload capable of airdrop on target
- Designed aerodynamic surfaces using XFLR5 and 3D modelled in Solidworks CAD
- Analyzed structure using FEA in Femap and Nastran per FAA airworthiness standards
- Manufactured carbon fiber composite using wet layup method with CNC routed molds

Von Karman Vortex Street CFD Simulation, Computational Fluid Dynamics course ***OpenFOAM***

- Conducted a transient, incompressible OpenFOAM simulation of turbulent flow over a 2D cylinder with k-ω SST turbulence model, achieving a grade of 98%
- Oscillating flow mechanism characterized through the calculation of the Strouhal number

Finite Wing CFD and Wind Tunnel Experiment, Aerodynamics course ***OpenFOAM, MATLAB***

- Conducted OpenFOAM simulations to investigate the effects of downwash and wingtip vortices
- Simulations validated through wind tunnel experimentation with 3D printed finite wing

Vortex Panel Method, Aerodynamics course ***MATLAB***

- Developed the code to implement the vortex panel method in MATLAB to approximate aerodynamic coefficients of an arbitrary airfoil shape, achieving a grade of 100%

SAE Aeroconnect, Schulich UAV ***Solidworks, MATLAB, Excel***

- Led a team of 15 students as Mechanical Lead to design a UAS for the SAE Aeroconnect Competition 2022, achieving 1st place overall
- Designed flight regime and structure to carry passengers around LAX airport per FAA standards

PUBLICATIONS

Noaeen, M., et. al. (2022). Reinforcement learning in urban network traffic signal control: A systematic literature review. *Expert Systems with Applications, 199,* 116830. https://doi.org/10.1016/j.eswa.2022.116830

SCHOLARSHIPS & AWARDS

Jason Lang Scholarship	**2020, 2021, 2024**
1st Place - SAE Aeroconnect Competition	**2020 - 2022**
Rutherford Scholarship	**2019**
Thorncliffe Community Scholarship	**2019**
Royal Conservatory of Music – Piano Level 5 Honours with Distinction	**2010**

PROFESSIONAL AFFILIATIONS

American Institute of Aeronautics and Astronautics (AIAA) – Student Member	**2022 – Present**
Society of Automotive Engineers (SAE) – Student Member	**2020 – Present**
Schulich UAV – President	**2019 – 2023**
Kappa Sigma Fraternity	**2019 – 2023**
UCalgary Ski and Board Club	**2019 - 2022**
UCalgary Firearms Association	**2019 - 2022**