Lochlin King

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Education, Certifications, and Awards

BSc. Mechanical Engineering | University of Alberta | Graduated April 2020 | 3.4 GPA

Key Electives: FEA for Mechanical Engineers, Applied CFD, Feedback Control Design, Aerodynamics

- Certified SolidWorks Professional (CSWP), 2019
- NSERC Undergraduate Student Research Award, 2019
- Jason Lang Scholarship, 2019
- Junior Honours Design Award, 2018

Experience

Lead Student Engineer| Student Team for Alberta Rocketry Research (STARR) | Aug. 2018 – Present

- Led a 30-member team in the development of a solid fuel rocket for the IREC competition
- Assigned tasks, held weekly design meetings, met with sponsors, and procured materials
- Reduced airframe cost by 80% through appropriate material selection and procurement
- Calculated external loads and performed analytical stress analysis on thrust plate and longerons
- Tested mesh convergence and validated finite element results with analytical calculations
- Presented research to industry experts at the 2018 and 2019 Aero-Day conferences on behalf of STARR

Vertical Takeoff and Landing System, Capstone Project| University of Alberta | Jan. – Apr. 2020

- Designed and developed a vertical takeoff and landing system (VTOL) for a fixed wing drone
- Generated and systematically refined, high quality, structured, hexahedral meshes in ANSYS
- Removed stress singularities near boundary conditions by using line loads instead of point loads
- Performed a topology optimization in ANSYS to reduce the VTOL structure mass by nearly 50%
- Optimized topology results for manufacturability using SolidWorks
- Completed verification simulations of optimized structure and validated results with analytical model
- Designed a 3D printed wind shroud, reducing drag by an estimated 25% compared to original design
- Sized and selected off the shelf components to streamline manufacture and assembly
- Designed VTOL structure to be waterjet from sheet metal and bent into shape, reducing fabrication time
- Successfully delivered the completed system on time and 20% under budget

Research Assistant | University of Alberta Laboratory of Turbulent Flow | Apr. – Sept. 2019

- Evaluated the aerodynamic performance of a client designed tunnel hull jet boat
- Created a SolidWorks model with sheet metal and surface tools, optimized for 3D printing
- Specified limit-fit tolerances and produced engineering drawings for in-house machine shop
- Collaborated with machinists to fabricate and assemble experimental apparatus
- Executed wind tunnel measurements and performed load cell data acquisition with LabView
- Automated data processing with MATLAB, saving approximately 4 hours of work per day
- Prepared a technical report to convey test results and suggest improvements to the client

Technical Skills

Analysis	**Design**	**Manufacturing**	**Programming**
ANSYS APDL	DFM & DFA	Additive manufacturing	CSS
ANSYS Workbench	Fusion360	Manual mill	C++
Matlab/Simulink	GD&T	Manual lathe	HTML
Siemens STAR-CCM+	Solidworks	TIG, GMAW, SMAW	Python