Joshua C. Brown

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Education

University of Alberta   *Edmonton Alberta, Canada*

B.Sc. in Mechanical Engineering, Minor in Mathematics   *Sept. 2019 - Jan. 2024*

- Will finish upcoming fall semester
- Cumalitive GPA 3.8

Skills

Solid Modelling	SolidWorks, Onshape, Fusion 360
Programming	Python, ROS/ROS2, MATLAB, LaTeX
Manufacturing	CNC Router, Carbon Fiber, Power/Hand Tools, 3D Printing

Experience

Mechatronic Systems Lab (Dr. Martin Barczyk)   *University of Alberta*

Bimanual Force Control Undergraduate Research   *Jan. 2024 - Apr. 2024*

- Implemented simple bimanual force control algorithm
- Reviewed force control and dynamical systems control literature
- Created docker environment for portable development

Pegasus Imagery   *St. Albert, Alberta Canada*

Mechanical Engineering Student   *Sept. 2022 - Nov. 2023*

- Iterated on a Drone Tail Design with Little Oversight
- Manufactured Composite Drone Parts in House
- Used a CNC Router to Manufacture Parts as needed
- Designed and Modelled FDM printed Parts
- Lead the Creation of Build Manuals for Manufacturing Repeatability

Defence Research and Development Canada (DRDC)   *Suffield, Alberta Canada*

Defence Robotics Research Student   *Sept. 2021 - Apr. 2022*

- Researched LiDAR Following Algorithm using Machine Learning
- Developed Several Following algorithms with varying complexities
- Debugged and Augmented a pre-existing Codebase For UGV Autonomous Navigation and Control
- Tested Visual Odometry Software

Tutor   *Edmonton, Alberta*

Tutor   *2020 - 2022*

- Prepared lessons and worked through practice problems
- First year engineering calculus, Elementary Math

Student Clubs

Autonomous Robotic Vehicle Robot (ARVP)   *University of Alberta*

Software Co-Lead   *Jan. 2022 - PRESENT*

- Implemented a basic Kalman filter for state estimation of an AUV
- Wrote a basic driver for a Doppler Velocity Log (DVL) and IMU
- Implemented a P-controller for autonomous vision-based underwater control
- Troubleshooting hardware such as CAN bus

AlbertaSat   *University of Alberta*

Junior Mechanical Member   *Nov. 2019 - Sept. 2020*

- Collaborated on "FlatSat" design to modularly test satellite subsystems
- Designed and created solidworks drawing templates to be used by the team
- Used computer aided manufacturing (CAM) tools and solid models to 3D print and CNC mill prototype parts

Projects

Mechanical Engineering Capstone
University of Alberta

FSAE REAR WING
Jan. 2024 - Apr. 2024

- Lead a design team to create a formula student rear wing
- Used FEA to optimize design for weight and cost
- Fully modelled rear wing using SolidWorks

HackED 2024
University of Alberta

FROUTE
Jan. 2024

- Learned about and implemented bluetooth connection between a laptop server and hc-05 bluetooth module
- Interpretted serial data on a microcontroller

Purely Personal
At Home

MOBILE ROBOT
2023

- Designed and made a simple mobile robot
- Sourced motors, sensors, and development boards
- Designed and 3D printed a chassis to mount all electronics

MecE 360 Design Project
University of Alberta

TRANSMISSION DESIGN
May 2022 - Aug. 2022

- Created code in SMath to analyze structural failure criteria of a transmission shaft
- Awarded best in class project of 8 competing groups

HackED 2023
University of Alberta

DEMOCRATIC OUIJA
Jan. 2023

- Created an electronic ouija board with a group of five
- Used printrun suite to control two axis gantry using python sent GCode
- Developed paths for gantry to follow

MecE 260 Design Project
University of Alberta

PUCK LAUNCHING VEHICLE
Sept. 2020 - Dec. 2020

- Drafted the chosen concept of team vehicle
- Designed a Mount of Sheet Metal to connect several Launching assemblies with a Main Chassis
- Chosen as Most Promising Design of 20 groups

YeeHaw Hacks, Major League Hacking
Online

JUAN WICK
Aug. 2020

- Collaborated with four team members to create a computer game with the use of public assets in a span of 48 hours
- Executed most of the back-end work such as converting user input into character actions and creating enemy behaviour in C#
- Presented project to a panel of judges and awarded first place of over 50 projects

Honors & Awards

AWARDS

2023	**3rd Place**, HackED	*Edmonton, Alberta*
2021	**1st Place**, YeeHaw Hacks	*Online*
2021	**Best Design**, Second Year Design Course	*University of Alberta*
2022	**Best Design**, Third Year Design Course	*University of Alberta*

Certificates

| 2021 | **Certified Solidworks Professional (CSWP)**, Dassault Systemes |