

# Joshua Brown

Edmonton, Alberta, Canada

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## Education

### University of Alberta

B.SC. IN MECHANICAL ENGINEERING, MINOR IN MATHEMATICS

- Will finish upcoming fall semester
- Cumulative GPA 3.8

Edmonton Alberta, Canada

Sept. 2019 - Jan. 2024

## Skills

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

## Experience

### Dr. Martin Barczyk, University of Alberta

BIMANUAL FORCE CONTROL UNDERGRADUATE RESEARCH

- Worked independently with vague direction
- Implemented simple bimanual force control algorithm
- Reviewed force control and dynamical systems control literature
- Created docker environment for portable development

Edmonton, Alberta

Jan. 2024 - Apr. 2024

### Defence Research and Development Canada (DRDC)

DEFENCE ROBOTICS RESEARCH STUDENT

- 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

Suffield, Alberta Canada

Sept. 2021 - Apr. 2022

### Pegasus Imagery

MECHANICAL ENGINEERING STUDENT

- 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

St. Albert, Alberta Canada

Sept. 2022 - Nov. 2023

## Projects

### YeeHaw Hacks, Major League Hacking

JUAN WICK

- 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

Online

Aug. 2020

### Second Year Design Course

PUCK LAUNCHING VEHICLE

- 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

University of Alberta

Sept. 2020 - Dec. 2020

### Third Year Design Course

TRANSMISSION DESIGN

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

University of Alberta

May 2022 - Aug. 2022

## Mechanical Engineering Capstone

### FSAE REAR WING

- 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

University of Alberta

Jan. 2024 - Apr. 2024

## HackED 2023

### DEMOCRATIC OUIJA

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

University of Alberta

2023

## HackED 2024

### FRUTE

- Bluetooth connection between a laptop server and hc-05 bluetooth module
- Interpreting serial data on a microcontroller

University of Alberta

2024

## Purely Personal

### MOBILE ROBOT

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

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2023

## Student Clubs

### Autonomous Robotic Vehicle Robot (ARVP)

#### SOFTWARE CO-LEAD

- Implemented a basic Kalman filter for an AUV
- Wrote a basic driver for a Doppler Velocity Log (DVL) and IMU
- Implemented a P-controller for visual servoing
- Reviewed and merged code from a small team
- Troubleshooting hardware such as CAN bus

University of Alberta

Jan. 2022 - PRESENT

## Honors & Awards

### AWARDS

- 2023 **3rd Place**, HackED
- 2021 **1st Place**, YeeHaw Hacks
- 2021 **Best Design**, Second Year Design Course
- 2022 **Best Design**, Third Year Design Course

Edmonton,

Alberta

Online

University of

Alberta

University of

Alberta

## Certificates

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