

# Zachary Alves

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## EDUCATION

**Northwestern University** | Evanston, IL

09/2023 – 09/2024

M.S. Robotics, *expected December 2024*

- Relevant Coursework: Mechatronics, ROS2, SLAM, C++, Python

**Colorado State University** | Fort Collins, CO

08/2017 – 05/2022

B.S. Mechanical Engineering

- Minor in Computer Science

## SKILLS

**Software:** C++, ROS/ROS2, Python, Jekyll, SOLIDWORKS, C#, RobotStudio

**CAD:** SOLIDWORKS (9 years)

## WORK EXPERIENCE

**Lincoln Electric Automation** | Fort Collins CO

01/2021 – 06/2023

Project Engineer

06/2022 – 06/2023

- Demonstrated system features and effectiveness to customers for systems ranging up to \$1 million
- Developed and program customer specific six axis robotic systems
- Customized welding robot control programs to meet or exceed unique performance metrics
- Validated operating conditions to meet safety requirements for end users
- Troubleshooted electrical, software, and mechanical components
- Coordinated with members of different engineering teams to optimize system efficacy
- Assisted production assembly of custom systems to support production needs

Intern – Mechanical Engineer

01/2021 – 06/2022

- Designed mechanical parts for automatic welding robotics systems
- Utilized Finite Element Analysis (FEA) to ensure design meet specifications
- Detailed CAD models for existing parts while ensuring proper GD&T
- Assisted assembly on manufacturing floor

**Colorado State University** | Fort Collins CO

02/2018 – 12/2020

Lab Staff | Idea 2 Product 3D Printing Lab

- Created CAD models and printed 3D components for CSU events and clients of the Colorado State University Lab
- Conducted training sessions for new students and provided after hours access privileges for the lab
- Repaired 3D printers to improve performance and for regular maintenance

## Lab Staff – Summer Position

- Tested sterilization techniques on ultrasonic generators to establish accelerated reliability values

**CERTIFICATIONS**

Certified SOLIDWORKS Associate (CSWA)

2015

**PROJECTS****SLAM** | Robotic SLAM class

02/2024

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**Robotic Arm and Hand Project** | Embedded System Class

12/2023

- Programmed large python project using Git along with four other students
- Created model hand for physics simulation to be controller by user actions
- Demonstrated project functionality to classmates and video crew

**Heavy Lift UAV Drone** | Senior Design Project

09/2021 – 05/2022

- Optimized gimbal system to hold a wireless camera
- 3D modeled and 3D printed gimbal, battery storage, and busbar components
- Obtained FAA Part 107 license to test drone

**Modifications to Quadrupedal Robot** | Personal Project

09/2020 – 11/2020

- Designed and 3D printed components with mounting modifications to accommodate printer limitations
- Modified pre-written code to adapt robot controls to an Xbox controller

**Autonomous Egg Delivery Robot** | Design II Class

12/2019

- Designed robot capable of carrying an egg over 5 meters without cracking the egg
- Programmed the robot using Python to autonomously perform task
- Performed 100% of all CAD models and engineering drawings

**SolidWorks surface model of computer mouse** | Design I Class

05/2019

- Utilized surface modeling techniques to model complete contour of mouse
- Generated engineering drawings using Solidworks models

**Fabricated Machined Clock** | Manufacturing Processes Class

05/2019

- Machined metal and acrylic components from bar stock and sheets to meet tight tolerances
- Completed final assembly to meet engineering drawings and verify functionality

**ACTIVITIES AND LEADERSHIP**

- CSU Marching Band

2017 – 2021

- CSU Basketball Pep Band

2018 – 2022