

Zachary Alves

Cell: 720-215-1442

Portfolio: <https://alves-zach.github.io/>

Email: alves.zach26@gmail.com

EDUCATION

Northwestern University (Evanston, IL)

12/2024

M.S. Robotics

- Relevant Coursework: Mechatronics, ROS2 programming, SLAM

Colorado State University (Fort Collins, CO)

05/2022

B.S. Mechanical Engineering

- Minor in Computer Science

SKILLS

CAD: SOLIDWORKS (9 years)

Software: RobotStudio, RAPID, Python, MATLAB, SOLIDWORKS, C++, Java, C#

3D printing software: Cura, MakerBot, Prusa slic3r

Machines: Lathe, drill press, CNC mill, oxy-acetylene torch (metal treating)

WORK EXPERIENCE

Lincoln Electric Automation, Fort Collins CO

01/2021 – 06/2023

Project Engineer

06/2022 – 06/2023

- Demonstrate system features and effectiveness to customers for systems ranging up to \$1 million
- Develop and program customer specific six axis robotic systems
- Customize welding robot control programs to meet or exceed unique performance metrics
- Validate operating conditions meets safety requirements for end users
- Troubleshoot electrical, software, and mechanical components
- Coordinate with members of different engineering teams to optimize system efficacy
- Assist 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 meets specifications
- Detailed CAD models for existing parts ensuring proper GD&T
- Assisted assembly on manufacturing floor

CSU Lab, Idea 2 Product 3D Printing Lab, Fort Collins CO

02/2018 – 12/2020

Lab Staff

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

Lab Staff – Summer Position

- Tested sterilization techniques on ultra-sonic generators to establish accelerated reliability values

CERTIFICATIONS

Certified SOLIDWORKS Associate (CSWA)

2015

PROJECTS

Designed 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

Design 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

Designed and Built an Autonomous Egg Delivery Robot, Design II

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

05/2019

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

Fabricated Machined Clock, Manufacturing Processes

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