

Zachary Alves

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EDUCATION

- Northwestern University** | Evanston, IL 09/2022 – Present
M.S. Robotics, *expected December 2024*
- Relevant Coursework: Mechatronics, ROS2 programming, SLAM
- Colorado State University** | Fort Collins, CO 08/2017 – 05/2022
B.S. Mechanical Engineering
- Minor in Computer Science

SKILLS

CAD: SOLIDWORKS (9 years)
Software: RobotStudio, Python, MATLAB, SOLIDWORKS, C++, Java, C#, ROS/ROS2
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
- 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

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