Zachary Alves

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EDUCATION

Colorado State University (Fort Collins, CO) 05/2022
B.S. Mechanical Engineering
- Minor in Computer Science
- Relevant Coursework: Solidworks, Mechatronics, FEA, Fluids, C++, MATLAB, Control Systems, Lasers, Senior Design

Northwestern University (Fort Collins, CO) 12/2024
M.S. Robotics
- Relevant Coursework: Mechatronics, ROS2 programming, SLAM

SKILLS

CAD: SOLIDWORKS (7 years)
Software: Robotstudio, RAPID, Python, MATLAB, SOLIDWORKS, C++, Java, C#
3D printing software: Cura, MakerBot, Prusa slic3r
Machines: Lathe, drill press, CNC mill, oxyacetylene 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
- 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

Medtronic, Boulder CO 06/2019 – 09/2019

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 Computer Science Interest Club 2019

HOBBIES AND INTERESTS

3D Printing	Playing Saxophone and Guitar	Gaming
Watching Movies	Snowboarding	Rubik's Cubes
Dungeons and Dragons	Building PCs	Rock Concerts