Jillian Kellum

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SUMMARY

B.S. Mechanical Engineering student at MSOE with co-op and internship experience along with independent and hands-on and team-based project experiences. Devoting 15-20 hours per week as an NCAA athlete with a full academic schedule. Developed customer service skills with food service job. Skills in MATLAB, MATLAB Simulink, CNC Routing, 3D printing, CAD, Excel.

EDUCATION

B.S. Mechanical Engineering | Milwaukee School of Engineering | 3.96 GPA | Expected Dec 2027

CO-OP AND INTERNSHIP EXPERIENCE

Mechanical Engineering Design Co-Op | Husco International | January – August 2025

- Designed, tested, modified, and launched hydraulic flow and pressure control system using MATLAB Simulink to regulate flow and pressure on test racks, replicate new customer testing, and show company's adaptability in a short period of time.
- Created electrical diagrams and various prototype wire harnesses to launch new control system.
- Created utilization documentation using Git and Azure to teach cross discipline teams how to use and expand new flow and pressure control system.
- Created project outline for a new and unique continuous durability valve test rack, including plumbing schematic with proof of concept to show team best options to pursue.
- Modified test blocks and updated drawings using Creo to create BOM for new continuous durability valve test rack.
- Authored two external and internal environmental reports for group's valves and coils entering production to ensure customer performance requirements.
- Conducted hydraulic performance, electrical, environmental, and torque retention tests for coils and valves to establish baseline performance specifications.
- Created parse scripts and analyzed testing data using test rack data and Excel to present findings and recommendations to team.

Energy Services Intern | Cedar Falls Utilities | May – August 2024

- Examined data using Python and Google Collab to determine customer program eligibility.
- Examined energy usage in household and large, local companies and made recommendations for energy improvement and workday adjustments.
- Utilized VBA in Excel and other methods to make customer-friendly HVAC sizing form.
- Decoded technical rebate programs into fliers for customers.
- Developed and presented to General Manager about outreach program for company.

INDEPENDENT PROJECT EXPERIENCE

Elevator Lift: Design and construct structural garage lift to lift loads into loft area 10 ft from ground level to create additional storage area.

- Identified problem: underutilization of storage space in garage and safety hazard of carrying loads up ladder.
- Researched solutions of DIY garage lift using a hoist and created models for hoist mount, lift, and rails in Onshape to fit unique parameters.
- Built 8.5 ft hoist mount frame attached to side wall, 115 lb. lift from 2x4s and 2x6s, and rails.
- Purchased 1760 lb. limit hoist and assembled all components.
- Modified components to create fully functional lift for specific area and use.

PROJECT EXPERIENCE

MATLAB Robot Design Project (Team of 3): Detect and locate the position of three randomly placed objects, lighting up an LED once each object is touched.

- Researched and decided on solution based on collaboration, decision matrices, data analysis, and other constraints.
- Constructed and programed robot using MATLAB, Arduino board, and various sensors.
- Tested in real time and modified for optimal performance.

CAD Prosthetic Limb Project (Team of 2): Reduce discomfort and increase quality of life for a three-legged dog using design process.

- Brainstormed ideas & researched available resources to identify current solutions & functionality.
- Drafted models of dog using Artec Spider 3D scanner to construct a custom prosthetic.
- Manufactured rough prototypes of foot and leg components using 3D printing and rubber casting to assess different elements and how they interacted together.
- Refocused main component materials to PLA and TPU filament due to reliability found in testing.
- Performed trial fits on dog with multiple prototypes and troubleshot design for optimized performance.

NASA Student Launch Initiative Project (Team of 12): Design a rocket carrying a unique payload and increase STEM engagement in surrounding community as Safety Officer with Level 1 Rocket Certification.

- Composed and delivered numerous reports totaling over 500 pages involving elaborate safety sections, vehicle calculations and predictions, outreach quotas, and payload progress to be submitted to NASA to demonstrate preparedness when launch day arrived.
- Led team to engage over 300 students in hands on STEM-related activities to interest young students in aeronautics and engineering.
- Connected with community through 15 elementary teachers and Cedar Falls School District to plan outreach engagements.

Result: *Judge's Choice, 3rd place Outreach, 1st place 3D printing, and 2nd place Social Media awards.*

TECHNICAL SKILLS

Programming: MATLAB, MATLAB Simulink (PID Control Systems), Python, Microsoft Office & Excel
Modeling: SOLIDWORKS, Creo, Autodesk Inventor, Onshape, Drafting, Visio
Prototype Development: CNC Routing, 3D Printing, 3D Scanning, Wire Harness Prototyping
Courses: Solid Modeling and Design, Statics, Circuits, Material Science, Thermodynamics, Dynamics, Mechatronics

NCAA STUDENT ATHLETE EXPERIENCE

MSOE NCAA Women's Soccer Team | August 2023 - present | 15-20 hours per week

- Balance 2-hour, daily practice, off-season training; bi-weekly game travel with full-class schedule.
- Study, learn, and execute numerous game strategies, mechanics, and systems.
- Practice troubleshooting and problem-solving techniques in high stress, real-time competition environment and immediately modify strategy accordingly.

Developing teamwork, communication skills, time management and prioritizing skills, competitive character, highly disciplined work ethic, and performance excellence.

OTHER WORK HISTORY

Sandwich Topper and Cashier | SubCity on the Hill | June 2021 – July 2023
Sports Scorebook Keeper | Cedar Falls School District | December 2017 – February 2020