Joseph M. Wilson

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Education

MS Thesis Mechanical Engineering — **Graduation Date: Aug 2021**

University of Colorado Boulder

BS Mechanical Engineering, Energy Engineering Minor — **Graduation Date: May 2020**

University of Colorado Boulder

Experience

Teaching Assistant, Mechanical Engineering Department — **January 2021 – May 2022**

- Held office hours to reinforce fundamentals of course topics for enrolled students.
- Graded assignments and provided feedback to further improve students' understanding of material.
- Courses include Computational Fluid Dynamics (CFD), Sustainable Energy, and Manufacturing Processes.

Student Assistant, Energy Engineering Program — **January 2019 – May 2020**

- Provided information about the Energy Engineering Minor Program to interested students.
- Completed administrative work as necessary determined by the Program owner.
- Conducted surveys to tailor events to interest of students enrolled in the Energy Engineering Program.

Engineering Intern, Arcosa Lightweight — **June 2019 – August 2019**

- Implemented the principles of Lean Six Sigma to organize storehouse for consumables and materials.
- Learned and complied with MSHA safety standards at all times to ensure a safe work environment.
- Communicated plan, progress, and results to all supervisors with a vested interest in project outcome.
- Created a presentation to communicate results of project to supervisors, managers, and executives.

Calibration and Repair Technician, U.S. Marine Corps — **July 2011 – July 2016**

- Delegated workload and supervised tasks to ensure work was done in a timely manner with high quality.
- Served as Training Manager for 1.5 years, overseeing training schedules for a total of 43 individuals.
- Completed calibration of new assets and trained colleagues to operate assets to ensure proper use.
- Utilized knowledge of operation of 600 calibration standards to properly calibrate test equipment.
- Completed quality assurance checks of over 150 assets.
- Utilized troubleshooting and electronic schematic expertise to repair test equipment when necessary.

Projects

Electrically Actuated Grippers for client Mikron Corporation (Senior Design Project), Team Member/Project Manager

- Coordinated scheduling of the team and ran meetings with team, faculty director, and client.
- Participated in development while being accountable for the overall result of the project.
- Developed manufacturing grippers that are electrically actuated instead of pneumatically actuated.
- Ensured that market development of devices would be comparable in cost to current market grippers.
- Met specifications required by client for actuation speed, force, and distance.

Solar District Cup National Competition – 3rd Place Winner, Team Member

- Design a solar panel and battery storage system for New Mexico State University Campus.
- Developed Python script that would evaluate shading losses for any 2D, horizontal solar array.
- Evaluated the impact to the distribution grid that the solar and storage installations would add.

Skills

- Computational Fluid Dynamics
- SolidWorks
- PTC Creo
- Python
- C++
- MATLAB
- Quality Control
- Lean Six Sigma
- Project Management

Publications

- Implementing a Neg. Pres. Isolation Space within a SNF to Control SARS-CoV-2 Transmission, AJIC, Oct 2020

- A Lagrangian Approach Towards Quantitative Analysis Of Flow-mediated Infection Transmission in Indoor Spaces With Application To SARS-CoV-2., IJCFD, Nov 2021

Conferences and Abstracts

- *Flow Physics Modeling for Sars-CoV-2 Negative Pressure Isolation Space in a Skilled Nursing Facility.* Wilson, J., Miller, S., Clements, N., Steiner, C., Mukherjee, D., Rocky Mountain Fluid Mechanics Symposium, August 2020
- *Flow Physics Informed Design of a Negative Pressure Isolation Space for SARS-CoV-2 in a Skilled Nursing Facility.* J. Wilson, S. Miller, N. Clements, C. Steiner, D. Mukherjee, CCTSI CU-CSU Summit, August 2020
- *A Coupled Lagrangian Model for Flow-mediated Transmission of SARS-CoV-2 through Respiratory Ejecta in a Skilled Nursing Facility.* J. Wilson, S. Miller, N. Clements, C. Steiner, D. Mukherjee, American Physical Society Division of Fluid Dynamics 2020, November 2020
- *Computational Modeling of Viral Infection Transmission and Control in Indoor Spaces*. Wilson, J., Miller, S., Mukherjee, D., United States National Congress on Computational Mechanics, July 2021