

# MONTANA W. MARKS

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## EXPERIENCE

### Graduate Research Assistant

#### Bio-Inspired Dynamics Lab - Montana State University

📅 Aug. 2020 – May 2021

📍 Bozeman, Montana

- Research and Develop low order fluid structure interaction methods and models
- Review literature associated with lab research and aid in development of experiments

### Graduate Teaching Assistant

#### Measurement & Instrumentation Lab - Montana State University

📅 Jan 2020 – May 2021

📍 Bozeman, Montana

- Work with course instructor to develop laboratory assignments
- Work with students to troubleshoot problems with experimental setup and aid in learning of course material
- Grade student lab report and homework submissions

### Design/Manufacturing Engineer

#### MRL Equipment

📅 July 2018 – June 2019

📍 Billings, Montana

- Devised, drafted, and revised standard operating procedures and work instructions in order to help eliminate errors, inconsistencies, and redundancies in ERP system and engineering department practices
- Improved bill of material accuracy by implementing drawing design standards and rebuilding the ERP system to better reflect engineering documentation and drawings.
- Interpreted engineering drawings and schematics to assess manufacturability and determine the best method of manufacturing
- Worked in close contact with a team of engineers, and manufacturing personnel to improve accuracy of product line pick documents resulting in significantly improved inventory accountability while maintaining efficiency and employee morale.

### Resident Project Representative Engineer Intern

#### KLJ Engineering

📅 June 2015 – Aug. 2015

📍 Dickinson, North Dakota

- Oversaw the construction of water main installation and subsequent city infrastructure
- Assured contract compliance of the project contractor and coordinated with project engineer
- Managed summary of quantities and progress estimate spreadsheet in order to track project progress
- Revised, corrected, and drafted as-built drawing plans
- Performed hydro-static pressure testing on newly installed water main sections

## EDUCATION

### MS in Mechanical Engineering

#### Montana State University

📅 Aug. 2019 – May 2021

### BS in Mechanical Engineering

#### Montana State University

📅 Aug. 2014 – May 2018

## TECHNICAL SKILLS

### Drafting and Design

- SOLIDWORKS, Fusion360, & AutoCAD

### Numerical Computation

- MATLAB, Excel/Visual Basic, & Mathcad

### Fluid and Structural Modeling

- STAR-CCM+, ANSYS Workbench & APDL

### Documentation & Presentation

- LaTeX, Word, & PowerPoint

### System Design & Data Collection

- LabVIEW, & Simulink

### Mathematical Modeling

- Lagrangian Mechanics, System Dynamics, Classical Mechanics, Rigid Body Dynamics, Fluid Mechanics

### Coding Environments & Languages

- MATLAB, Python

## PROJECTS

### Reduced-Order Aeroelastic Modeling of Small Scale Aircraft Rotor

- Developed a low order fluid structure interaction model of a small scale aircraft rotor. This was accomplished by applying Lagrangian dynamics to a structural model in order to develop non-linear equations of motion. Blade element theory was then employed to couple aerodynamic forces to the structural model. An optimization routine utilizing the low order model was used to enhance rotor performance by determining an ideal deformed blade shape.

### Flow Generation Apparatus

- Designed a fluid flow generation apparatus for a UUV/AUV testing tank for NAVSEA. Several CFD models were created for numerous potential designs. Once specifications were met and a final design chosen a fluid transport system with the capability of moving nearly 11,000 Gpm of water was then designed. Pipe flow calculations were performed to select proper pump and pipe size. Utilizing dimensional analysis, a physically accurate small scale system was then designed and built.