MONTANA W. MARKS

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EXPERIENCE

Graduate Research Assistant

Bio-Inspired Dynamics Lab - Montana State University

Aug. 2020 – Current 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 – Current 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

Manufacturing/Design 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 - 3.67 GPA

Montana State University

Aug. 2019 – Current

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

Repair & Maintenance

- Automotive, Bycycle, Electronic Devices, Audio Systems

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.

Large Scale Irrigation System Design

- A large scale irrigation system for agricultural application was developed using a proprietary pipe flow calculator. Calculations of system characteristics such as head loss, target operating pressure at pump head, and target flow rate were performed in order to determine proper pump size and various pipe diameters.

Flow Generation Aparatus

- 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.