Andrew Moodie

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Education

Purdue University, West Lafayette, Indiana August 2020 - May 2024
Bachelor of Science in Mechanical Engineering
Minor in Spanish

Professional Experience

General Dynamics Electric Boat, New London, Connecticut August 2024 - Present
Systems Engineer - Future Plant Studies, Secret Clearance

- **Developed a unified turbine generator control system** for all U.S Nuclear Navy platforms under construction (Virginia, Columbia and Ford Classes), leveraging common hardware building blocks to reduce lifecycle maintenance costs and mitigate obsolescence risks.
- **Compiled and analyzed signal interfaces and software algorithms** across existing control systems, establishing a centralized database to guide sensor and process integration into the common controller.
- **Created detailed system architecture diagrams** using Visio to communicate control system design concepts and interfaces to stakeholders across industry and government.
- **Applied Model Based System Engineering (MBSE)** by using SysML and Catia NoMagic to capture requirements and consolidate system knowledge previously dispersed across multiple organizations.
- **Led cross-functional collaboration** between three prime defense contractors, the Department of Energy, and the Navy, aligning technical objectives and streamlining the design review and customer approval process.
- **Authored turbine control requirements** for the next-generation fast-attack submarine procurement specification.
- **Recognized with the Operational Excellence Award** for contributions to the common turbine generator control system initiative.

Nooter/Eriksen, Fenton, Missouri May - August 2023
Research and Development Engineer

- **Implemented a new control system** restoring operational capability to the company's wind tunnel, enabling product testing to resume.
- **Performed flow testing** by regulating ion concentrations within a closed-loop water system, evaluating a descaling device's effectiveness in heat recovery steam generators.
- **Identified and recommended process improvements** to enhance testing efficiency and accuracy.
- **Presented technical findings and outcomes** to the Vice President, summarizing key internship contributions and proposed next steps.

Purdue University, West Lafayette Indiana August 2021-May 2024
Resident Assistant

- **Fostered an engaged residential community** of 150+ students over three years by developing and leading educational programs that supported successful transitions to university life, including large scale events with over 200+ participants.
- **Served as an on-call supervisor** responsible for crisis response and community safety across a residence hall of 500+ residents.
- **Collaborated Effectively** with university administrators and students to resolve sensitive issues with professionalism and empathy.

Design Projects

Toroidal Blade Quiet Leaf Blower - Senior Design Project

- **Designed and manufactured a low-noise leaf blower** utilizing an innovative toroidal fan blade that significantly reduced noise levels without compromising overall performance; selected as a finalist for the *Testing and Validation* award.
- **Developed and executed a comprehensive test regime** evaluating 15 fan blade variations to optimize pitch, thickness, and blade count for acoustic and overall performance.
- **Coordinated project planning and execution** by maintaining Gantt chart schedules, organizing team meetings, and ensuring deliverables were completed on time.

Gear Reduction Competition

- **Designed and manufactured components** for a small-scale wind turbine, modeling the full gear train's kinematic motion in Creo.
- **Engineered a functional 3600:1 gear reduction system** by integrating machined worm gears with precision laser-cut spur gears, achieving smooth and reliable power transmission.

Grain Header Support Rod

- **Designed and modeled an agricultural grain header system** capable of supporting 5,000 N of load, and rotating between 4-40 rpm through a 90° range of motion.
- **Performed Finite Element Analysis (FEA)** in SolidWorks to identify stress concentrations, and **reinforced structural weak points,** improving overall durability and performance.

Leadership

Electric Vehicle Grand Prix - Team Lead

- **Spearheaded the effort to start an Electric Vehicle Grand Prix team** at First Street Towers residence hall, providing students with hands-on engineering experience by converting a gas powered go-kart into an electric vehicle.
- **Lead a multidisciplinary team** in development of a custom 24s 10p Lithium-ion battery pack using standard 21700 battery cells.
- **Mentored a group of underclassmen engineers** by providing guidance on core engineering skills such as creating a Bill of Materials (BOM), developing and analyzing parts using Computer Aided Design (CAD), and writing successful design reports.
- **Worked with multiple organizations and sponsors** to ensure the team was properly supplied and funded.
- **Maintained a workshop and equipment** shared between two gasoline and one electric vehicle grand prix teams.

Technical Skills

Passed FE Exam | MATLAB | Python | NX | Creo | Fusion 360 | SolidWorks | Programming with Arduino Certificate | SysML | MagicGrid