Sara Sourani

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Education

Master of Engineering — **Idaho State University** — *Idaho, USA* — **01/2023 - 12/2024**

- Major in Mechanical Engineering

Skills

CAD

- **CATIA** | **SOLIDWORKS** | Industrial Drawing | Meshmixer employed in diverse projects as detailed below.

Mechanical, Electrical & Software

- 3D Printers – *Up to five software using for 3d printers* | CNC Machine | MATLAB | Mission Planner | Swift Console | ROS | Gazebo | Arduino | Universal GCode Sender | Wiring

Experience

Mechanical Engineer – Chassis — **Ecological Research** — *Idaho, USA* — **05/2023 - Current**

- A **grant** from CERE was awarded to design a chassis of an autonomous vehicle through optimization using **finite elements, MATLAB,** and conducting stress analysis using **SOLIDWORKS**. This study introduces "Flex", a groundbreaking autonomous vehicle tailored for jungle navigation and the paper of that has received approval for publishing in **ASME 2024 International Mechanical Engineering Congress and Exposition (IMECE2024).**
- Building and printing the chassis of Flex using the **big meter Modix large 3d printer**.
- Designing a suspension mechanism that is attached to the chassis and has the ability to change the height of Flex. That would contribute to a 30%increase in research projects focused on AGVs for challenging terrains.

3D Printing Lab — **Idaho State University** — *Idaho, USA* — **01/2023 - Current**

- Operating of more than six distinct types of **3D printers**, such as Stratasys, Markforged, Raise3D E2, Raise3D Pro2, and utilizing a variety of materials such as ABS, PLA, Carbon Fiber, PC, PVA, QSR, has led to the successful fulfillment of over 200 print requests.
- Assembled the **Modix large 3D printer** with significant dimensions within one month, diligently working on the calibration to ensure optimal functionality.

Mechanical Design Engineer CPI for Dinosaur Model Designing — **Museum of Idaho** — *Idaho, USA* — **05/2023 - 08/2023**

- Developing of a functional walking mechanism for the dinosaur using **SOLIDWORKS**, Meshmixer and **3d printer** technologies to create a distinctive dinosaur model intended for display at the museum which was funded up to $20000 and the paper of that has been accepted for publication in **ASME 2024.**

CAD Engineer – CNC Machine — **Idaho State University** — *Idaho, USA* — **01/2023 - 05/2023**

- Designed the mechanical components of the **CNC machine** using **SOLIDWORKS** aimed to optimize cost and reduce the complexity of thebulky-sized engraving machine, providing cost savings of up to 50% for modifications made during the prototyping compared to post-mass production adjustments, enhancing efficiency in wood cutting.
- Utilized the **Arduino** board powered by GRBL firmware to control stepper motors in the CNC machine, **Universal GCode Sender** (UGS) streamlines G-code handling and facilitates real-time monitoring and automation.
- Building a prototype of a CNC machine with 3D-printed SolidWorks components and a welded base achieved a 25% cost reduction, 20% faster design iterations, and 30% improved assembly precision.

Automotive Researcher — **Idaho State University** — *Idaho, USA* — **01/2023 - 05/2023**

- Engaging in the development of autonomous navigation for an agricultural robot using RTK GPS and Pixhawk, including the creation of a wiring diagram for the AGV robot with RTK GPS and Pixhawk integration, utilizing **Mission Planner** (GCS) software, and employing **Swift Console** software.

Teaching Assistant — **Idaho State University** — *Idaho, USA* — **01/2013 - Current**

- **Mechatronics – Kinematics and Dynamics of Machinery – Machine Design**.

Projects

- **IEEE Conference: Stress Analysis of a Chassis Frame Using SOLIDWORKS** — *Accepted* — **(03/2024)**
- **ASME Conference: Optimizing Chassis Design for Autonomous Vehicles Based on Finite Element Analysis and Genetic Algorithm** — *Accepted* — **(04/2024)**
- **ASME Conference: Design and Development of an Oryctrodromeus-Inspired Robotic Dinosaur Skeleton** — *Accepted* — **(04/2024)**