

---

## **EDUCATION:**

<b>North Carolina State University</b>	Prospective Graduation: Dec 2025
Ph.D. in Mechanical Engineering	GPA : - <b>4.00/4.00</b>
Master's in Mechanical Engineering ( <i>Graduated: June 2024</i> )	GPA : - <b>4.00/4.00</b>

<b>The University of Mississippi, Honors College</b>	Graduated: May 2021
Bachelor of Science in Mechanical Engineering (BSME)	GPA : - <b>3.89/4.00</b>

---

## **PROFESSIONAL EXPERIENCE:**

<b>North Carolina State University – Mechanical and Aerospace Department (MAE)</b>	<i>Aug 2021 – Present</i>
<i>PhD Researcher – Digital Manufacturing and Polymeric Lab</i>	

- Planned, designed, assembled, and fabricated a full-fledged Digital Light Processing (DLP) printer system based on LabVIEW and Scrolling DLP Printer system based on Python
- Developed program to control the DLP Printer that allows user specified printing parameters and integrated the translational z-axis stage and image projection unit using LabVIEW
- Developed image processing programs for pixelwise grayscale adjustment and automatic border detection and dimension acquiring program using MATLAB and Python
- Developed fully automated system to obtain grayscale masks for uniform illumination by integrating two linear stages controlled by Arduino, power meter sensor and image projection algorithm using LabVIEW
- Developed optimization algorithm to obtain optimum parameters to solve precision and dimensional inaccuracy
- Supervised and directed the research activities of 4 undergraduate students, providing mentorship and guidance in projects involving development of multi-scale DLP printer and characterization of photopolymer materials

*Instructor – MAE Senior Design & Structures and Instrumentation Lab*

- Delivered lectures and guided, coordinated, coached about 120 students in problem solving as a representative TA for MAE Senior Design Course sponsored by John Deere and Daimler Trucks for 4 consecutive years
- Demonstrated Lab experiments, guided & supervised about 40 students for Structures and Instrumentation Lab

<b>ABB, Raleigh, NC</b>	<i>May 2025 – Aug 2025</i>
-------------------------	----------------------------

*Multiphysics R & D Intern*

- Implemented coupled Electromagnetic–thermal–mechanical simulation workflow using Ansys Maxwell, Icepack, and Mechanical to evaluate Lorentz-force-induced deformation in busbar assemblies under short-circuit conditions.
- Optimized laminated busbar and insulation designs through iterative Multiphysics simulations and design ideation to reduce stress and thermal hotspots.
- Designed and prototyped ergonomic clamshells for a handheld power tool using SolidWorks, integrating internal components (motor, load cell, solenoid, screen, PCB) and refining screen placement, weight distribution, and grip symmetry.
- Researched and sourced compact electromechanical components (e.g., solenoids, through-hole load cells) and incorporated them into functional design layouts to support manufacturability and cost-efficiency goals for the product team.

<b>Rapid Shape GmbH, Raleigh, NC</b>	<i>May 2024 – Aug 2024</i>
--------------------------------------	----------------------------

*Application Engineering Intern*

- Diagnosed, repaired, and optimized 3D printers and post-processing equipment (Straumann and RapidShape printers, Pro Wash, and Pro Cure) through hands-on mechanical and electrical troubleshooting.
- Optimized printing parameters based on material behaviors to resolve print failures and align with customer requirements, ensuring high-quality part production.
- Performed hardware repairs, calibrations, and regular software updates to restore functionality, enhance performance, and maintain seamless machine operation.

- Investigated atomic-level sintering mechanisms for In-space additive manufacturing of metals/alloys using computational framework for modeling, simulation, and prediction of metal/alloy nanoparticle sintering with LAMPPS
- Produced and analyzed results of responses/behaviors of Ti/Al core shell particles under different temperature and pressure

---

### **SELECTED PROJECTS:**

#### **Automated removal of support structures from 3D printed parts using DLP printer with dual UR5 Robot arms**

- Engineered a collaborative robotic system integrating two UR5 arms through MQTT protocol and ROS2 packages in Python, achieving synchronized operation where one arm hold parts printed using DLP printer while the other removed supports, enhancing automation and efficiency in 3D printing applications

#### **Investigation of Powder Characteristics and Microstructural Evolution of Laser Printed Ti-15Mo Samples**

- Optimized the printing parameters for better yield with least porosity in laser printed Ti-15 Mo samples from powder prepared with mechanical alloying through numerical modeling along with powder and microstructure characterization techniques like LECO analysis, SEM image analysis, optical image analysis, and microhardness testing.

#### **Ecofriendly – Air Powered – Seedpods Disposal Rocket Project**

- Designed and fabricated the prototype of portable, cost effective, ecofriendly, and easy to use seedpods disposing rocket using various 3D printing processes (FDM, SLA, and Powder bed fusion)

#### **Designing a Practical Free-floating Buoy for Harvesting wave energy**

- Designed a practical free-floating buoy with permanent magnet-based system for harvesting wave energy by applying modeling, analysis and design principles learnt in Design of Electromechanical System Course

---

### **TECHNICAL SKILLS:**

#### Prototyping Software

Solid works, Autodesk  
Inventor, AutoCAD,  
Creo/Pro-E

#### Analysis Software

Ansys, ABAQUS, MS  
Excel, SAP2000,  
COMSOL

#### Programming Languages

LabVIEW, MATLAB,  
Python, Simulink

#### Miscellaneous

Arduino, Connected  
Components Workbench,  
ROS2

---

### **AWARDS AND MERITS:**

- Leon Memorial Scholarship - NCSU
- 2<sup>nd</sup> Place Winner of NCSU MAE poster presentation, 2023
- Chancellors Honors Roll – Olemiss
- Phi Kappa Phi Honors Society, Tau Beta Phi Honors Society

---

### **SELECTED PUBLICATIONS/CONFERENCES:**

- *Publication:* Subedi, Liu, Wang, Shovon, Chen, Ware et al. "Multi-material vat photopolymerization 3D printing: a review of mechanisms and applications." *npj Advanced Manufacturing* (2024).
- *Publication:* Subedi, Shovon, Ware et al. "Automated Grayscale Modulation to Enhance DLP Fabrication Accuracy by Correcting Non-uniform Illumination." *Journal of Micro-and Nano-manufacturing* (2024)
- *Publication:* Subedi, and Ware. "Modeling and Correcting Illumination Inhomogeneity over Multiple DLP Illumination Intensities for Better Fabrication Accuracy". **2023 International Solid Freeform Fabrication Symposium**. University of Texas at Austin, 2023.
- *Technical Presentation* : "Modeling and Correcting Illumination Inhomogeneity over Multiple DLP Illumination Intensities for Better Fabrication Accuracy" (**Solid Freeform Fabrication Symposium 2023**, An Additive Manufacturing International Conference, Austin, Texas)
- *Technical Presentation* : "Utilization of DLP 3D printing towards superhydrophobic surfaces" (**International Materials Application and Technologies (IMAT 2023) Conference**, Detroit, Michigan)