Shekhar Thapa

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SUMMARY

- Experienced in designing mechanical systems and prototyping using hand tools, 3D printers, and workshop machines & equipment while prioritizing cost-effectiveness, manufacturability, and reliability.
- Proficient in 2D & 3D CAD software (AutoCAD, SolidWorks, and Autodesk Inventor) and competent with Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) software for mechanical stress, heat transfer and fluid dynamics simulations.

EDUCATION

University of Georgia, College of Engineering — Athens, GA
Master of Science in Mechanical Engineering — **Expected - December 2023**
Certificate: *Graduate Certificate in Agricultural Data Science* — Overall GPA: 4.00/4.00

Tribhuvan University, Institute of Engineering — Kathmandu, Nepal
Bachelor's Degree in Mechanical Engineering — **September 2017**

TECHNICAL SKILLS

Programming languages: Python, R, MATLAB, C
CAD Software: SolidWorks, Autodesk Inventor, AutoCAD, CATIA
Simulation Software: Ansys Workbench (Mechanical, Structural, Heat and Fluid)
Others: Microsoft Office Suite, LabVIEW, Robotic Operating System (ROS)

RELEVENT EXPERIENCE

Graduate Research Assistant — **May 2021 - Present**
University of Georgia – Tifton, GA

- Designed CAD models for mechanical parts and assemblies in Autodesk Inventor, performed structural simulations, and produced 2D drawings to assist a shop machine operator in fabricating components.
- Developed over ten mechanical systems from conceptual design to prototyping and testing, listed in ePortfolio.
- Utilized additive manufacturing, specifically Fused Deposition Modeling (FDM), to produce rapid prototypes with both polymer and metal materials and conducted testing, analysis, and subsequent redesign of mechanical components.
- Presented research findings at three conferences (Beltwide Cotton, ASABE, and IIPA).

Assistant Lecturer and Workshop Trainer — **November 2018 - March 2021**
Himalaya College of Engineering – Lalitpur, Nepal

- Taught Engineering 2D and 3D drawing to 192 freshmen each academic year, guiding them in creating 3D models using SolidWorks and printing them using polymer filament 3D printers.
- Instructed 48 freshmen in each semester, imparting essential knowledge in Workshop Technology, and providing hands-on skills in Drilling and Lathe Machining, Bench Works, Gas and Arc Welding.
- Guided two final-year student teams in the fabrication on their final year projects.

PROJECT EXPERIENCE

End-Effector Design for a Robotic Cotton Harvester *(MS research project)* – Tifton, GA — **May 2021 - Present**

- Conceptualized the mechanism of an end-effector for a robotic harvesting system to pick multiple cotton bolls at once.
- Prototyped the end-effector and integrated it with a vacuum conveying system and a robotic arm.
- Trained and implemented Deep Neural Network Models (Yolov3 & Yolov4) for cotton detection and integrated into ROS.
- Evaluated the system's harvesting performance, obtaining 3.2 times faster than the existing robotic cotton harvesting systems.

Seedling Skip Replanter & **Magnetic Levitator** *(Control System Course)* – Athens, GA — **August 2021 - April 2022**

- Selected the appropriate sensors, using a wheel encoder and ultrasound proximity sensor for the seedling skip replanter to detect seedling skips, while employing a Hall effect sensor for the magnetic levitator to measure distance.
- Buit circuit boards to connect sensors, actuators, and microcontrollers and then implemented PID control for system stability.

Brick Dust Conveying Machine *(Undergraduate Project)* – Kathmandu**,** Nepal — **November 2016 - September 2017**

- Designed CAD models for a hopper, a rotary air value, a hose and a cyclone separator using SolidWorks and followed by creating detailed fabrication drawings.
- Conducted flow simulations within the cyclone separator in ANSYS fluent, analyzing velocity & pressure profiles.
- Improved workplace safety by implementing a closed pneumatic conveying system to transport brick dust, reducing the health hazards associated with its exposure.

HONORS AND AWARDS

First Place, M.S. Student Poster Competition, 2023 IIPA Conference, Athens, GA — **May 2023**
First Place, Student Hackathon: Crop Track Competition, 2023 IIPA Conference**,** Athens, GA — **May 2023**
Graduate Student Domestic Travel Award 2023, Graduate School, UGA, Athens, GA — **July 2023**