Shekhar Thapa

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e-Portfolio

SUMMARY OF QUALIFICATIONS

- Experienced in designing over 15 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.
- Skilled in programming languages (R, Python, and MATLAB) and adept with Robotic Operating System (ROS), Computer Vision, Machine Learning Algorithms, and Data Science Tools
- Ability to work in teams with effective communication and leadership skills.

EDUCATION

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

Tribhuvan University, Pulchowk Campus – Kathmandu, Nepal **September 2017**
Bachelor's Degree in Mechanical Engineering

DESIGN AND FABRICATION EXPERIENCE

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

- Developed over eight mechanical systems, including a robotic cotton harvester end-effector, cotton conveying vacuum system, Pigweed pulling end-effector, plant height measuring tool, Alcohol sampling device, a steering mechanism and a variable height spraying attachment for a rover, among others, from conceptual design to prototyping and testing.
- 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.
- 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.
- Trained and implemented Deep Neural Network Models (Yolov3 & Yolov4) for cotton detection during robotic harvesting.
- Presented research findings at conferences, including 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.

INTERN AND COURSE PROJECT EXPERIENCE

Seedling Skip Replanter *(Sensor and Transducer)* & **Magnetic Levitator** *(Control System)* **August 2021 - April 2022**

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

Intern, Toyota Motors – Kathmandu**,** Nepal **November 2016 - December 2016**

- Learned about the layout of the Toyota Motors service center including inventory management and workflow.
- Processed approximately 10 job orders per day from customers, analyzing potential issues with their vehicles and discussing them with service engineers and service technicians.

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**