Karki Anurag

Cincinnati, Ohio, USA

5134002285 | karkiag@mail.uc.edu | anuragkarki47 | personal website

Summary

- Strong simulation background (FEA/CFD): ANSYS, ABAQUS, MATLAB/Simulink; applied to structural, modal, and thermal studies.
- End-to-end prototyping experience: CAD (SolidWorks), fabrication (3D printing/laser cutting/composites), and sensor/avionics integration.
- Proficient in Python/MATLAB for automation, analysis, and simulation workflows

Education

University of Cincinnati Cincinnati, Ohio
Master of Science in Mechanical Engineering Aug 2024 – Dec 2026

- Fall 2024 student
- Core Courses: Design of Experiment, Decision Engineering, Industrial AI, Intelligent System, Robot Control and design

Tribhuvan University Lalitpur, Nepal
Bachelor in Mechanical Engineering Nov 2017 – Jul 2022

- Elective Courses taken: Advance Mechanical Design, Mechanical Design & Simulation, Operation Research

Work Experience

P&G Digital Accelerator @ University of Cincinnati Cincinnati, OH
Graduate Research Assistant Jun 2025 – Present

- Assisted in computational modeling and simulation of material behavior using ABAQUS
- Executed Design of Experiments to analyze paper property variations using ABAQUS
- Developed Python scripts to automate and streamline ABAQUS simulation workflows

National Innovation Center Nepal Kathmandu, Nepal
Mechanical Engineer Nov 2022 – Jan 2024

- Designing 3D CAD models and assemblies of VTOL drones using SolidWorks
- Performing Finite Element Analysis (FEA) using ANSYS to evaluate structural integrity of UAV frames
- Conducting modal and thermal simulations to assess in-flight vibration and thermal management performance
- End-to-end UAV prototyping using 3D printing, laser cutting, and carbon-fiber layups for functional testing
- Collaborating with electronics and AI teams to integrate sensors, avionics, and battery modules into airframes

Incubation, Innovation, and Entrepreneurship Center (IIEC) Lalitpur, Nepal
Mechanical Engineer Jul 2022 – Nov 2022

- Designing modular UAV components for rapid prototyping and iteration
- Modeling UAV frame structures and sensor payload mounts in SolidWorks for use in Software-in-the-Loop (SITL) and Hardware-in-the-Loop (HITL) environments
- Assisting with ROS-based test flights for navigation stack validation in simulated and physical environments

Design Projects

Shape Optimization of Blended Wing Body Vehicle Lalitpur, Nepal
Pulchowk campus, Tribhuvan University Jan 2021 – Feb 2022

- Conducted both aerodynamic and stability analysis of a blended-wing body (BWB) vehicle
- Optimized the shape of the planform with 23% increase in aerodynamic efficiency

Shape Optimization of Convergent-divergent Nozzle for Maximum Thrust Using SU2 Lalitpur, Nepal
Pulchowk campus, Tribhuvan University May 2021 – Jul 2021

- Performed CFD analysis on 2D nozzle using SU2 software
- Thrust of a supersonic converging-diverging nozzle was optimized by using SU2 software

Design and fabrication of Long endurance Unmanned aerial vehicle (UAV) Lalitpur, Nepal
Pulchowk campus, Tribhuvan University Jul 2020 – Nov 2020

- Implemented iterative design process to come to a final design selection
- CAD modeled the entire vehicle
- Fabricated parts using 3D-printer, laser-cutter

Robotics and Automation Projects

Industrial Spray-Painting Robot Workcell Design Cincinnati, USA
University of Cincinnati Oct 2024 – Dec 2024

- Designed and simulated a robotic cell using ABB RobotStudio for automated spray painting of car doors
- Achieved 300% improvement in productivity with a 30-second painting cycle vs. 2 minutes manual time
- Developed AHP-based robot selection matrix and conducted cost-benefit analysis yielding < 3 year ROI
- Integrated safety (light curtains), motion sensors, and real-time flow control for paint uniformity

Genetic Algorithm-based UAV Path Planning for Wildlife Monitoring Cincinnati, USA
University of Cincinnati Oct 2024 – Mar 2025

- Developed an automated path planning system for UAVs using a Genetic Algorithm approach
- Optimized flight paths to maximize the probability of wildlife detection
- Achieved improved performance compared to existing path planning methods

Design and Testing of Decision Support Mechanism Lalitpur, Nepal
Pulchowk campus, Tribhuvan University Jan 2021 – Feb 2022

- Designed a data acquisition system using Arduino and sensors
- DAS was attached to UAV and communicated using telemetry to ground station
- Decision support mechanism was built using DAS

Skills

Design skills	Solidworks, XFLR5, OpenVSP
Programming skills	Python, MATLAB, ROS2
Computational skills	ANSYS, SU2, SIMULINK
Miscellaneous skills	Linux, Latex, MS Office