# Karki Anurag

Cincinnati, Ohio, USA

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## Summary


- Strong background in CFD, 3D modeling, and optimization of UAVs and robotic workcells
- Hands-on experience with robotics systems, real-time sensor integration, and AI-based automation
- Proficient in microcontroller-based systems, Python/ROS2 programming, and simulation tools
- Experienced in collaborative projects applying neural networks, SOMs, and regression models


## Education

University of Cincinnati — Cincinnati, Ohio
MS in Mechanical Engineering — Aug 2024 - Apr 2026

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

Tribhuvan University — Lalitpur, Nepal
Bachelor in Mechanical Engineering — Nov 2017 - July 2022

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

## Work Experience

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

- Designed 3D CAD models and assemblies for VTOL drones used in last-mile medical delivery
- Led end-to-end prototyping using 3D printing, laser cutting, and composite materials
- Performed aerodynamic, structural, and stability simulations to optimize UAV configurations
- Created detailed fabrication drawings and design documentation for manufacturing handoff
- Collaborated with electronics and AI teams to integrate sensors, batteries, and avionics into airframes

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

- Modeled UAV frames, mountings, and components in SolidWorks for SITL and HITL simulation platforms
- Designed modular components to support quick iterations during UAV prototyping
- Conducted CAD-to-real assembly testing, validating print tolerances and component fits
- Assisted in full system integration for autonomous test flights using ROS-based navigation stack

## 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 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

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| Programming skills | Python , MATLAB, ROS2 |
| Computational skills | ANSYS, SU2, SIMULINK |
| Design and other skills | Solidworks, XFLR5, OpenVSP, Linux, Latex, MS Office. |