

# Karki Anurag

Bhaktapur, Nepal

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## Summary

- 1 year+ of research in aerodynamic shape optimization
- Basic and advanced 3D modeling skills in Solidworks and CFD skills
- Basic and advanced programming skills
- Strong theoretical background in aerodynamics and control system

## Education

### Pulchowk Campus, Tribhuvan University

Lalitpur, Nepal

Bachelor of Mechanical Engineering

Nov 2017 - July 2022

- 73.67 % estimated to be 3.723 GPA as per scholaro website
- **Core courses :** Finite element method, Fluid mechanics, Mechanical design and simulation, Operational Research, Heat transfer, Control system, Computer-Aided Design

## Work Experience

### Incubation, Innovation, and Entrepreneurship Center (IIEC)

Lalitpur, Nepal

Mechanical Engineer

Sept 2022 - Current

- Design and fabrication of UAVs
- Performed a thermal analysis of the battery of a fixed-wing UAV
- Performed a software-in-the-loop (SITL) simulation of surveillance drone in Gazebo simulator

### Prokura Innovations

Lalitpur, Nepal

Mechanical Engineering Intern

Jun 2021 - Aug 2021

- Design and fabrication of VTOL (Vertical Take-Off and Landing) for last-mile delivery of medicine and blood
- Performed both aerodynamic and structural analysis of the UAV

## Projects

### Software-in-the-loop Testing of Snow Leopard Detection System Integrated into BWB UAV

Lalitpur, Nepal

IIEC

Aug 2022-Nov 2023

- Snow leopard detection algorithm was created
- Images of snow leopard were trained in YOLOv5
- BWB UAV aerodynamics was uploaded to Gazebo simulator
- PX4 was used for the automation of the BWB UAV
- ROS2 code was built for automation and connecting Gazebo with detection system
- SITL testing was done for the whole system using Gazebo Simulator

### Optimization of Eagle-Ray Blended Wing Body Vehicle and Testing of Data Acquisition and Decision Support Mechanism

Lalitpur, Nepal

Pulchowk campus, Tribhuvan University

Jan 2021 - Feb 2022

- Final year thesis
- Conducted both aerodynamic and stability analysis of Eagle-Ray, a blended-wing body (BWB) vehicle designed for snow leopard surveillance.
- Optimization of the UAV planform using gradient and non-gradient method
- Designed and tested a data acquisition system to integrate into the BWB UAV

### Flow Analysis and Shape Optimization of Convergent-divergent Nozzle for Maximum Thrust Using SU2

Lalitpur, Nepal

Pulchowk campus, Tribhuvan University

May 2021 - Jul 2021

- Turbomachinery course project
- Perform 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)

Pulchowk campus, Tribhuvan University

Lalitpur, Nepal

Jul 2020 - Nov 2020

- Designed a planform for UAV for surveillance purposes
- Fabricated the planform using a homemade foam cutter
- Performed manual flight test

## Skills

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**Programming skills** Python, MATLAB, ROS2.

**Computational skills** ANSYS Fluent, ANSYS APDL, ANSYS CFX, SU2.

**Design and other skills** Solidworks, XFLR5, OpenVSP, Linux, Latex, MS Office.

## Publications

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### CONFERENCE PAPER

Aerodynamic Shape Optimization of Blended Wing Body Planform

Anurag Karki, Hem P Pandeya, Sudip Bhattarai, Abhishek Karn, Aakash Sarraf

14th IOE Graduate Conference, 2023, Lalitpur, Nepal

## Test Scores

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**GRE** 317 out of 340

**IELTS** 8 out of 9

## References

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### Sudip Bhattarai

Assistant Professor at Pulchowk Campus

- Final Year Thesis Supervisor
- Head of Department
- Sudip@ioe.edu.np

### Mahesh Chandra Luitel

Professor at Pulchowk Campus

- Teaches Thermodynamics and FEM
- Senior professor at Pulchowk Campus
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### Hari Bahadur Dura

Assistant Professor at Pulchowk Campus

- Mechanical Design and Simulation
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