Dipesh Kunwar

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Education

Bachelors in Aerospace Engineering, Pulchowk Campus, Institute of Engineering, Tribhuvan University 2023

- **Grade & Ranking:** 87.89% (Equivalent GPA 4.0), 2nd/ 48 (Aerospace), 2nd/ 3500 (Engineering Degree)
- **Thesis:** Formulation of Insitu Flight Performance Toolbox for Decision Support System, Supervised by Dr. Sudip Bhattrai and Er. Vishal Paudel
- **Relevant Coursework:** Flight Dynamics, Aircraft Preliminary Design, UAV Synthesis, Aerodynamics, Computational Fluid Dynamics, Aircraft Propulsion, Compressible Aerodynamics, Hypersonics, Advanced Propulsion Systems

Professional Experience

Energy Systems Engineer, Nernst Energy System LLP, Chennai, Tamil Nadu, India Present

- Working on systems design and integration of a fuel cell-battery hybrid propulsion system for maritime and aviation applications.
- Developing optimization frameworks for sizing and control of conceptual integrated fuel cell-battery powertrains in regional commercial airliners.

Instructor, Pokhara Engineering Campus, Pokhara, Nepal 08/2023–01/2024

- Worked as an instructor and/or laboratory assistant (*) for the undergraduate mechanical engineering courses listed below. Classes assisted:
  - MEC 109: Engineering Drawing
  - MEC 189: Thermodynamics *
  - MEC 178: Mechanical Workshop
  - MEC 288: Strength of Materials *

Mechanical Engineering Intern, Heli Air Nepal Pvt. Limited, Pokhara, Nepal 05/2023–10/2023

- Oversaw ground operations and flight planning, including creating weight and balance charts and route layouts for gyrocopter missions.
- Assisted the maintenance team in record keeping and managing technical logs for daily and routine maintenance.

Engineering Intern, Operations Engineering and Planning Division-Nepal Airlines Corporation, Kathmandu, Nepal, Supervised by Er. Vishal Paudel 11/2022–01/2023

- Digitized performance charts for the DHC-6 Series 300 aircraft operated by Nepal Airlines Corporation, utilizing advanced analytical techniques.
- Contributed to flight route planning by generating Regulated Takeoff Weight (RTOW) and aircraft weight and balance data.
- Designed and implemented a MATLAB-based application for aircraft performance calculations tailored to the DHC-6 Series 300.

Publications and Conferences

[1] **D. Kunwar**, S. Pandey, Y. Poccheredy, A. Dicholkar, and J. Hjelm "Multi-objective Optimization Study for Sizing and Optimal Control for an Integrated Fuel Cell-Battery System for Commercial Airliners," *AIAA Aviation Forum and ASCEND*, 2025. (Accepted)

[2] Y. Poccheredy, **D. Kunwar**, S. Pandey, A. Dicholkar, and J. Hjelm "Mass-based Optimization Studies for Sizing and Optimal Control of Hybrid Fuel Cell-Battery System for Commercial Airliners," *AIAA Aviation Forum and ASCEND*, 2025. (Accepted)

[3] **D. Kunwar**, P. Bhandari, S. Shrestha, S. Bhattrai, and S. Neupane "In situ Flight Data Analysis, Performance, and Planning for STOL Operations," *AIAA Aviation Forum and ASCEND*, Jul. 2024. Available: https://doi.org/10.2514/6.2024-4253.

[4] **D. Kunwar**, P. Bhandari, and S. Shrestha, "Formulation of Insitu Flight Performance Toolbox for Decision Support System," Thesis, *Tribhuvan University, Institute of Engineering, Pulchowk Campus,* 2023. Available: https://elibrary.tucl.edu.np/handle/20.500.14540/17733

[5] **D. Kunwar**, P. Paudel, S. Dhakal, S. Pandey, and S. Paudel, "Study on Effect of Spring and Damping Elements on UAV Landing Gear System," Poster, *International Conference on Vibration Engineering and Technology of Machinery (VETOMAC)*, Springer Nature, 2022.

[6] B. Parajuli, **D. Kunwar**, P. Regmi, and S. Shrestha, "Study of Temperature Distribution and Cooling Effectiveness for Combined Impingement-Convection Cooling (CICC) in Strut Insert Turbine Blade," *Unpublished Manuscript*, 2021.

Research Projects

In situ Flight Data Analysis, Performance, and Planning for STOL Operations 2024
Supervised by Dr. Sudip Bhattrai

XF-11 Replica VTOL Design and Testing using Tilt Rotor and Thrust Vectoring 2024
In association with NEXA Flight, South Africa

Formulation of Insitu Flight Performance Toolbox for Decision Support System
Bachelors Thesis, Supervised by Dr. Sudip Bhattrai and Er. Vishal Paudel 2022-2023

Design and Analysis of a Multi-Engine General Aviation Trainer Aircraft
Senior Project, Supervised by Dr. Sudip Bhattrai 2022

Study on Effects of Spring and Damping Elements on UAV Landing Gear System
Supervised by Dr. Sudip Bhattrai 2022

Design and Fabrication of a Medical Delivery Drone for AIAA Design, Build, and Fly (DBF) Competition
Supervised by Dr. Charles Hoke and Dr. Sudip Bhattrai 2021-2022

Design and Fabrication of a 4-axis Hotwire CNC Foam Cutter
Supervised by Dr. Sudip Bhattrai, and Asst. Prof. Kamal Darlami 2022

Study of Temperature Distribution and Cooling Effectiveness for Combined Impingement-Convection Cooling (CICC) in Strut Insert Turbine Blade
Academic Project, Supervised by Asst. Prof. Hari Bahadur Dura 2021

Study of Aerodynamic Forces on a NACA 0012 Foil Using DAQ system in a Low Subsonic Wind Tunnel
Academic Project, Supervised byAsst. Prof. Kamal Darlami 2021

Design and Manufacture of a Can-Sat for a High Altitude Baloon
Supported by SEDS Pulchowk 2021

Design and Fabrication of Twin-Boom Radio-Controlled (RC) Aircraft for the 11th National Mechanical and Aerospace Engineering Exhibition, Supported by SOMAES 2020

Honors and Awards

Tribhuvan University Silver Medalist for ranking 2nd among all engineering graduates in 2023 2023

Springer Nature's award for Best Poster Presentation at the 17th International Conference on Vibration Engineering and Technology of Machinery-VETOMAC 2022 2022

Global Award Nominee for NASA International Space Apps Challenge 2020

Nepal Government's merit-based full scholarship for Bachelor's Degree in Aerospace Engineering (National Rank: 73rd, Aerospace Major: 3rd) 2018

Competences

Test Scores: IELTS 8.0, GRE 327 (160 V 167 Q)

Applications: CATIA, SolidWorks, X-FLR5, OpenVSP, X-Plane, ANSYS, ABAQUS, LabVIEW, OpenFOAM

Programming Languages: Matlab, C/C++, Python, OpenMDAO, DYMOS

Volunteering and Community Engagement

International Liaison to Nepal, Advanced Air Mobility Institute 2024-Present

Design Head, MeroSpace Magazine Committee 2022-2023

Event Coordinator, ZENIX -2021 (Virtual Mechanical Engineering Event) 2021

Founding Member | Design and Analysis Sub-section Lead, AIAA/DBF at Pulchowk 2021-2022

General Member, Students for the Exploration and Development of Space (SEDS) 2020-2023

Design Volunteer, Incubation, Innovation and Entrepreneurship Center 2020-2022

Project Mentor, 11th National Mechanical and Aerospace Engineering Exhibition 2020

Sub-Coordinator, National Mechanical Engineering Seminar-2020 2020

Asst. Human Resource Manager, Society of Mechanical Engineering Students 2019-2020

Organizational Affiliation

General Registered Engineer- Aerospace Engineering,Nepal Engineering Council (NEC), Membership No. : 81987

Student Affiliate Member, Royal Aeronautical Society (RAeS), Membership No. : 3053998

Student Member, American Institute of Aeronautics and Astronautics (AIAA), Membership No. : 1339895

References

Dr. Sudip Bhattarai, Asst. Professor | Head of Department
DMAE, Pulchowk Campus, IOE, Tribhuvan University—Nepal | sudip@pcampus.edu.np

Asst. Prof. Kamal Darlami, Asst. Professor | Deputy Head of Department
DMAE, Pulchowk Campus, IOE, Tribhuvan University—Nepal | darlami.kd@pcampus.edu.np