Binayak Lohani

Curriculum Vitae

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DOB: Sep 14, 2001

Education

2018–2023	**IOE Pulchowk Campus, Tribhuvan University, Nepal**, *Bachelors of Engineering, Aerospace Engineering*.
2016–2018	**Goldengate College, Nepal**, *High School, Science*.
2008–2016	**LRI School, Nepal**, *School Leaving Certificate*.

Research Experience

March 2021 – Dec 2021 — **CFD Research Intern**, FOSSEE, IIT BOMBAY, Semester Long Internship.
-Research Topic: Large Eddy Simulation (LES) of a confined planar jet opening in a rectangular channel
-Supervisor: Prof. Manaswita Bose

Jan 2022 – June 2022 — **Visiting Student Researcher**, UNIVERSITY OF OTTAWA.
-Research Topic: Numerical Model of a Tidal Current Acceleration Structure (TCAS)
-Supervisor: Prof. Majid Mohammadian

April 2022 – Present — **Undergraduate Researcher**, HARVARD UNIVERSITY.
-Research Topics:
1. Thermal Modeling and Analysis of the High-Altitude-Long-Endurance (HALE) solar aircraft's propulsion system, SACOS.
2. Drag Analysis of High Altitude Stratospheric Superpressure and Zero Pressure Balloons using LES
3. CHT Analysis of a thermal optical plate
-Supervisor: Er. Craig Mascarenhas, Anderson Research Group

June 2022 – Present — **Bachelor Thesis**, IOE PULCHOWK CAMPUS.
-Research Topics: Numerical study of the dispersion of pollutants in the urban street canyon
-Supervisor: Prof. Neeraj Adhikari and Prof. Arun Bikram Thapa

Volunteer and Work Experience

Sep 2019 – Present — **Committee Member**, LEO CLUB HIGH VISION, KATHMANDU.
-Successfully conducted fundraising campaigns for poor school students and various other social activities such as Blood Donation Programs.

Aug 2020 – Dec 2020 — **Tutor**, NAWTAN ELEARNING, Putalisadak, Kathmandu.
-Mathematics tutor for high school students helping with Calculus.

Sep 2022 – Present — **Technical Contributor**, CFD-FOSSEE, IIT Bombay.
-Creating Spoken Tutorials for intermediate users of OpenFOAM.
-Mentoring the interns in research-based projects.
-Mentor at the Workshops of CFD

Projects

Jan 2021 – Feb 2021   **Kelvin Helmholtz Instability Experimental Setup and Simulation**, Aerospace Engineering Laboratory.
This project involves the experimental setup of the Kelvin Helmholtz Instabilty in the Aerodynamics Lab of the Department of Mechanical and Aerospace Engineering, Pulchowk Campus. This project demonstrates the effect of shear layer that results in the instability.

Nov 2020 – Jan 2021   **Study of Coanda Effect in Turbulent Jets**, .
The project involves the study of the effect of viscosity of different fluids giving rise to the Coanda Effect using multiphase flow solver in OpenFOAM. It is published on the CFD FOSSEE website of IIT Bombay.

Aug 2021 – Nov 2021   **Effect of backward-facing step size with fuel injection in a supersonic flow**, .
This is the project work carried out as a practical study in Aerospace Propulsion course. The work involves the study of the effect of backward facing step size with transverse fuel injection.

Dec 2021 – Jan 2022   **Pollutant Dispersion Modelling using CFD: A walkthrough of solver development in OpenFOAM**, .
The project involves the study of pollutant dispersion and validation with wind tunnel experiment along with walkthrough of solver development in OpenFOAM. It is published on the CFD FOSSEE website of IIT Bombay.

Skills & Abilities

Programming Languages   C, C++, Fortran, Python, MATLAB

CAD   CATIA, Solidworks

CAE   ANSYS, OpenFOAM, Pointwise

Software   LaTeX, MS Word, MS Excel

Languages

Nepali   **Native Speaker**

Hindi   **Fluent**

English   **Fluent**

Publications

Peer-Reviewed Conference Papers

2021   **Binayak Lohani, Ashley Melvin and Manaswita Bose** , Large Eddy Simulation of a confined planar jet opening in a rectangular channel, *48th National Conference on Fluid Mechanics and Fluid Power*, 2021, DOI: 10.1007/978-981-19-6970-6_67.

Journal Article

2022   **Binayak Lohani, Derek Foran, Abdolmajid Mohammadian and Ioan Nistor** , Numerical Model of a Tidal Current Acceleration Structure, *Journal of Renewable and Sustainable Energy*, 2022, DOI: 10.1063/5.0104471.

In Review

2023   **Binayak Lohani and Craig Mascarenhas** , Aerodynamic drag analysis of superpressure and zero pressure balloons using Large Eddy Simulations (LES), *Advances in Space Research*, 2023.