SAROJ BASNET

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LinkedIn | GitHub | Portfolio Website

PROFILE

Mechanical Engineering graduate from IOE, Pulchowk Campus, with research experience in batch distillation and vibration analysis of mechanical systems. Proficient in Python, MATLAB, ANSYS, and SolidWorks, with hands-on fabrication experience. Research interests include computer-aided design and analysis, computational mechanics, numerical modeling, and machine learning.

EDUCATION

Bachelor of Mechanical Engineering

IOE, Pulchowk Campus – Tribhuvan University

May 2021 – April 2025 Pulchowk, Lalitpur

- Relevant coursework: Mechanics of Solids; Strength of Materials; Machine Design & Simulation; Finite Element Method; Numerical Methods; Applied Thermodynamics & Heat Transfer; Fluid Mechanics; Probability & Statistics; Computer Programming; Operation Research.

Higher Secondary Education

Nepal Mega College

2018 – 2020 Babarmahal, Kathmandu

- GPA: 3.65/4.00

PROJECTS

Design, Fabrication and Testing of Batch Distillation Apparatus for Alcohol Micro-Distillery

Bachelor Final Year Project

June 2024 – March 2025 Pulchowk Campus

- A fully functional batch distillation apparatus with reflux and bubble cap trays.
- Improved purity, ethanol concentration, and recovery ratio of the distillate.
- Selected for Pulchowk Innovation Program 2025.
- Patent application filed.

Fabrication of a Plastic Injection Molding Machine

Collaborated with a team of peers

May 2022 – February 2023

- Built a plastic injection molding machine using locally available materials.
- Gained hands-on experience in manufacturing.

AWARDS & HONORS

3rd Rank among 12,000 Students
Secured 3rd position in IOE BE/BArch Entrance Examination 2021.

Winner – Design Hackathon, MechTrix 2025
24-hour 3D design competition project to design a modular, versatile, and cost-effective small-scale agricultural machine for cash crop cultivation in Nepal.

Award-Winning Distillation Project
2nd Runner-up at **Nepal Techno-Fest 2025** and **INNOCHEM'25** programs for designing an innovative batch distillation apparatus.

Best Engineering Award – MechTrix 2023
Built a functional plastic injection molding machine using locally sourced materials.

SKILLS

Engineering Tools: SolidWorks | AutoCAD | ANSYS (Fluent, Mechanical)

Programming & Data Science: Python | Machine Learning | MATLAB | C | Excel Solver

Productivity: Microsoft Word, PowerPoint | LaTeX | Adobe Premiere Pro

Languages: English (Fluent) | Nepali (Native)

EXPERIENCES

Mechanical Engineering Intern

Gorkha Brewery Pvt. Ltd. (Part of Carlsberg Group)

September – October 2024 | Mukundapur, Nawalpur

- Optimized plant layout to improve operational efficiency and workflow.
- Documented mechanical components, machine parts and running hours for maintenance records.

Teaching & Content Creation

November 2022 – August 2025

- Taught Physics entrance preparation classes for +2 students at Nepal Mega College.
- Conducted a workshop on scientific calculator usage for engineering entrance students at Ambition Guru.
- Grew YouTube channel to 10k+ subscribers and 1.5m+ views through educational content creation.

INDEPENDENT RESEARCH AND ONGOING WORK

- **Free Vibration Analysis of a Simplified Compressor Blade Modeled as a Rectangular Plate with NACA 2412 Thickness Distribution**
  Independent Research, 2025
  Developed a Python-based semi-analytical model using Reissner–Mindlin plate theory and the Rayleigh–Ritz method, validated with ANSYS (error <3% in first six modes). Currently extending the model to include taper, twist, and rotational effects. [*GitHub Link*]
- **Design, Mathematical Modeling, and Experimental Validation of a Batch Distillation Apparatus for Small-scale Alcohol Production.**
  Ongoing work on improving the mathematical model in Python and performing additional experimental trials for validation. Aiming to optimize purity, recovery, and energy efficiency for small-scale distilleries.

TRAINING & WORKSHOP

Startup Orientation Workshop & Bootcamp

Industrial Enterprise Development Institute (IEDI)

06 – 23 May 2025 | Kathmandu, Nepal

- Completed intensive 13-day training on entrepreneurship, business planning, and startup development.
- Applied market research and financial analysis techniques to develop a feasible business concept.
- Created and pitched a complete business plan under expert mentorship.

REFERENCE

Name: Bikki Chhantyal
Position: Assistant Professor, Thapathali Campus
Email: chhantyalbikki@tcioe.edu.np

Additional references available upon request.