Sugam Aryal

Passport: 10583882 | **Date of birth:** 17/09/2001 | **Place of birth:** Kathmandu, Nepal | **Nationality:** Nepalese | **Phone number:** (+977) 9818944248 (Mobile) | **Email address:** aryalsugam17@gmail.com | **LinkedIn:** Sugam Aryal |

Address: Jiwan Smriti Marg, Tahachal, 4400, Kathmandu, Nepal (Home)

ABOUT ME

Mechanical Engineer focused on mechanical systems, and sustainable engineering. I bring hands-on experience in CAD/CAE, prototyping, fabrication, and lab instrumentation, backed by leading engineering teams across design, installation, and testing projects. I'm driven by practical problem-solving and have contributed to community climate initiatives and technical training programs. I aim to build efficient, reliable systems that create real-world impact.

EDUCATION AND TRAINING

08/2019 – 05/2024 Dhulikhel, Nepal
B.E. IN MECHANICAL ENGINEERING (AUTOMOBILE) Kathmandu University

- Electives:
  - Hybrid and Electric Vehicles
  - Refrigeration and Air Conditioning
  - Maintenance Engineering
  - Automobile Engineering

Website https://ku.edu.np/ | **Final grade** 3.65 | **Thesis** Development of A Powertrain of An Electric FSAE Vehicle (completed May 2024)

05/2017 – 05/2019 Lalitpur, Nepal
GCE ALEVELS GEMS Institute of Higher Education

Website https://www.gihe.edu.np/

WORK EXPERIENCE

MECHANICAL DESIGN AND PROJECT LEAD ENGINEER – MANTRA INCORPORATION – 07/02/2024 – Current – LALITPUR, NEPAL

Website: https://mantrainc.com.np | **Link** : https://www.facebook.com/mantraincnepal/

- Designed and drafted manufacturable structures, machines, and sheet-metal components in SolidWorks. Produced complete BOM/BOQ sets, GD&T-ready drawings when required, and DXF/STL files for in-house and subcontract fabrication, as well as rapid prototyping. Performed FEA, tolerance analysis, and assembly validation to identify critical issues before fabrication, which reduced defects and improved consistency across subcontractor builds.
- Led a cross-functional team of two engineers and several interns through design, fabrication, installation, and maintenance projects. Supervised sub-let factory work to address machining or forming deviations, and oversaw installation, commissioning, and preventive maintenance of UTMs, torsion machines, Marshall Stability rigs, and ductility machines. Frequently diagnosed mechanical and instrumentation faults on-site.
- Developed rapid prototypes, jigs, and functional enclosures through 3D printing and CO_2 laser cutting, which shortened design-to-validation cycles. Worked with instrumentation such as load cells, strain gauges, accelerometers, and LVDTs for data-acquisition setups, troubleshooting calibration and signal-quality issues.
- Provided consulting for EV and automotive laboratory setups, advising on motor and battery selection, powertrain configuration, thermal considerations, and integration constraints for academic and commercial testing environments. Delivered technical training to more than a dozen high-school head teachers and principals on the safe operation of testing machines, sensors, 3D printers, lathes, and laser cutters.
- Managed over thirty tender procurement cases by evaluating specifications, coordinating with international manufacturers, and aligning technical requirements with lead times and warranty terms. Collaborated with more than eight universities and public institutions, including Nepal Police, the Ministry of Education, and NAST, to deploy equipment, conduct training, and support research activities. Served as the technical liaison among client teams, suppliers, and fabrication partners to ensure smooth installation and successful project delivery.

BARISTA – TRISARA – KATHMANDU, NEPAL

- Prepared beverages and maintained service quality in a high-volume café environment, ensuring consistent customer experience.
- Handled daily customer interactions, improving communication and fast-paced service skills while supporting smooth front-of-house operations.

PROJECTS

05/2023 – 01/2024

Team Urja - Development of a Powertrain of an Electric FSAE vehicle

- Led design and integration of the EV powertrain for a Formula-style racecar incorporating motor/controller specification, battery packaging, thermal strategy, and full powertrain layout.
- Modeled powertrain mounts, differential fixtures, and chassis interfaces in SolidWorks; validated assemblies with FEA and produced manufacturing drawings, jigs/fixtures, and assembly documentation.
- Managed component selection, BOMs, fabrication workflows, and testing schedules; contributed to GFRP body development and chassis–powertrain integration.
- Delivered complete technical documentation and competition submissions; vehicle achieved 18th place at Formula Bharat 2024 with the powertrain meeting the 17 Nm torque target.

Links https://www.linkedin.com/in/sugamaryal/overlay/1717433969599/single-media-viewer/?profileId=ACoAADI5JJYBU-U-Q7zDngjJmqRTz4DSt2qHDuE | https://formulabharat.com/portfolio/formula-bharat-2024-2/#:~:text=E36,Nepal | https://www.instagram.com/p/C2i5-i7PwcD/?img_index=2

08/2021 – 11/2021

Team Udaya, MILLENIUM FELLOWSHIP

- Developed a small-scale bio-briquette manufacturing workflow, producing 30 prototypes while surveying 10 households to assess firewood dependency and adoption barriers, and led community climate-awareness initiatives in coordination with local bodies to promote cleaner fuel alternatives aligned with SDG 13: Climate Action.

Links https://www.millenniumfellows.org/fellow/2021/kathmandu/sugam-aryal | https://www.linkedin.com/in/sugamaryal/overlay/1635521190996/single-media-viewer/?profileId=ACoAADI5JJYBU-U-Q7zDngjJmqRTz4DSt2qHDuE

2021

Integration And Performance Testing Of Regenerative Braking System In Internal Combustion Engine Vehicles

- Developed and validated a scaled regenerative braking system (RBS) for ICE vehicles, demonstrating 42% real-world energy recovery compared to 53.9% theoretical efficiency.
- Conducted quantitative modelling using UDDS and Kathmandu driving data to compare braking-energy availability and assess integration feasibility in standard petrol cars.

2022

Design And Fabrication Of Sanitary Pads Vending Machine

- Engineered a low-cost automated sanitary-pad dispenser for Nepalese schools using Arduino Uno, IR sensors, and a motor–spring mechanism, featuring ID card authentication, keypad-based selection, and sensor-feedback control to ensure secure, reliable single-pad dispensing and improved menstrual hygiene access.

2025

Design, fabrication and performance analysis of polycarbonate based solar dryer.

- Developed a compact dome-shaped solar dryer with twin-wall polycarbonate insulation, forced-air DC fan circulation, and ESP8266 + DHT22 monitoring to evaluate low-temperature drying performance, achieving internal temperatures 10–15°C above ambient and up to 66.7% moisture reduction in 5 hours, demonstrating strong thermal stability and efficient solar energy utilization for agricultural applications.

PUBLICATIONS

2025

Design & Fabrication of Low-Cost Twin-Shaft Shredder and Single-Screw Extruder for Plastic Waste Recycling

Poster Presentation.

Authors: Bhawana Dahal, Subarna Regmi, Sugal Khatiwada, Sugam Aryal | **Journal Name**: Kathmandu Conference on Plastic Waste Management (KCPWM 2025) | **Publisher**: Department of Applied Sciences and Chemical Engineering, Tribhuvan University

CERTIFICATIONS

Nepal Engineering Council, 17/07/2024

Registered Mechanical Engineer

Link https://nec.gov.np/registration/84856?programName=Mechanical Engineering

SKILLS

Fusion 360 / Catia V5 / SolidWorks / AutoCAD / Autodesk Inventor | Ansys (FEM) | Office Suites: MS Office; Open Office; Libre Office | Programming (Python, C, Arduino) | Software Fluidsim | LabView | FusionCAM | Gcode for CNC machining