SOMNATH LUITEL

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EDUCATION

2019 –2024 **Bachelor's in Civil Engineering (B.E.), Institute of Engineering, Pulchowk Campus, Tribhuvan University (TU),**

Relevant Coursework: Fluid Mechanics, Engineering Hydraulics, Hydrology, Irrigation & Drainage Engineering, Water Supply Engineering, Environmental Engineering, Soil and Foundation Engineering, Engineering Geology, Computational Techniques, Probability and Statistics

WORK EXPERIENCE

July 2024- Present **Research Assistant, Pulchowk Campus, Lalitpur, Nepal**

- Conducting Hydrological analysis of the proposed dam at Gwar Khola, a Governmental project.
- Collaborating with Prof. Kuolin Hsu from UC Irvine for research work on Water resources and hydrology
- Supervising final year students' projects, working on the identification of research gaps in **water resources and climate resilience**.

Sept 2024- Jan 2025 **Site Engineer, Initial Environmental Examination of Landfill Site at Manthali, Ramechhap**

- Worked as a Site Investigation Engineer for the report preparation of the Initial Environmental Examination (IEE) of Proposed Landfill Site at Manthali, Ramechhap, conducted a socio-economic survey, and water and soil quality test.

May – Aug 2024 **Intern, Civil Engineer, Institute of Himalayan Risk Reduction**

- Coordinated research projects on **hydrology and remote sensing** applications.
- Prepared reports and field data assessments related to **climate impact studies**.

Jan-Nov 2023 **Tutor, Clamphook Academy, Lalitpur, Nepal**

- Faculty of Mathematics at Nepal's well-recognized Entrance Preparation Academy.
- Career counselling and exam preparation at government schools in Kathmandu Valley (Part-time)

RESEARCH PROJECTS

Aug 2025 - Present **Enhanced Machine Learning Model for Seasonal Irrigation Water Need Estimation Using Remote Sensing and Precipitation Data**

- Integrating AquaCrop-simulated Net Irrigation Water Requirement (NIWR), MODIS-based LST/ESI, and SPEI drought indices with Random Forest and Boruta feature selection to model seasonal irrigation demand in Chitwan, Nepal.
- Calibrating and validating the framework for achieving higher accuracy in irrigation water estimation under climate variability for data-scarce regions.

2025 - Present **Bias Adjustment of Satellite-Based Precipitation Estimates Using Local Gauge Observations and Orographic Factors for the Himalayan Region: A Case Study in Nepal**

- Currently conducting a regional-scale study on bias adjustment of satellite-based precipitation estimates using local rain gauge data and orographic factors across the Himalayan region of Nepal.
- Developing and validating a bias correction framework that integrates satellite rainfall products with ground observations to improve precipitation accuracy for hydrological modeling and climate resilience in mountainous terrains.

2025 - Present **Modeling the Impact of Climate-Induced Drought on Irrigation Demand and Crop Productivity: Adaptation Strategies for Sustainable Agriculture in Water-Stressed Regions**

- Assessed irrigation demand and crop productivity under drought using AquaCrop, SPI/SPEI indices, and local agro-climatic data in the Mahakali Irrigation Command Area.
- Established Factor of Safety (FoS) framework and recommended adaptation strategies to enhance agroecosystem resilience.

Feb - June 2025 **Impact Evaluation of Climate Change on Water Resources and Irrigation Projects in Nepal (Case of Khageri River Basin)**

- Evaluating changes in river flow, groundwater recharge, and irrigation efficiency under different climate scenarios.
- Utilizing SWAT hydrological modeling, Global Climate model, GIS-based analysis, and statistical methods to quantify climate change impact on change in net irrigation water requirements.

2023 - 2024 **Monitoring of Land Subsidence Pattern of Pokhara Valley using InSAR technique | Final year Major Project (2024).**

- Used Sentinel Application Platform (SNAP) Desktop for the processing and analysis of Satellite data
- Applied Sentinel-1 InSAR processing to detect subsidence patterns and plot them in GIS.

PROJECTS

Nov 2024 -Present **Hydrologic Modeling for a governmental project**

- Hydrological Analysis, dam-storage analysis, and dam-height optimization for Gwar Khola Multipurpose Dam

RESEARCH INTERSTS

Water resources management, Computational Hydrology, Climate change and resilience, Remote sensing, Sustainable development, Environmental conservation, Big Data and Advanced Analytics techniques, Groundwater Hydrology: Groundwater flow modeling, Hydrologic Modeling & Remote Sensing: Use of HEC-HMS, GIS, and satellite-based approaches for water resource assessments, Climate Change and Water Resources: Impact assessment on irrigation projects, precipitation trends, and groundwater recharge.

COMPUTER SKILLS

- Geographic Information System and Cartography (ArcGIS, QGIS)
- **Drafting and Modelling, Analysis**: AutoCAD, GIS, SNAP, HEC-HMS, HEC-RAS, ArcSWAT, AquaCrop
- **Programming tools**: Python, R, C programming
- **Others**: Word, Excel, PowerPoint, Project and Visio, MATLAB, Origin Pro, LaTeX, Google Earth Engine

PUBLICATIONS

Journal Articles

- S. Lamichhane, N. Devkota, H. P. Poudel, and S. Luitel, “Flood Hazard Mapping and Flood Vulnerability Analysis of Building Structures at Settlement-Scale,” Journal of Science and Engineering (JScE), Volume

11, 2024. DOI: https://doi.org/10.3126/jsce.v11i01.73526

- S. Luitel, S. Ghimire, S. Chaulagain, S. Sah, D. K. Thapa, and S. Lamichhane, "Assessment of Land Subsidence Pattern in Pokhara Valley Using Sentinel-1 InSAR Processing," Journal of Engineering Technology and Planning (JOETP), vol. 5, no. 1, pp. 27–37, 2024. DOI: https://doi.org/10.3126/joetp.v5i1.69649

Books and Chapters

1. S. Luitel (Ed.), A Textbook of Civil Engineering Material, by S. Lamichhane, Kathmandu: Heritage Publication, 2025. ISBN: 978-9937-35-019-8.

LEADERSHIP, ASSOCIATION AND VOLUNTEERING

2024- Feb 2025	**Secretary** at Institute for Research and Action Nepal (IRACTION)
2022-2024	**President** of Madan Bhandari Sports Academy-Pulchowk Unit (Motivating sports events and programs for engineering students.
2023-Present	**Member** of Free Student Union (FSU), Pulchowk Campus (Conducting academic events, exhibitions, competitions, and personality development programs.
2024	**Member** of Pulchowk Pride Award Selection Committee-2080 and 2081.
2024	Attended the seminar on "**Research for Undergraduates**" by the University Grant Commission and Pulchowk Campus.
2023	Completed a "**3-Day Training on GIS**" by CESS-Nepal.
2022	Attended the seminar on "**Water Resource Management**" by the Department of Civil Engineering, Pulchowk Campus.

SCHOLARSHIPS & AWARDS

Merit-based Scholarship to pursue Undergraduate: Secured 4 4-year Scholarship for a Bachelor's in Civil Engineering Course

Merit-based Scholarship to pursue higher secondary school: Secured a position in an examination taken by the Nepal Government through the National Examination Board (NEB) and got full scholarship to complete higher secondary education

"**District Level Youth Talent Recognition and Honor 2074**" Award (Honored as **Youth Scientist**, issued by the National Youth Council, District Youth Committee Office, Government of Nepal, Kathmandu).

CONTACTS OF REFEREE

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