

LAXMAN KAFLE

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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Cambridge, USA

PhD in Geotechnical and Geo-environmental Engineering

June 2023 - May 2029

Research topic: Enhancing rock permeability through electrical fracturing.

TSINGHUA UNIVERSITY

Beijing, China

Masters in Civil Engineering

Sept 2019 - June 2022

Thesis: Influence of precipitation and reservoir water level variation on slope stability and landslide tsunami.

INSTITUTE OF ENGINEERING, TRIBHUVAN UNIVERSITY

Lalitpur, Nepal

Bachelors in Civil Engineering

Nov 2012 - Sept 2016

Thesis: Limit State Design of the Commercial Building in Kathmandu Valley.

PUBLICATIONS

1. Kafle, L., R. Villamor-Lora, and H.H. Einstein. "Electrical Rock Fracturing Techniques and Applications." In *59th Rock Mechanics/Geomechanics Symposium*, Santa Fe, New Mexico, 8-11 June 2025.
2. Kafle, L., R. Villamor-Lora, U. Mok, H.H. Einstein, and J. Germaine. "Characterization of Direction Dependent Properties of Sierra White Granite: Initial Results." In *58th Rock Mechanics/Geomechanics Symposium*, Golden, Colorado, 2024.
3. Kafle, L., Xu, W.-J., Nagel, T., 2024. "Numerical Investigation of a Potential Landslide-Induced Tsunami at the Suofengying Reservoir in China." *Landslides*.
<https://doi.org/10.1007/s10346-024-02217-9>
4. Kafle, L., Xu, W.-J., Nagel, T., 2022. "Influence of Rainfall and Reservoir Water Level Variation on Slope Stability and Evolution of Landslide-Tsunami: A Case Study of Bianjiazhai Landslide at Suofengying Reservoir in China." Presented at *2022 Fall Meeting, AGU*, 12-16 Dec.
5. Kafle, L., Xu, W.-J., Zeng, S.-Y., Nagel, T., 2022. "A Numerical Investigation of Slope Stability Influenced by the Combined Effects of Reservoir Water Level Fluctuations and Precipitation: A Case Study of the Bianjiazhai Landslide in China." *Engineering Geology*, 297, 106508.
<https://doi.org/10.1016/j.enggeo.2021.106508>

AWARDS AND HONORS

Mathworks Fellowship

2025-2026 Academic year

Scholarship (\$107K) graduate fellowships provide support to graduate students within the School of Science at MIT.

Michael L. Batzle Scholarship

Sep 2025 to July 2026

Scholarship (\$2,421.23) from the Society of Exploration Geophysicists, awarded for academic excellence

in geophysics.

Louis Berger Fellowship Fund (A)

2023-2024 Academic year

Tuition award of \$57,986.00, along with a monthly stipend of at least \$3,462.00 and a year of medical insurance worth \$3,089.00.

China Scholarship Council (CSC)-Type A

Sept 2019 - June 2022

Scholarship by the Chinese government to pursue a masters in civil engineering at Tsinghua University, Beijing, China.

RESEARCH EXPERIENCE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Cambridge, USA

Graduate Research Assistant

June 2023-Present

- Investigating rock fracturing mechanisms using electric potential (pulsed/steady) to enhance permeability for geothermal applications.
- Characterization of Direction Dependent Properties of Sierra White Granite using uniaxial, triaxial and Brazilian tests.

TSINGHUA UNIVERSITY

Beijing, China

Graduate Research Assistant

Sept 2019 - June 2022

- Rainfall and reservoir water level fluctuation induced landslides near a reservoir area. Which involves analysis of unsaturated soil and numerical modeling using fully coupled hydromechanical FEM analysis.
- Numerical analysis of landslide tsunami in a reservoir area and its cascading effects using a two-phased, single-layer, depth-averaged FVM model.

INSTITUTE OF ENGINEERING, TRIBHUVAN UNIVERSITY

Lalitpur, Nepal

Undergraduate Final Year Thesis

2016

- Limit State Design of the commercial building in Kathmandu Valley.

TEACHING EXPERIENCE

NEPALGUNJ TECHNICAL COLLEGE

Nepalgunj, Nepal

Diploma in Engineering Department Head

Nov 2016 - Dec 2017

- Taught various civil engineering subjects to diploma students, including Hydraulics, Estimation & Costing, Structural Engineering, Drawing, and C-Programming.
- Supervised mini final-year projects and coordinated as department head with stakeholders.

NATIONAL CAMPUS FOR BUSINESS

Lalitpur, Nepal

A-Level Mathematics Tutor

Oct 2011 - June 2013

- Tutored A-Level students in Mathematics and led revision sessions.

PROFESSIONAL EXPERIENCE

MANNING'S CONSULT PVT. LTD.

Lalitpur, Nepal

Geotechnical Engineer/Team Leader

June 2022-May 2023 and

Nov 2018-Sept 2019

- Worked as a team leader in a project for creating catchment area protection plan of a proposed hydropower dam site on Western Nepal from June 2022-May 2023.

- Worked as a consultant site engineer for the construction of health posts and retrofitting of the blood bank building from Nov 2018-Sept 2019.

NATIONAL RECONSTRUCTION AUTHORITY (NRA)

Gulmi, Nepal

Civil Engineer

Dec 2017 - Nov 2018

- Helped earthquake-affected communities reconstruct/retrofit earthquake-safe housing.
- Was responsible for inspecting and verifying whether the reconstructed/retrofitted houses are within the guideline of NRA or not and recommend government subsidies.

RESEARCH INTERESTS

- Dynamic rock fracturing techniques
- Geothermal energy (EGS) and sustainability
- Underground construction
- Slope stability, debris flow, landslide tsunami, and climate change.

TECHNICAL SKILLS

- Programming (MATLAB, Python, C++ , and C)
- Digital Fabrication
- Open-source software use and contribution: OpenGeoSys, DClaw
- Software skills (Fusion360, ArcGIS, Plaxis 3D, GeoStudio, etc.)

EXTRA-CURRICULAR ACTIVITIES

- Finalist for NASA RASC-AL Challenge 2024–25; led CAD design of lunar infrastructure systems and presented to NASA and aerospace leaders in Cocoa Beach, Florida.
- Have a professional license for non-life insurance surveyor class “A” certified by the Insurance Board, Nepal, License No. 1699/078/79
- Certificate of Completion for the training on ‘Retrofitting of Rural Housing in Nepal’ from the National Reconstruction Authority, Nepal, in the year 2018.
- Certificate of completion of ‘Earthquake Resistant Building Construction’ from Ministry of Urban Development, Central Level Project Implementation Unit (CLPIU), Nepal, in the year 2017
- Certificate of Completion for the course entitled ‘Global Leadership’ from Orbis Institute, Denver, USA, 2010

REFERENCES

PROF. HERBERT H. EINSTEIN

Civil and Environmental Engineering

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PROF. JOHN GERMAINE

Civil and Environmental Engineering

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