KISHOR TIMSINA

Ph.D., Structural Engineering
The University of Tokyo

CONTACT

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EDUCATION

Doctor of Philosophy
Civil Engineering
The University of Tokyo
2020 – 2023

Master of Engineering
Civil Engineering
The University of Tokyo
2017 – 2019

Bachelor of Engineering
Civil Engineering
Pulchowk Campus, IOE
Tribhuvan University
2009 – 2012

HONOURS & AWARDS

- MEXT Scholarship — Doctoral Studies, University of Tokyo (2020–2023)
- Furuichi-Kimitake Prize — Outstanding Master's Thesis, University of Tokyo (2019)
- ADB–JSP Scholarship — Master's Studies, University of Tokyo (2017–2019)
- Full Scholarship & College Fellowship — Bachelor's Studies, Tribhuvan University (2009–2012)

Assistant Professor · Structural Engineer · Researcher

PROFILE

Dr. Kishor Timsina holds a PhD in Structural/Earthquake Engineering from The University of Tokyo, Japan. He has extensive experience in analyzing, designing, and retrofitting earthquake-resistant structures, as well as in structural health monitoring and numerical model updating of structures. His research includes the performance assessment of various structures and the development of retrofitting methodologies for different non-engineered Nepali buildings (RC frame and masonry). Dr. Timsina has made significant contributions to the development and enhancement of the 2D and 3D Applied Element Method (AEM) for collapse analysis of structures and soil-structure interaction. At Madan Bhandari University, he focuses on researching numerical and experimental methods for new and existing Nepali building structures, utilizing local and sustainable materials such as bamboo, timber, masonry (stone, brick), and other cost-effective options. He is also exploring the application of artificial neural networks and numerical optimization in structural engineering. In summary, Dr. Timsina's work integrates advanced structural engineering principles with a focus on enhancing the resilience and sustainability of Nepali building infrastructure.

CURRENT POSITION

Assistant Professor & Programme Coordinator *March 2024 – Present*
Madan Bhandari University of Science and Technology (MBUST)
Sustainable and Resilient Infrastructure Programme · Member, Executive Council

- Coordinate and lead the Sustainable and Resilient Infrastructure (SRI) programme, including curriculum design, faculty recruitment and partnership development.
- Serve on the University Executive Council, contributing to institutional strategy and academic governance.
- Teach graduate courses in Applied Element Modelling, Finite Element Modelling, Structural Dynamics, Structural Evaluation & Retrofitting, and Wood Mechanics.
- Supervise doctoral and master's research on bamboo characterisation, stone-masonry retrofitting and seismic safety of heritage structures.
- Lead funded research projects on sustainable reconstruction and structural use of native bamboo species.

PROFESSIONAL EXPERIENCE

Structural Engineer / Deputy Programme Manager *Nov 2019 – Nov 2020*
National Society for Earthquake Technology – Nepal (NSET)

- Coordinated and supervised the "Technical Support for Resilient Community" programme on multi-hazard risk reduction across rural municipalities of Nepal.
- Led analysis, design and retrofitting of earthquake-resistant buildings, and supported municipalities in multi-hazard risk assessment and DRR policy development.
- Designed and established a Building Permit System (BPS) framework for the rural context, successfully rolled out in seven rural municipalities.
- Supported implementation of Risk-Sensitive Land Use Plans (RSLUP) and established Community Disaster Preparedness Learning Centres (CDPLC).
- Delivered technical training for engineers on earthquake-resistant design, construction and code-compliance checking.

Civil Engineer / Programme Coordinator *Mar 2013 – Sep 2017*
National Society for Earthquake Technology – Nepal (NSET)

CORE COMPETENCIES

- Finite Element & Applied Element Modelling (2D / 3D)
- Seismic Vulnerability Assessment & Retrofitting Design
- Structural Health Monitoring & Model Updating
- Post-Earthquake & Post-Fire Damage Assessment
- Numerical Optimisation for Retrofitting
- Artificial Neural Networks for Structural Engineering
- Disaster Risk Reduction Project Implementation
- Stakeholder Coordination, Training & Capacity Building

PROGRAMMING

- GFORTRAN — AEM tool development
- MATLAB
- Python

LANGUAGES

English — Professional

Nepali — Native

Japanese — Working

- Eastern-region team coordinator for the Building Code Implementation Programme across multiple municipalities of Nepal.
- Served as team leader for detailed damage assessment in earthquake-affected areas following the 2015 M7.6 Gorkha Earthquake.
- Performed analysis, design and construction supervision of earthquake-resistant buildings, and conducted seismic vulnerability assessments and retrofitting designs.
- Trained engineers, masons and communities on earthquake-resistant construction, vulnerability assessment and emergency response (Light Search & Rescue, Rapid Visual Assessment, Detailed Damage Assessment).
- Served as Trainer of Trainers (ToT) and Training for Instructor (TFI) for the national Mason Training programme.

RESEARCH INTERESTS

Structural and Earthquake Engineering, with focus on:

- Performance evaluation of existing structures — masonry, RCC, bio-materials (bamboo, timber), rural and heritage structures (experimental & numerical).
- Structural health monitoring and numerical model updating.
- Retrofitting methodologies for vulnerable structures (experimental & numerical).
- Development, improvement and application of the Applied Element Method (AEM).
- Soil–structure interaction (SSI) and finite element analysis of structures.
- Multi-hazard risk reduction.

RESEARCH SUPERVISION

- PhD — Mukesh Maharjan: “Characterisation of Bambusa balcooa (Dhanu Bans) and Bambusa nutans (Mal Bans) for Structural Application.”
- PhD — Dipu Chapagain: “Development of 3D Applied Element Method for Collapse Simulation in Stone Masonry Structures.”
- PhD — Sapana Prajapati: “Seismic Performance of Traditional Heritage Structures: Influence of Timber Bands and Joints.”
- Master's — Nilkantha Regmi: “Numerical optimisation of openings in stone-masonry homestays for seismic safety considering traditional architecture and comfort.”
- Master's — Aayush Niraula: “Optimisation of Mud Mortar for Stone Masonry Using Natural Additives.”
- Master's — Rupesh Shakya: “Performance Evaluation of Pre-fabricated Bamboo Wall Panels.”
- Master's (co-supervisor) — Binita Silwal: “Green treatment to improve resistance of Bambusa nutans and balcooa against fungal degradation and UV exposure.”
- Supervisor — MoEST-funded research on “Sustainable and Resilient Reconstruction of Traditional Stone Masonry Buildings in Mud Mortar.”

COURSES TAUGHT

- FBM-EL-577 · Applied Element Modelling of Structures
- SRI-EL-579 · Finite Element Modelling of Structures
- SRI-EL-583 · Structural Evaluation and Retrofitting Methods for Existing Structures
- SRI-EL-578 · Advanced Structural Dynamics and Vibration Control
- FBM-CR-501 · Fundamentals of Forest Biomaterials Science (Wood Mechanics)

FUNDED RESEARCH PROJECTS

Sustainable & Resilient Reconstruction of Traditional Stone-Masonry Buildings in Mud Mortar *Feb – Jun 2025*

Ministry of Education, Science and Technology (MoEST), Government of Nepal

NRs. 670,000 · Completed

Characterisation of Bambusa balcooa and Bambusa nutans for Structural Application *2024 – 2026*

Base Bahay Foundation, Philippines

PHP 1,060,350 (~NRs. 25 Lakhs)

Research & Development Partnership in Bamboo-related Research *2025 – 2029 (5 years)*

Green Bamboo Creation (GBC)

NRs. 10 Lakhs

Evaluating the Potential of Mass Timber for Residential Buildings and Industrial Development in Nepal *2026*

Department of Urban Development and Building Construction (DUDBC), Government of Nepal

~NRs. 15 Lakhs

Conduct Study and Research on Cost-Effective Local Housing Technologies and Construction in Collaboration with the Study/Research Institute *2026*

Department of Urban Development and Building Construction (DUDBC), Government of Nepal

~NRs. 15 Lakhs

PROFESSIONAL SERVICE & COMMITTEES

- Member — Technical Committee for Fire Damage Assessment Guideline Development following the 2025 Gen-Z Protest Fire, Department of Urban Development and Building Construction (DUDBC), 2025.
- Member — Research and Publication Subcommittee, Structural Engineers Association of Nepal (SEANep), 2025.
- Member — Technical Committee for Adoption of ISO Standards for Bamboo Design Guidelines, Nepal Bureau of Standards and Metrology (NBSM), 2025.

SELECTED PUBLICATIONS

Peer-Reviewed Journal Articles

1. **Timsina, K.**, Gadagamma, C. K., & Meguro, K. (2021). Sociotechnical evaluation of the soft-storey problem in reinforced-concrete frame buildings in Nepal. *Journal of Performance of Constructed Facilities*, 35(4), 04021019.
2. **Timsina, K.**, Amatya, N., Gadagamma, C. K., & Meguro, K. (2024). Retrofitting solution for soft-story mitigation in reinforced-concrete frame buildings: A socio-technical approach using numerical optimisation. *Journal of Earthquake and Tsunami*, 18(02), 2350040.
3. Hossain, M. S., Numada, M., Mitu, M., **Timsina, K.**, Krisna, C., Rahman, M. Z., Kamal, A. S. M. M., & Meguro, K. (2023). Simplified engineering geomorphic-unit-based seismic site characterisation of the detailed area plan of Dhaka city, Bangladesh. *Scientific Reports*, 13(1), 11151.
4. Multazam, Z., Yamamoto, K., **Timsina, K.**, Gadagamma, C. K., & Meguro, K. (2024). Shaking-table tests of a one-quarter scale model of concrete hollow-block masonry houses retrofitted with fibre-reinforced paint. *Scientific Reports*, 14(1), 8041.
5. Htin, L., **Timsina, K.**, Gadagamma, C. K., Hussain, Q., Ejaz, A., Saingam, P., Khaliq, W., et al. (2025). Enhancing seismic resilience of soft-storey buildings through optimised reinforced-concrete infill solutions. *Engineered Science*.
6. Multazam, Z., Yamamoto, K., **Timsina, K.**, Shanthanu, R., & Meguro, K. (2025). Enhancing seismic resilience in weak masonry units: the impact of rebar reinforcement in concrete hollow-block masonry structures. *Journal of Disaster Science and Management*, 1(1), 4.

7. Hossain, M. S., **Timsina, K.**, Gadagamma, C. K., Numada, M., Kamal, A. S. M. M., & Meguro, K. (2025). Upgradation of 2D applied element method (AEM) for soil-structure interaction (SSI). *Progress in Engineering Science*, 2(2), 100071.
8. **Timsina, K.**, Gadagamma, C. K., Numada, M., & Meguro, K. (2019). Development of a numerical-optimisation framework for solving the soft-storey problem in reinforced-concrete frame buildings. *Seisan Kenkyu*, 71(4), 813–823.
9. **Timsina, K.**, Gadagamma, C. K., & Meguro, K. (2019). A comprehensive field study to examine the complications in the soft-storey problem in Nepal. *Seisan Kenkyu*, 71(6), 1059–1063.
10. **Timsina, K.**, Phumsrang, C., Gadagamma, C. K., & Meguro, K. (2025). Sensitivity-based model updating of operational modal data in 3D Applied Element Method (3DAEM). *Engineered Science* [under revision].

Additional manuscripts under preparation on damage detection using operational modal data, and mechanistic modelling of soft-storey phenomena in RC frames with infill masonry walls.

Selected Conference Presentations & Invited Talks

1. **Timsina, K.** (2025). Integrating machine learning for model updating in the Applied Element Method and vibration-based structural health monitoring. *NEA Talk Programme*, Nepal Engineers Association.
2. **Timsina, K.** & Gadagamma, C. K. (2025). Condition assessment of RC buildings using 3D AEM, model updating and artificial neural networks. *International Summer Programme 2025*, Nanjing Technological University, July 2025.
3. **Timsina, K.** (2025). Build with Bamboo. Panellist, *1st National Bamboo Conference 2081 Pre-Event*, Kathmandu, February 2025.
4. **Timsina, K.**, Gadagamma, C. K., Yamamoto, K., & Meguro, K. (2022). A comparative study of sensitivity-based and Bayesian methods for model updating of a 5-DOF system. *41st Annual Conference of the Japan Society for Natural Disaster Science*.
5. **Timsina, K.**, Gadagamma, C. K., & Meguro, K. (2022). Sensitivity-based structural model updating of idealised shear frames using operational modal data. *1st International Symposium on One Health, One World*.
6. **Timsina, K.**, Gadagamma, C. K., Gokon, H., & Meguro, K. (2018). A proposal for an optimised solution for the open-storey problem in non-engineered infilled-masonry RC framed buildings in Nepal. *17th USMCA Symposium on New Technology for Urban Safety for Mega Cities in Asia*.
7. **Timsina, K.**, Pradhan, S., & Shrestha, S. (2015). Building-code implementation — way to a safer society. *14th USMCA Symposium on New Technology for Urban Safety for Mega Cities in Asia*.