Preetish Kakoty, PhD
Research Fellow - The University of Auckland / GNS Science, NZ
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EXPERIENCE

Research Fellow — Lower Hutt, New Zealand
The University of Auckland and Earth Sciences New Zealand — Mar, 2024 - Present
Research Mentor: Dr. Ken Elwood

- Collaborating with a multi-disciplinary team to develop building blocks towards a state-of-the-art seismic risk model for Wellington to inform policy decisions
- Co-developed a framework to identify appropriate risk thresholds for building codes

Visiting Researcher — Stanford, USA
Blume Earthquake Engineering Center, Stanford University — Jan, 2023 - Feb, 2023
Host/Advisor: Dr. Adam Zsarnóczay and Dr. Gregory G Deierlein

- Worked with SimCenter researchers on developing a multi-level regional seismic risk model that includes high-fidelity models of buildings.

Graduate Research Assistant — Vancouver, Canada
Engineering for Seismic Resilience Lab, UBC Vancouver — Jul, 2018 - Jan, 2023
Advisor: Dr. Carlos Molina Hutt

- Developed numerical models for non-ductile RC shear wall buildings for seismic performance assessment.
- Led a multi-disciplinary team to quantify expected ground motion amplifications in sedimentary basin regions.
- Worked in a multi-organizational team to inform City and County of San Francisco's executive directive on enhanced recovery guidelines for tall buildings.

Graduate Research Assistant — Irvine, USA
Performance Based Earthquake Engineering Lab, UC Irvine — Sep, 2015 - May, 2017
Advisor: Dr. Farzin Zareian

- Developed a probabilistic framework to estimate the indirect economic loss in highway networks using traffic simulations due to post-earthquake disruptions.

Undergraduate Researcher — Guwahati, India
EQRisk Project, AEC (in collaboration with Norwegian Seismic Array) — Nov, 2014 - May, 2015
Advisor: Dr. Jayanta Pathak

- Assisted in developing numerical models for seismic performance assessment of typical residential buildings in North-East India using SAP2000.

EDUCATION

University of British Columbia (UBC) Vancouver, Canada
PhD in Structural & Earthquake Engineering Jan, 2024
Dissertation: Basin Amplification Effects and Seismic Performance of Non-Ductile Reinforced Concrete Shear Wall Buildings during Subduction Earthquakes
Committee: Dr. Carlos Molina Hutt (Chair), Dr. Stephanie Chang, Dr. Ken Elwood

Johns Hopkins University (JHU) Baltimore, USA
Master of Science in Engineering (Systems Engineering) May, 2018

University of California Irvine (UCI) Irvine, USA
Master of Science (Structural Engineering) Mar, 2017
Thesis: Quantification of Downtime in a Highway Network During Seismic Events
Research Advisor: Dr. Farzin Zareian

Assam Engineering College (AEC) Guwahati, India
Bachelor of Engineering in Civil Engineering Jul, 2015
Thesis: Preparation of Design Aids for Reinforced Concrete Foundation Design
Thesis advisor: Dr. Palash J Hazarika

INTERNSHIPS

Intern Vancouver, BC
Bush Bohlman and Partners Jan, 2019 - Apr, 2019
Developed a framework for assessing the seismic risk of hospital infrastructure in the Greater Vancouver area. This is part of an Mitacs Accelerate Program Award.

Intern (Remote)
Guy Carpenter May, 2019 - Aug, 2019
Calibrated earthquake source models from Canada's 2015 seismic hazard model for (re)-insurance purposes. This is part of an Mitacs Accelerate Program Award.

COMPUTING SKILLS

Languages	Python, Matlab
Software	OpenQuake, QGIS, OpenSees
Others	LaTeX, Microsoft Office

PUBLICATIONS

Journal Articles

[J8] **Kakoty P**, Kourehpaz P, Galasso C, Molina Hutt C, Bradley B. (In-Prep). "Application of physics-based ground motion simulation for regional risk assessment".

[J7] **Kakoty P**, Elwood K, DiCaprio C, Bora S . (In-Prep). "Framework for Selecting Representative Earthquake Scenarios for Regional Risk Simulation".

[J6] **Kakoty P**, Dunn C, Hulsey, A, Brown C, Elwood K. (In-Prep). "Earthquake Fatality Risk Tolerance: What Risk Thresholds Should be Used in Setting Building Code Provisions".

[J5] **Kakoty P**, Molina Hutt C, Elwood K. (In-Review). "Collapse Risk of Non-ductile Tall Reinforced Concrete Shear Wall Buildings". *ASCE Journal of Structural Engineering*

[J4] **Kakoty P**, Molina Hutt C, Ghofrani H, Molnar S. (2023). "Spectral Acceleration Basin Amplification Factors for Interface Cascadia Subduction Zone Earthquakes in Canada's 2020 National Seismic Hazard Model". *Earthquake Spectra*. Vol: 39(2). pp 1166-1188 [DOI]

[J3] Molina Hutt C, Hulsey AM, **Kakoty P**, Deierlein GG, Eksir Monfared A, Yen WY, Hooper JD. (2022). "Toward Functional Recovery Performance in the Seismic Design of Modern Tall Buildings".*Earthquake Spectra*. Vol: 38(1). pp 283-309 [DOI]

[J2] Eksir Monfared A, Molina Hutt C, **Kakoty P**, Kourehpaz P, Centeno J. (2021). "Effects of Georgia Sedimentary Basin on the Response of Modern Tall RC Shear-Wall Buildings to M9 Cascadia Subduction Zone Earthquakes". *ASCE Journal of Structural Engineering*. Vol: 147(8). 05021003. [DOI]

[J1] **Kakoty P**, Dyaga SM, Molina Hutt C. (2021). "Impacts of Simulated M9 Cascadia Subduction Zone Earthquakes Considering Amplifications due to the Georgia Sedimentary Basin on Reinforced Concrete Shear Wall Buildings". *Earthquake Engineering and Structural Dynamics*. Vol: 50(1). pp 237-256. [DOI]

Refereed Conference Papers
(* indicates presenting author)

[C13] **Kakoty P***, Elwood K. (2025). "Framework for Selecting Representative Earthquake Scenarios: A Case Study for Wellington, New Zealand". 14^{th} International Conference on Structural Safety and Reliability, Los Angeles, USA.

[C12] **Kakoty P***, Elwood K. (2025). "Framework for Selection of Representative Earthquake Scenarios for Wellington". Proceedings of the New Zealand Society of Earthquake Engineering Annual Technical Meeting, Auckland, New Zealand.

[C11] McKenzie H*, **Kakoty P**. (2025). "Damage to demolition – challenges and findings from inspection of damaged hollowcore floors". Proceedings of the New Zealand Society of Earthquake Engineering Annual Technical Meeting, Auckland, New Zealand.

[C10] **Kakoty P***, Molina Hutt C, Elwood K. (2024). "Collapse risk of tall non-ductile reinforced concrete shear wall buildings". Proceedings of the 18^{th} World Conference on Earthquake Engineering, Milan, Italy. [link]

[C9] Kalita, P*, **Kakoty P**. (2024). "Earthquake insurance penetration in India: opportunities and challenges". Proceedings of the 18^{th} World Conference on Earthquake Engineering, Milan, Italy. [link]

[C8] **Kakoty P***, Molina Hutt C, Elwood K. (2023). "Quantifying Variability in the Collapse Risk of Non-ductile Reinforced Concrete Shear Wall Buildings". Proceedings of the joint Canadian-Pacific Conference on Earthquake Engineering, Vancouver, Canada.[link]

[C7] **Kakoty P***, Molina Hutt C, Ghofrani H, Molnar S. (2022). "Proposed basin amplification factors for subduction interface hazard in the 2020 seismic hazard model of Canada". Proceedings of the 12^{th} US National Conference in Earthquake Engineering, Earthquake Engineering Research Institute, Salt Lake City, USA. [link]

[C6] **Kakoty P***, Mithra S, Molina Hutt C. (2020). "Quantifying Basin Amplification in Southwest BC from Simulated M9 Cascadia Subduction Zone Earthquakes". Proceedings of the 17^{th} World Conference on Earthquake Engineering, Sendai, Japan. [link]

[C5] **Kakoty P**, Monfared A E, Molina Hutt C*. (2019). "Seismic performance of tall buildings designed following non-prescriptive design procedures". Proceedings of the 12^{th} Canadian Conference on Earthquake Engineering, Quebec City, Canada.[link]

[C4] **Kakoty P***, Zareian F. (2018). "Quantification of downtime in a highway network during moderate seismic events". Proceedings of the 11^{th} National Conference in Earthquake Engineering, Earthquake Engineering Research Institute, Los Angeles, USA. [link]

[C3] Simpson B, Ortega M, **Kakoty P***, Hassan W. (2018). "Resilience Reconnaissance for hospitals after the 2010 Maule earthquake". Proceedings of the 11^{th} National Conference on Earthquake Engineering, Earthquake Engineering Research Institute, Los Angeles, USA.[link]

[C2] Hassan W*, **Kakoty P**, Simpson B, Ortega M . (2018). "Efficiency assessment of tsunami evacuation routes in Viña Del Mar, Chile". Proceedings of the 11^{th} National Conference on Earthquake Engineering, Earthquake Engineering Research Institute, Los Angeles, USA.[link]

[C1] **Kakoty P**, Bharali R*. (2014). "Reliability analysis of RC frame equipped with vibration control devices, under seismic loading conditions". Proceedings of 15^{th} Symposium on Earthquake Engineering, Indian Association for Earthquake Technology and IIT-Roorkee, India. 798-803, ISBN: 978-81-88901-59-3

Reports

[R4] Integrating sedimentary basin amplification effects in regional seismic risk of Metro Vancouver: Disaster and Climate Risk and Resilience Assessment (DCRRA).*Ministry of Emergency Management and Climate Resilience, Government of British Columbia*, Victoria, BC. (In-Preparation)

[R3] Virtual Earthquake Reconnaissance Team (VERT): Phase 1 Response to Indios, Puerto Rico M6.4 Earthquake.*Earthquake Engineering Research Institute*, Oakland, CA. [link]

[R2] Seismic Risk Modelling of Hospital Infrastructure for Lower Mainland Facilities Management. *A MITACS Accelerate project for Lower Mainland Facilities Management, British Columbia, with collaboration from Bush Bohlman and Partners LLP*. 2019

[R1] ATC-119. (2018). "San Francisco Tall Buildings Study". An Applied Technology Council project for the City and County of San Francisco, CA. [link]

Posters

[P4]

[P3] **Kakoty P***, Elwood K. (2024). "Framework for Selecting Representative Earthquake Scenarios in Wellington for Regional Risk Simulation". QuakeCore Annual Meeting, Ahuriri Napier, New Zealand.

[P2] **Kakoty P***, Mithra S, Molina Hutt C. (2020). "Performance of Pre-1980 Reinforced Concrete Shear Wall Buildings in Large Magnitude Cascadia Subduction Zone Earthquakes". National Earthquake Conference, San Diego, CA, USA.

[P1] **Kakoty P.*** (2017). "Optimization of bridge inspection route in a post-earthquake context". Equilibrium Models in Systems Engineering, Johns Hopkins University, Baltimore, MD, USA.

FUNDING AND FELLOWSHIP

Peter Wall Institute of Advanced Studies
Nature and Climate Emergency Fellow August, 2022
Fellowship Amount: C$ 3,000
Inducted into a trans-disciplinary cohort of 12 PhD students across UBC to ideate and work towards community facing projects addressing the climate emergency.

University of British Columbia, Vancouver
Public Scholar Initiative Fellow August, 2020
Fellowship Amount: C$ 8,500
Awarded a fellowship to facilitate collaboration with the City of Vancouver for informing upcoming seismic policy.

Mitacs, Canada
Mitacs Accelerate Award January, 2019
Funding Amount: C$ 15,000
Awarded research funding to collaborate with local health authorities to work on seismic risk of hospital infrastructure

LECTURTALKS

[L12] *The many faces of performance-based earthquake engineering.* Department of Civil and Environmental Engineering, University of the Bío Bío, Chile (virtual - 2025)

[L11] *Seismic Risk Models and Their Role in Shaping Risk Reduction Policies.* Department of Earthquake Engineering, Indian Institute of Technology Roorkee, India (2024)

[L10] *Disaster Resilience for Sustainable Livelihood Development in Eastern Himalaya.* 12^{th} Eastern Himalayan Naturenomics^{TM} Forum, Balipara Foundation, Assam, India (2024)

[L9] *Basin Amplification Effects and Seismic Performance of Non-Ductile Reinforced Concrete Shear Wall Buildings during Subduction Earthquakes.* GNS Science Seminar Series, Lower Hutt, New Zealand (2024)

[L8] *Sedimentary Basin Amplification in Ground Motion Shaking during Subduction Earthquakes in Metro Vancouver.* Earthquake Engineering Research Institute - British Columbia Annual General Meeting, Vancouver, BC, Canada (2023)

[L7] *Multi-Scale Regional Seismic Risk Assessment to Quantify Housing Recovery and Economic Impacts in Urban Centers.* CatIQ Connect 2023, Toronto, ON, Canada (2023)

[L6] *Regional Seismic Risk for Dense Urban Centers in Vancouver.* GIS Day 2022 organized by SFU Library, UBC Library, and UBC Faculty of Forestry, Online (2022)

[L5] *Seismic Risk and Urban Resilience: Impacts of Megathrust Earthquakes on Existing Buildings.* Department of Earth Sciences, Simon Fraser University, Burnaby, Canada (2022)

[L4] *Regional Seismic Risk Models: Why We Do What We Do.* 2021 Research Talks, Civil Engineering Department, UBC Vancouver, BC, Canada (2021)

[L3] *Towards Functional Recovery Performance in the Seismic Design of Modern Tall Buildings.* Invited talk at the HayWired Vol 3 Roll-Out by USGS, Online (2021) [link]

[L2] *Impacts of basin amplification on existing tall building infrastructure.* Invited talk at the Earthquake Engineering Research Institute (EERI) Annual Meeting (Online) (2021)

[L1] *Long-term response and recovery of healthcare infrastructure following the 2010 Maule Earthquake.* Invited talk at the Earthquake Engineering Research Institute (EERI) Annual Meeting (Online) (2021)

SERVICE

Journal Reviewer
Bulletin of Seismological Society of America
Earthquake Spectra
International Journal of Disaster Risk Reduction

18th World Conference on Earthquake Engineering, Milan, Italy
Session Co-Convener Jul, 2024
Session Title: Seismic Risk Models for Decision Support: Advances and Applications [link]

Student Leadership Council at EERI
Co-President 2020 - 2021
Treasurer 2019 - 2020
Secretary 2018 - 2019
Post-Earthquake Reconnaissance Workshop Chair 2017 - 2018
Led a group of graduate students from different universities to organize undergraduate seismic design competition, pot-earthquake reconnaissance workshop, and other student related events of EERI.

EERI Annual Meeting
Organizing Committee Member Mar, 2021

International Colloquium on Performance, Protection & Strengthening of Structures Under Extreme Loading & Events, Whistler, Canada.
Student Organizer Sep, 2019

Interdisciplinary Seminar on Smart & Sustainable Infrastructures, Vancouver
Member, Organizing Committee Mar, 2019

EERI UBC Vancouver Student Chapter
President Aug, 2019 - Dec, 2020

EERI UC Irvine Student Chapter
Vice President Aug, 2016 - Mar, 2017

Aadharshila
Annual Newsletter of Civil Engineering Department, Assam Engineering College
Co-Editor 2014-2015
Memeber, Editorial Team 2012-2014

Assam Engineering College
Training and Placement Coordinator Jun, 2014 - May, 2015

SCIENCE COMMUNICATION

[5] Disaster Risk in Evolving Landscapes *online essays*. Ongoing (Launched in March 2024)

[4] Understanding Seismic Risk of Older Buildings in Vancouver for the "Big One" and Impacts on Community Resilience. *3MT Competition, Civil Engineering Graduate Student Society.* 2022

[3] Earthquake preparedness: Individual Resilience to Community Resilience. *ScienceSlam Canada*. 2021

[2] Earthquake shake table demonstration. *Salmonberry Fair Day, Dunbar Community Centre.* 2019

[1] Session Facilitator. *Cedar Summer Camp, UBC*. 2019 & 2022

PROFESSIONAL MEMBERSHIP

Student Member,
American Society of Civil Engineers
Structural Engineers Association of BC
Seismological Society of America
Earthquake Engineering Research Institute
Canadian Society of Civil Engineers