

JOSHUA DIMASAKA

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EDUCATION

University of Cambridge	United Kingdom
PhD Artificial Intelligence for the study of Environmental Risks	2023-26
<i>Dissertation: Global Disaster Risk Quantification Audit using AI and Earth Observation Data</i>	
<i>Advisor: E. So (UCam), C. Geiß (DLR), R. Muir-Wood (Moody's RMS), F. Bendimerad (EMI)</i>	
MRes Environmental Data Science	2022-23
<i>Research: Exposure Assessment of Settlement-Road Systems from Climate-influenced Mass Movements</i>	
<i>Advisor: A. Marinoni (UiT), S. Selvakumaran (UCam)</i>	
Stanford University	United States
MA Public Policy	2020-22
<i>Research: Regional Earthquake Risk Assessment of the Greater Metro Manila Area, Philippines</i>	
<i>Advisor: J. Baker (Stanford)</i>	
MS Civil & Environmental Engineering, Sustainable Design & Construction (Structures)	2019-22
<i>Research: Landslide, Liquefaction, and Building Damage via Causal Inference from Satellite Imagery</i>	
<i>Advisor: H. Y. Noh (Stanford), S. Xu (Johns Hopkins), D. Wald (USGS)</i>	
Exec. Educ. Ignite Certificate, Entrepreneurship & Innovation, Grad School of Business	2021
Knight-Hennessy Graduate Fellow	2019-22
University of the Philippines Los Baños	Philippines
BS Civil Engineering, <i>magna cum laude</i> , college valedictorian, rank 1/341	2018

PROFESSIONAL APPOINTMENTS

Apr - Jun 2026	Guest Scientist, Digital GreenTalents, German Aerospace Center, DE
Jul - Sep 2024	Guest Scientist, Helmholtz AI, German Aerospace Center, DE
Oct 2022 - present	Postgraduate Researcher, University of Cambridge, UK
Mar - Aug 2022	Urban Resilience Fellow, Earthquakes and Megacities Initiative, PH
Dec 2021 - May 2022	Public Policy MA Researcher, Stanford University, US
Mar 2021 - Mar 2022	Earthquake Risk Consultant, Stanford University, US
Jun - Sep 2021	Structures & Natural Hazards Researcher, FM Global, US
Jun 2020 - Jun 2021	Geospatial & Machine Learning MS Researcher, Stanford University, US
Jul 2018 - Jul 2019	Structural Design Engineer, Arup, PH
May - Jul 2017	Planning & Control Engineering Intern, Ayala Group (MDC), PH

PEER-REVIEWED PUBLICATIONS

- [P-1] Dimasaka, J., Geiß, C., and So, E. (2026). **GraphVSSM: Graph Variational State-Space Model** for Probabilistic Spatiotemporal Inference of Dynamic Exposure and Vulnerability for Regional Disaster Resilience Assessment. In *Proceedings of the Special Track on AI for Social Impact at the 40th AAAI Conference of Artificial Intelligence*. (Accepted).
Code: github.com/riskaudit/GraphVSSM
- [P-2] Dimasaka, J., Geiss, C., Muir-Wood, R., and So, E. (2026). **GraphCSVAE: Graph Categorical Structured Variational Autoencoder** for Spatiotemporal Auditing of Physical Vulnerability Towards Sustainable Post-Disaster Risk Reduction. *Progress in Disaster Science, Special Issue on AI, Emerging Technologies, and Immersive Solutions for Disaster & Emergency Response* (in review).
Award: Best Overall Conference Paper, 8th Int'l Disaster & Risk Conference (IDRC)
Code: github.com/riskaudit/GraphCSVAE
- [P-3] Dimasaka, J., Geiß, C., and So, E. (2026). **DeepC4: Deep Conditional Census-Constrained Clustering** for Large-scale Multitask Disaggregation of Urban Morphology. *ISPRS Journal of Photogrammetry and Remote Sensing, Special Issue on Interpretability and Explainability in GeoAI for Geospatial Science and Earth Observations* (in review).
Code: github.com/riskaudit/DeepC4

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- [P-4] **Dimasaka, J.**, Selvakumaran, S., and Marinoni, A. (2024). Enhancing Assessment of Direct and Indirect Exposure of Settlement-Transportation Systems to Mass Movements by Intergraph Representation Learning. *Environmental Research Letters, Focus Collection on Natural Hazards, Disasters, and Extreme Events*, 19(11), 114055.
Award: *Outstanding Student Presentation Award (OSPA)*, AGU Annual Meeting 2023
Code: github.com/IMPACTSquad/InterGraphNorwayMM
- [P-5] Xu, S., **Dimasaka, J.**, Wald, D., and Noh, H.Y. (2022). Seismic Multi-hazard and Impact Estimation via Causal Inference from Satellite Imagery. *Nature Communications*, 13(1), 7793.
Code: github.com/SusuXu/VBCI

MANUSCRIPTS IN PREPARATION

- [M-1] **Dimasaka, J.**, Geiß, C., and So. E. (2026). **METEOR 2.5D**: Tracking Physical Vulnerability and Disaster Risk Across the 47 UN-Designated Least Developed Countries as of 2020, 1975-2030. (*Target Journal: Nature Sustainability*).
- [M-2] **Dimasaka, J.**, Geiß, C., and So. E. (2026). Spatiotemporal Mapping of the Annual Earthquake and Flood Risk of Quezon City, Philippines. (*Target Journal: Nature Communications*)

CONFERENCE PRESENTATIONS

- [C-1] A Data-Driven Probabilistic Approach to Regional Dynamics of Building Exposure and Physical Vulnerability Towards Global Disaster Risk Quantification Audit. *AGU Annual Meeting 2025*, United States, Dec 16, 2025.
- [C-2] Modernizing Quezon City's Building Risk Data with AI and Earth Observation. *20th Assoc. of Pacific Rim Universities - Multi-Hazards Conference & Symposium*, Philippines, Nov 28, 2025.
- [C-3] Spatial Disaggregation of Rwandan Building Exposure and Vulnerability via Weakly Supervised Conditional Census-Constrained Clustering (C4) using Earth Observation Data. *AGU Annual Meeting 2024*, United States, Dec 10, 2024.
- [C-4] Global Mapping of Exposure & Physical Vulnerability Dynamics in Least Developed Countries using Remote Sensing & Machine Learning. *12th Int'l Conference on Learning Representation (ICLR), 2nd Machine Learning for Remote Sensing Workshop*, Austria, May 11, 2024.
- [C-5] Near-real-time Country-wide Estimation of Susceptibility and Settlement Exposure from Norwegian Mass Movements via Inter-graph Representation Learning. *AGU Annual Meeting 2023*, United States, Dec 14, 2023.
- [C-6] Improving Post-earthquake Disaster Response using Bayesian-Updated Ground Failure Models with Satellite Imagery. *20th Assoc. of Structural Engineers of the Philippines (ASEP) International Convention*, Philippines, May 21, 2021.

INVITED TALKS

- [I-1] Near-real-time Country-wide Estimation of Susceptibility and Settlement Exposure from Norwegian Mass Movements via Intergraph Representation Learning. *Innovations Group WG5 of LandAware, an int'l network on early warning systems*, Online, Jun 25, 2024.
- [I-2] Computing in Civil Eng'g. *University of the Philippines Los Baños*, PH, Sep 29, 2023.
- [I-3] Mapping Global Disaster Risk using AI and Earth Observation Data: Examples from Climate-Induced Mass Movements and Seismic Multi-Hazard Impact Assessment. *Moody's Risk Management Solutions – Model Development Team*, London, UK, Jun 21, 2023.

TECHNICAL REPORTS

- [T-1] Tanhueco, R.M., Bendimerad, F., Khazai, B., Tibig, L., **Dimasaka, J.**, and Luzon, P.K. (2022). Climate and Disaster Risk Assessment Report for Quezon City: Climate Change, Earthquake, Flood, and Landslide Hazards, including Identification of Hotspot Barangays. Quezon City Government and Earthquakes & Megacities Initiative.
- [T-2] Bendimerad, F., Canney, N., and **Dimasaka, J.** (2021). Seismic Risk and Loss Estimation of Stanford University Buildings.

OPEN-SOURCE DATA INITIATIVES

- [O-1] METEOR 2.5D: An Open Geospatial Dataset of Spatiotemporal Evolution of Physical Vulnerability in UN-recognized Least Developed Countries (as of 2020) at Five-year Intervals, 1975-2030. doi.org/10.5281/zenodo.16608380 | doi.org/10.5281/zenodo.16695059
- [O-2] A Local-Scale Dataset of Annual Spatiotemporal Maps of Physical Vulnerability in the Cyclone-Impacted Coastal Khurushkul Community (Bangladesh) and Mudslide-Affected Freetown (Sierra Leone) (2016–2023). doi.org/10.5281/zenodo.16656471
- [O-3] A City-Scale Dataset of Annual Spatiotemporal Maps of Building Exposure and Physical Vulnerability in Quezon City, Philippines (2016–2030). doi.org/10.5281/zenodo.16655873
- [O-4] OpenSendaiBench: A Benchmark Dataset of Building Exposure and Vulnerability Dynamics for EO-based Auditing of Global Disaster Risk. doi.org/10.5281/zenodo.10840484

TEACHING

- 2025 Presenter, Advanced Animations for Scientific Oral Presentation, *University of Cambridge*
- 2023 Demonstrator, Geospatial Data Visualization (Basics of GIS), *University of Cambridge*
- 2016-17 Group Tutor, Eng'g Science & Civil Eng'g Courses, *University of the Philippines Los Baños*

VOLUNTEERING

- 2025 Reviewer, *AAAI Special Track on AI for Social Impact & AI for Urban Planning Workshop*
Reviewer, *Updated UNDRR-International Science Council Hazard Information Profiles*
Lead, *Mw-7.7 Seismic Impact Assessment in Myanmar & Thailand using Remote Sensing Data*
- 2024 Reviewer, *American Geophysical Union Annual Meeting 2024, OSPA*
Reviewer, *GeoAI for a Sustainable Future in Africa Workshop*
Reviewer, *Cambridge Journal of Science and Policy*
Exhibitor, *Cambridge Festival*
- 2023-25 Admission Ambassador for Scholar Q&A, *Stanford Knight-Hennessy Scholars Program*
- 2023 Reviewer, *American Geophysical Union Annual Meeting 2023, OSPA*
Participant, *Joint Workshop of Disaster Research Group & UK Alliance for Disaster Research*
- 2022 Reviewer, *Intersect: The Stanford Journal of Science, Technology, and Society*
- 2020 Fellow, *New Story Charity (Affordable Housing Solutions)*
- 2017 Lead Organizer, *12th Engineering Congress (Philippine, National)*
- 2014-22 Lead Coordinator and Interviewer, *Ramar Scholarship Foundation for Low-Income Students*

RECOGNITIONS

2025	Digital GreenTalents, <i>Federal Ministry of Research, Technology & Space, DE</i>	€	5,850
2025	Best Overall Paper Conference, <i>8th Int'l Disaster & Risk Conference, CY</i>		
2024	Helmholtz Visiting Researcher Grant, <i>Helmholtz Association, DE</i>	€	13,040
2023	Outstanding Student Presentation Award, <i>American Geophysical Union, US</i>		
2022-26	UKRI CDT Studentship, <i>Eng'g & Physical Sciences Research Council, UK</i> Departmental Award, <i>Earth Sciences, University of Cambridge, UK</i>	£	106,000 £ 106,000
2019-22	Knight-Hennessy Graduate Fellowship, <i>Stanford University, US</i>	\$	240,000
2018	Int'l Publication Award, <i>University of the Philippines, PH</i>		
2018	BPI-DOST Science Award, <i>BPI Foundation and Dept of Science & Tech, PH</i>		
2017	Best Scientific Oral Presentation, <i>ASEAN-CAFMN, PH</i>		
2017	3rd Place, Most Outstanding Civil Eng'g Student National Award, <i>PICE, PH</i>		
2013-17	DOST RA 7687 & RSFI Undergraduate Scholarships, <i>PH</i>	₱	547,000