

# Joshua Tabor Dimasaka

POSTGRADUATE RESEARCHER · UKRI CAMBRIDGE AI4ER CDT

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## Education

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### University of Cambridge

Cambridge, UK

MRES-PHD ARTIFICIAL INTELLIGENCE FOR THE STUDY OF ENVIRONMENTAL RISKS

Sep 2022 - Sep 2026 (Expected)

- Coursework: Advanced Data Science, Machine Learning and Physical World, Computational Geosciences, Bayesian Inference

### Stanford University, School of Humanities and Sciences

Stanford, CA, US

MA PUBLIC POLICY

Mar 2021 - June 2022

- Thesis: Towards an Equitable Development of the Regional Earthquake Resilience of the Metropolitan Manila, Philippines
- Advisor: Dr. Jack Baker

### Stanford University, School of Engineering

Stanford, CA, US

MS CIVIL & ENVIRONMENTAL ENGINEERING, SUSTAINABLE DESIGN & CONSTRUCTION

Sep 2019 - June 2022

- Research: Bayesian Updating of Seismic Ground Failure Estimations via Causal Graphical Models with Satellite Imagery
- Advisors: Dr. Hae Young Noh, Dr. Susu Xu, and Dr. David Wald (USGS)

### Stanford University, Graduate School of Business

Stanford, CA, US

EXECUTIVE EDUCATION IGNITE CERTIFICATE, ENTREPRENEURSHIP AND INNOVATION

Jan - Mar 2021

- Workshops: Market Segmentation, Design Thinking, Financial Analysis, Business Model, Go-to-Market Strategy, Pitching

### University of the Philippines Los Baños

Laguna, Philippines

BS CIVIL ENGINEERING (RANK 1/341, MAGNA CUM LAUDE, COMPLETED ONE SEMESTER EARLY)

Jun 2013 - Jan 2018

- Thesis: Low-Frequency Impedance Spectroscopy of Cement Paste Matrix Admixed with Nanosilica
- Advisors: Dr. Marish Madlangbayan and Dr. Alvin Karlo Tapia

### Tokyo Metropolitan University

Tokyo, Japan

EXCHANGE PROGRAM CERTIFICATE, INTEGRATED RIVER ENGINEERING WORK

Oct - Nov 2017

- Workshops: Advanced Technique on Flood Control, Water Supply, and Aquatic Environment for Megacity

## Professional Experience

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Mar - Aug 2022 **Urban Resilience Research Fellow**, EMI, an International Scientific NGO, Philippines  
Developed risk assessment tools using MATLAB to analyze 400,000 buildings and 3.2-million population subjected to the "Big One" Mw-7.2 earthquake of the Marikina West Valley Fault System.

Dec 2021 - May 2022 **Public Policy Graduate Researcher**, Stanford Public Policy Program, US  
Designed city-wide GIS maps and wrote MATLAB modules to calculate economic, space, and social losses of 23 cities with 1.14 million buildings using an OpenQuake-run probabilistic hazard analysis.

Mar 2021 - Mar 2022 **Earthquake Risk & Loss Consulting Assistant**, Stanford Land, Buildings, and Real Estate, US  
Analyzed the financial losses and business interruption of 750 buildings subjected to large earthquakes (up to Mw-7.6) and designed a Tableau dashboard for stakeholders' use.

Jun - Sep 2021 **Structures & Natural Hazards Research Intern**, FM Global, Engineering & Research Group, US  
Improved the firm's library of seismic design hazard and maps by more than 246%, starting with 130 and ending with 320 maps (or 190 new maps) from over 130 countries and territories.

Jun 2020 - Jun 2021 **Geospatial & Machine Learning - Graduate Research Assistant**, Stanford Noh Research Group, US  
Wrote MATLAB modules to apply Bayesian causal inference that uses satellite imagery to improve the landslide, liquefaction, and building damage models for global earthquake loss estimation.

## Professional Experience (Continued)

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- Jul 2018 - Jul 2019 **Graduate Structural Design Engineer**, Arup, Buildings Department, Philippines  
Post-earthquake and safety assessment of a tall building with 50 floors.  
Performance-based design peer review of two buildings with 41 and 43 floors and four basements.  
Code-based design peer reviews of three tall buildings with 43-49 floors and four basements each.  
Liquefaction susceptibility assessment of a three-tower building in a reclamation area.
- May - Jul 2017 **Planning and Control Engineering Intern**, Makati Development Corporation, Philippines  
Improved the operations of the Project Planning & Control Office by designing an Excel-VBA program to monitor the deliverables of over 100 national projects with real-time technical report status.

## Publications

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**Dimasaka, J.**, Peralta, E.K., Peralta, M.M., Tapia, A.G., & Madlangbayan, M.S. (2017). Effect of nano-SiO<sub>2</sub> from rice hull ash on the conductivity of cement paste. *Emerging Materials Research*, 7(3): 164-168.

## Conference Presentations

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- Wald, D., Xu, S., Noh, H., **Dimasaka, J.**, Jaiswal, K., Allstadt, K., and Engler, D. (2022). Integrated Strategies for Enhanced Rapid Earthquake Shaking, Ground Failure, and Impact Estimation Employing Remotely Sensed and Ground Truth Constraints. 12th National Conference on Earthquake Engineering, Topic Session on Novel Post-Earthquake Assessment Analysis and Modeling Techniques, Salt Lake City, Utah, United States.
- Xu, S., Wald, D., **Dimasaka, J.**, and Noh, H. (2022). Causality-Informed Bayesian Inference for Rapid Seismic Ground Failure and Building Damage Estimation. 12th National Conference on Earthquake Engineering, Topic Session on Novel Post-Earthquake Assessment Analysis and Modeling Techniques, Salt Lake City, Utah, United States.
- Wald, D., Xu, S., Noh, H., **Dimasaka, J.**, Jaiswal, K., and Engler, D. (2022). Enhanced Rapid Earthquake Ground Failure and Impact Estimates with Remotely Sensed and Ground Truth Constraints. Seismological Society of America Annual Meeting, Bellevue, Washington, United States.
- Xu, S., **Dimasaka, J.**, Wald, D., and Noh, H. (2022). Bayesian Updating of Seismic Ground Failure Estimations via Causal Graphical Models with Satellite Imagery. 17th World Conference on Earthquake Engineering, Sendai, Japan.
- Xu, S., **Dimasaka, J.**, Wald, D., and Noh, H. (2021). Fusing Damage Proxy Maps with Geospatial Models for Bayesian Updating of Seismic Ground Failure Estimations: A Case Study in Central Italy. European Geosciences Union General Assembly Conference.
- Xu, S., **Dimasaka, J.**, Wald, D., and Noh, H. (2021). Causal Graph-based Joint Estimation of Ground Failure and Building Damage from Geospatial Prior Models and Satellite Imagery. Southern California Earthquake Center Annual Meeting.
- Dimasaka, J.**, Xu, S., Wald, D., and Noh, H. (2021). Improving Post-earthquake Disaster Response using Bayesian-Updated Ground Failure Models with Satellite Imagery. 20th Association of Structural Engineers of the Philippines (ASEP) International Convention.
- Dimasaka, J.**, Tapia, A., and Madlangbayan, M. (2017). Effect of Amorphous Nanosilica Synthesized from Rice Hull Ash on the AC Conductivity of Simulated Cement Paste Matrix using Impedance Spectroscopy. ASEAN Conference on Advanced Functional Materials and Nanotechnology, University of San Carlos, Talamban, Cebu, Philippines.
- Dimasaka, J.**, Tapia, A., and Madlangbayan, M. (2017). Impedance Spectroscopy of Cement Paste Matrix Admixed with Amorphous Nanosilica Synthesized from Rice Hull Ash. 5th Seminar Workshop on the Utilization of Waste Materials The 2nd International Symposium on Concrete Structure for the Next Generation, De La Salle University, Manila, Philippines.

## Awards, Fellowships, & Grants

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| 2022-2026 | <b>UKRI CDT Studentship</b> , Engineering & Physical Sciences Research Council           | £ 106,000  |
|           | <b>Departmental Award</b> , Department of Earth Sciences, AI4ER, University of Cambridge | £ 106,000  |
| 2019-2022 | <b>Knight-Hennessy Graduate Fellowship</b> , Stanford University                         | \$ 240,000 |

2018	<b>International Publication Award</b> , Office of the Vice President for Academic Affairs, University of the Philippines	
2018	<b>BPI-DOST Science Awards</b> , BPI Foundation and the Department of Science and Technology	
2018	<b>UPLB CEAT Academic Excellence Award</b> , University of the Philippines	
2017	<b>First Prize, Best Scientific Oral Presentation at ASEAN-CAFMN</b> , Philippine Council for Industry, Energy, and Emerging Technology Research & Development	₱ 15,000
2017	<b>Third Place, Most Outstanding Civil Engineering Students (MOCES) National Award</b> , Philippine Institute of Civil Engineers	
2013-2017	<b>DOST RA 7687 Undergraduate Scholarship</b> , Science Education Institute	₱ 347,000
	<b>RSFI Undergraduate Scholarship</b> , Ramar Foods International	₱ 200,000

## Outreach & Professional Development

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Aug 2018 - present	<b>Registered Civil Engineer</b> , Philippine Regulatory Commission Structural Engineering and Construction = 91% Hydraulics and Geotechnical Engineering = 93% Mathematics, Surveying, and Transportation Engineering = 89%
Dec 2017 - May 2022	<b>Co-Founder</b> , Project iQ: Initiatives of Quesadians, Charity, Paete, Laguna, Philippines Collaborated with the Philippines' Department of Science and Technology to distribute 750 3D-printed face shields and raised 2.6K USD to provide 750 face masks and PPEs to 400 frontliners and 100 health workers amidst COVID-19.
Jul 2017 - Jan 2018	<b>Founder and Organizing Head</b> , User Interface Philippines Led the Civil engineering Executive Organization's first national engineering software seminar and managed the registration, program, awards, technical, marketing, and publicity committees that have gathered more than 5,000 engineering undergraduate students from 100 colleges and universities in the Philippines (to date).
Jun 2016 - Jun 2017	<b>Registrations Head</b> , National Engineering Congress, Philippines Established a detailed strategy of pre-event invitation scheme and registration mechanism that resulted in a fivefold increase in the number of participants ( 1,500 in the year 2017, 300 in the year 2016) in the Materials and Construction Engineering Seminar and the National Intercollegiate Engineering Science Quiz Contest Year XII.
2014 - 2018	<b>College Scholarship Interviewer</b> , Ramar Scholarship Foundation Interviewed 40 first-gen low-income graduating high school students living in disadvantaged communities like mountainous or informal settling areas in Paete, Laguna to assist the donors in providing four-year financial packages for any college degree.

## Technical Skills

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Programming	<b>R, Python, MATLAB, Visual Basic</b>
Mapping	<b>QGIS, Story Map, Tableau</b>
Building	<b>AutoCAD, REVIT, Dynamo, Design Review, SimaPro, Bluebeam</b>
Desiging	<b>ETABS, SAFE, Enercalc, Mastan2, Oasys GSA, STAAD, MS Excel, FReW, Pile</b>