

Education

<i>Ph.D Candidate, Civil Engineering</i> Minor in Statistics and Computer Science University of California, Berkeley	Present
<i>Master of Science, Civil Engineering</i> University of California, Berkeley	May 2020
<i>Bachelor of Science, Civil Engineering</i> The University of Texas at Austin	May 2019

Research Interests

Seismic base isolation, earthquake protective systems, disaster resiliency, performance-based design, machine learning techniques, causality and causal treatments

Research Experience

<i>Graduate Student Researcher</i> Becker Group, Berkeley, CA	Jul 2019 – Present
- Automated constructing database of 400+ simulated base isolated structure designs and their full nonlinear time histories under seismic excitation using OpenSees in Python - Built and calibrated machine learning models to predict losses and structural performance using Gaussian processes, SVM regression/classification, and kernelized linear models - Performed inverse design of isolated systems with targeted repair cost, downtime, and risks using machine learning model predictions, culminating in 4 publications - Analyzed the effectiveness of ground motion intensity measures using statistical analysis, such as significance measures, hypotheses testing, and prediction accuracy	
<i>Undergraduate Research Assistant</i> UT Ocean Engineering Group, Austin, TX	Jan 2018 – May 2019
- Analyzed ducted turbine efficiency by coupling lifting line optimization with RANS flow solver - Designed course project, aiding students in building and testing outputs of 9 ducted turbines - Applied computational results to 3D-print prototypes and designed ducted turbine experiment - Coauthored article submission and presented findings to industry members in consortium - Implemented routine to include effects of non-uniform inflow for turbine optimization algorithm	
<i>Undergraduate Research Assistant</i> UT Thermal Façade Lab, Austin, TX	Sep 2016 – May 2017
- Constructed and monitored lab to replicate indoor environment for HVAC experiments - Resolved technical issues in weather station system and documented troubleshooting methods - Performed a building air flow leakage analysis on an Austin ISD installation - Maintained condition of equipment wiring and coolant piping insulation to ensure precision	

Teaching & Mentoring Experience

<i>Graduate Student Instructor</i> Earthquake Resistant Design, UC Berkeley	Spring 2024
<i>Graduate Student Instructor</i> Dynamics of Structures, UC Berkeley	Fall 2023
<i>Undergraduate Teaching Assistant</i> Fluid Mechanics, UT Austin	Fall 2018
<i>Undergraduate Teaching Assistant</i> Computing Methods, UT Austin	Spring 2017
<i>Graduate Mentor</i> Becker Group, Berkeley, CA	Aug 2022 – Present
- Guided undergraduate research assistant in seismic design of steel concentrically braced frame - Assisted in automating frame design process by implementing design procedures in Python	

Professional Experience

Navigation Engineering Intern

Aug 2017 – Dec 2017

US Army Corps of Engineers, Louisville, KY

- Designed and analyzed two sets of protective fenders for Cannelton Lock and Dam miter gates
- Calculated connection parameters for Olmsted Lock and Dam, including welds and lugs
- Inspected and reported on structural condition of two miter gates and an access bridge
- Performed seismic risk analysis and prepared periodic assessment for Olmsted Lock and Dam

Environmental Engineering Intern

May 2017 – Aug 2017

US Army Corps of Engineers, Louisville, KY

- Oversaw contractor work and performed two investigations for environmental remediation sites
- Assured deliverable quality for over ten remediation studies and environmental assessments
- Reviewed and wrote environmental specifications for three military construction projects
- Drafted scopes of work and cost estimates to procure and award a contract valuing \$30k

Publications & Presentations

Completed

- Pham, H., & Becker, T. (2024). *Decision Variable-based Inverse Design of Isolated Steel Frames using Gaussian Process Regression* [Conference presentation], Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference (EMI/PMC 2024). Chicago, Illinois, USA.
- Pham, H. G., & Becker, T. C. (2023). *Inverse Design of Isolated Structures using Predicted FEMA P-58 Decision Variables* [Conference presentation], 8th International Symposium on Life-Cycle Civil Engineering. Milan, Italy.
- Becker, T. C., & Pham, H. (2022). *Inverse design of isolated buildings given desired collapse probability via surrogate model* [Conference presentation]. In *The 3rd International Conference on Natural Hazards & Infrastructure*. Athens, Greece.
- Becker, T. C., & Pham, H. (2020). *Prediction of Bearing Failure with Surrogate Modeling* [Conference presentation]. 17th World Conference on Earthquake Engineering. Sendai, Japan.
- Du, W., Pham, H., & Kinnas, S. A. (2019). *Design by optimization and flume test of ducted horizontal axis marine current turbines*. In *The 29th International Ocean and Polar Engineering Conference*. OnePetro.

In review

- Pham, H. G., & Becker, T. B. (2024). Design of Isolated Building to Achieve Targeted Collapse Limits through Gaussian Process Modeling, *Engineering Structures*.

Professional Affiliations

Community Outreach Chair, Earthquake Engineering Research Institute (EERI), UC Berkeley Chapter

Student Leader, Cal Civil & Environmental Engineering Graduate Students' Society

Student Leader, Cal SEMM Doctoral Students and Researchers

Volunteer, EERI School Earthquake Safety Initiative

Member, Structural Engineers' Association of Northern California (SEAONC), UC Berkeley Chapter

Skills summary

Analysis and drafting: OpenSees, ETABS, SAP2000, Autodesk AutoCAD and Inventor, SolidWorks

Languages and platforms: Python, MATLAB, R, FORTRAN, C, C++, Linux

Awards & Honors

Outstanding Graduate Instructor Award, University of California, Berkeley, 2023 – 2024

Graduate Research Fellow, National Science Foundation, 2020 – 2023

Graduate Fellow, University of California, Berkeley, 2019 – 2020

References

Research adviser

Tracy Becker, Associate Professor
University of California, Berkeley
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Undergraduate research adviser

Spyros Kinnas, Professor
The University of Texas at Austin
kinnas@mail.utexas.edu