Maha Kenawy, Ph.D.

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Professional Webpage • Google Scholar Page

EDUCATION

Ph.D. in Civil and Environmental Engineering   2018
University of California, Davis
Specialization: Structural Engineering and Computational Mechanics

> Dissertation: Nonlocal Computational Framework for Simulating Extreme Limit States in Reinforced Concrete Structures

M.Sc. in Construction Engineering   2015
American University in Cairo, Egypt
Specialization: Structural Engineering and Construction Materials

> **Laboratory Instruction Fellowship for graduate study**
> **Honors Graduate Student Award in Construction Engineering**

B.Sc. in Construction Engineering - Magna Cum Laude   2011
American University in Cairo, Egypt
specialization: Structures and Materials

> **Leadership for Education and Development (LEAD) Undergraduate Scholarship** funded by the United States Agency for International Development and the Egyptian Ministry of International Cooperation
> **Honors Undergraduate Student Award in Construction Engineering**

Minor in Journalism and Mass Communication   2008
State University of New York, New Paltz and American University in Cairo

ACADEMIC AND PROFESSIONAL APPOINTMENTS

Tenure-Track Assistant Professor   2024 - present
Civil and Environmental Engineering, Oklahoma State University

Associate (Engineering Consultant)   2021 - 2023
Buildings and Structures practice, Exponent, Menlo Park, California
Assess damage to structures due to natural and man-made hazards, and develop frameworks for risk assessment of lifeline infrastructure subjected to extreme events.

Postdoctoral Scholar   2019 - 2021
Civil and Environmental Engineering, University of Nevada, Reno
Led research efforts on assessing the regional impacts of earthquakes on civil infrastructure, co-advised undergraduate and graduate students, and delivered guest lectures on nonlinear analysis of civil structures.

Course Instructor   2016
Civil and Environmental Engineering, University of California, Davis
Prepared and taught the undergraduate Engineering Statics course.

Graduate Student Researcher   2014 - 2018
Civil and Environmental Engineering, University of California, Davis

Created new numerical models for simulating civil structures subjected to extreme loads, supervised undergraduate student researchers, and assisted teaching undergraduate and graduate courses in structural engineering and mechanics.

Graduate Student Researcher   2011 - 2014
Construction Engineering, American University in Cairo, Egypt
Created, designed, and conducted experimental and numerical testing of novel modular structures, and assisted teaching undergraduate courses in structural analysis and design.

RESEARCH EXPERIENCE

Ground Motion Selection for Analysis of Near-Fault Civil Structures using Broadband Physics-Based Earthquake Simulations (Funded by the U.S. Geological Survey – Award #G22AP00380) (2022-2023)
PI: Maha Kenawy
- Studied the characteristics of near-fault physics-based simulated earthquake ground motion records and assessed their impacts on building structures.
- Created new framework and engineering guidelines for using physics-based simulated ground motions to improve performance-based seismic design.

Postdoctoral Research Projects, University of Nevada, Reno (2019 – 2021)

High Performance, Multidisciplinary Simulations for Regional Scale Earthquake Hazard and Risk (Funded by the Department of Energy – Project #17-SC-20-SC)
Supervisor: David McCallen
- Evaluated the seismic risks to civil structures across the San Francisco Bay Area using physics-based earthquake simulations and high-performance computing tools.
- Identified shortcomings of current ground motion record selection procedures for performance-based design in regions of high seismic hazard levels.
- Quantified the regional-scale variability of anticipated damage to buildings located near active faults using physics-based earthquake simulations.
- Created advanced analysis models for predicting the nonlinear response of reinforced concrete (RC) structures to strong ground motion.
- Co-developed high-performance computing regional-scale fault-to-structure earthquake simulation workflow in collaboration with seismologists and computer scientists.

Prediction of the Performance of Beam-Column joints in Aging Reinforced Concrete Structures (Funded by the Nevada Undergraduate Research Award Program)
Student advisee: Parker Allison
Supervised student developing a numerical modeling approach to assess the seismic performance of beam-column connections in nonductile reinforced concrete buildings.

Robust Simulation and Uncertainty Quantification of Damage to Reinforced Concrete Columns in Regions of High Seismic Hazard (Funded by the Southern California Earthquake Center Undergraduate Internship Program)
Student advisee: Leslie Ramos
Supervised student developing a numerical model to simulate the mechanisms of buckling of steel rebar in reinforced concrete columns subjected to extreme loading conditions.

Doctoral Research Projects, University of California, Davis (2014 – 2018)

Nonlocal Formulations for Robust Macro-Scale Simulations of Instability and Localization in Reinforced Concrete and Structural Steel Frame Elements (funded by the National Science Foundation – Grant #CMMI 1434300)
Advisors: Sashi Kunnath and Amit Kanvinde

- Pioneered a new simulation method for predicting the collapse of RC structures subjected to extreme events.
- Created novel finite element models and constitutive models for mesh-objective simulation of damage in RC structures, and implemented them into a structural analysis platform.
- Collaborated with researchers on developing constitutive models for simulating the local buckling of structural steel components.

Developing Reliable Seismic Demand Models with Limited Data
Advisor: Sashi Kunnath

- Formulated a seismic demand prediction model using statistical regularization to reduce the bias associated with predicting earthquake risks to structures.

Master's Research Project, American University in Cairo, Egypt (2011 – 2014)

Project: **Segmented Precast Concrete Spherical Shell Structures: Geometry, Structural Stability and Construction**
Advisors: Mohamed Naiem Abdel-Mooty and Khaled Nassar

- Invented a novel modular precast concrete structure that improves the durability, construction, and performance of large-span RC spherical shell systems.
- Designed and executed several laboratory experiments, and 3D nonlinear finite element simulations to assess the performance of the proposed structure.

PUBLICATIONS

Student advisees are underlined.

Peer-reviewed Journal Articles

1. **Kenawy, M.**, McCallen, D., and Pitarka, A. (2023). Characteristics and Selection of Near-Fault Simulated Earthquake Ground Motions for Nonlinear Analysis of Buildings. *Earthquake Spectra*. https://doi.org/10.1177/87552930231182164.

2. **Kenawy, M**., McCallen, D., and Pitarka, A. (2021) "Variability of Near-Fault Seismic Risk to Reinforced Concrete Buildings Based on High-Resolution Physics-Based Ground Motion Simulations," *Earthquake Engineering and Structural Dynamics,* 1–21. https://doi.org/10.1002/eqe.3413.

3. **Kenawy, M**., Kunnath, S.K., Kolwankar, S., and Kanvinde, A. (2020) "Concrete Uniaxial Nonlocal Damage-Plasticity Model for Simulating Post-Peak Response of Reinforced Concrete Beam-Columns under Cyclic Loading," *Journal of Structural Engineering,* 146 (5), 04020052. https://doi.org/10.1061/(ASCE)ST.1943-541X.0002592.

4. Kolwankar, S., Kanvinde, A., **Kenawy, M.**, Lignos, D., and Kunnath, S.K. (2020) "Simulating Cyclic Local Buckling Induced Softening in Steel Beam-Columns Using a Nonlocal Material Model in Displacement-Based Fiber Elements," *Journal of Structural Engineering*, 146 (1), 04019174. https://doi.org/10.1061/(ASCE)ST.1943-541X.0002457.

5. **Kenawy, M**., Kunnath, S.K., Kolwankar, S., and Kanvinde, A. (2018) "Fiber-Based Nonlocal Formulation for Simulating Softening in Reinforced Concrete Beam-Columns," *Journal of Structural Engineering*, 144 (12), 04018217. https://doi.org/10.1061/(ASCE)ST.1943-541X.0002218.

6. Kolwankar, S., Kanvinde, A., **Kenawy, M.**, Lignos, D., and Kunnath, S.K. (2018) "Simulating Local Buckling-Induced Softening in Steel Members Using an Equivalent Nonlocal Material Model in Displacement-Based Fiber Elements," *Journal of Structural Engineering*, 144 (10), 04018192. https://doi.org/10.1061/(ASCE)ST.1943-541X.0002189.

7. Kolwankar, S., Kanvinde, A., **Kenawy, M.**, and Kunnath, S.K. (2017) "Uniaxial Nonlocal Formulation for Geometric Nonlinearity-Induced Necking and Buckling Localization in a Steel Bar," *Journal of Structural Engineering*, 143 (9), 04017091. https://doi.org/10.1061/(ASCE)ST.1943-541X.0001827.

Peer-Reviewed Journal Articles (in-preparation)

1. **Kenawy, M.** and Pitarka, A. Performance Assessment of Near-Fault Buildings Subjected to Fling-Dominated Physics-Based Simulated Ground Motions.
Expected submission date: February 2024

2. **Kenawy, M.** "Integrated Design and Analysis Framework for Regional-Scale Nonlinear Simulation of Reinforced Concrete Frame Structures."
Expected submission date: March 2024

Peer-Reviewed Conference Papers

1. **Kenawy, M.** and Pitarka, A. (2024) "Use of Physics-based Simulated Earthquake Ground Motions in Nonlinear Analysis of Near-Fault Buildings." *Proceedings of the 18th World Conference on Earthquake Engineering*, June 30 – July 5, Milan, Italy.

2. **Kenawy, M.** and Giffin, B. (2024) "Model-Based Uncertainty in Predicting Damage to Near-Fault Reinforced Concrete Structures." *Proceedings of the 18th World Conference on Earthquake Engineering*, June 30 – July 5, Milan, Italy.

3. **Kenawy, M.** and Jampole, E. (2023) "Probabilistic Risk Assessment of Electric Power Infrastructure Subjected to Earthquake-Induced Landslides." *Proceedings of the 14th International Conference on Applications of Statistics & Probability in Civil Engineering*, July 9-13, Dublin, Ireland. http://hdl.handle.net/2262/103289.

4. **Kenawy, M.** and McCallen, D. (2023) "Selection of Near-Fault Physics-Based Simulated Earthquake Ground Motions for Seismic Performance Assessment of Structures." *Proceedings of the 14th International Conference on Applications of Statistics & Probability in Civil Engineering*, July 9-13, Dublin, Ireland. http://hdl.handle.net/2262/103527.

5. **Kenawy, M.**, McCallen, D., Pitarka, A., and Rodgers, A. (2022). "Seismic Risk to Buildings in the San Francisco Bay Area Predicted by Broadband Physics-Based M7.0 Hayward Fault Rupture Simulations." *Proceedings of the 12th National Conference in Earthquake Engineering*, June 27-July 1, Salt Lake City, UT.

6. **Kenawy, M.**, Ahmadi, A., and Kunnath, S.K. (2018) "Developing Reliable Seismic Demand Models with Limited Data." *Proceedings of the 11th U.S. National Conference on Earthquake Engineering*, June 24-29, Los Angeles, CA.

Conference Presentations, Panels and Posters

1. **Kenawy, M.** and Jampole, E. (2023) "Probabilistic Risk Assessment of Electric Power Infrastructure Subjected to Earthquake-Induced Landslides." Oral presentation at the *14th International Conference on Applications of Statistics & Probability in Civil Engineering*, July 9-13, Dublin, Ireland.

2. **Kenawy, M.** and McCallen, D. (2023) "Selection of Near-Fault Physics-Based Simulated Earthquake Ground Motions for Seismic Performance Assessment of Structures." Oral

presentation at the *14th International Conference on Applications of Statistics & Probability in Civil Engineering*, July 9-13, Dublin, Ireland.

3. **Kenawy, M.** (2022). "Building Better for Earthquakes and Pandemics." Oral presentation at the *2022 Natural Hazards Researchers Meeting*, Natural Hazards Center, July 13-14, Boulder, CO.

4. **Kenawy, M.**, McCallen, D., Pitarka, A., and Rodgers, A. (2022). "Seismic Risk to Buildings in the San Francisco Bay Area Predicted by Broadband Physics-Based M7.0 Hayward Fault Rupture Simulations." Oral presentation at the *12th National Conference on Earthquake Engineering*, June 27-July 1, Salt Lake City, UT.

5. **Kenawy, M.** and McCallen, D. (2022). "Selection of Simulated Earthquake Ground motions for Nonlinear Analysis of Near-Fault Structures." Oral presentation at the *2022 Engineering Mechanics Conference*, May 31-June 3, Baltimore, MD.

6. Allison, P. and **Kenawy, M.** (2021). "Numerical Prediction of the Performance of Beam-Column joints in Aging Reinforced Concrete Structures." Poster presentation at the *UNR Undergraduate Research Symposium: Wolf Pack Discoveries*, December 7, Reno, NV.

7. Ramos, L. and **Kenawy, M.** (2021). "Predicting Damage to Steel Rebar in Reinforced Concrete Structures Subjected to Earthquake Loading." Poster presentation at the Southern California Earthquake Center Annual Meeting, September 13-16, virtual event.

8. **Kenawy, M.**, McCallen, D. and Pitarka, A. (2021) "Impacts of Fault Rupture Characteristics and Shallow Basin Amplification on the Response of Ductile Buildings to Near-Fault Physics-Based Simulated Ground Motions." Oral presentation at the *Seismological Society of America Annual Meeting*, April 19-23, virtual event.

9. **Kenawy, M.** (2021) "Uncertainty in Performance-Based Seismic Design: Simulation-Based Findings and Future Directions." Poster presentation at the *Earthquake Engineering Research Institute (EERI) Annual Meeting*, March 23-25, virtual event.

10. **Kenawy, M.** and McCallen, D. (2020) "Near-Fault Earthquake Risk to Reinforced Concrete Buildings Based on High-Resolution Physics-Based Ground Motion Simulations." Poster presentation at the National Earthquake Conference, March 4-6, San Diego, CA.

11. **Kenawy, M**., Kunnath, S.K., and Kanvinde, A. (2019) "Advancing the Seismic Collapse Assessment of Reinforced Concrete Structures Using Nonlocal Frame Models." Oral presentation, *Engineering Mechanics Institute Conference*, June 18-21, Pasadena, CA.

12. **Kenawy, M.**, Kunnath S.K. and Kanvinde, A. (2019) "Nonlocal Computational Framework for Simulating Collapse in Reinforced Concrete Structures under Earthquake Loading." Poster presentation at the *Pacific Earthquake Engineering Research Center (PEER) Annual Meeting*, January 17-18, Los Angeles, CA.

13. **Kenawy, M**., Kunnath, S.K., and Kanvinde, A. (2018) "Nonlocal Fiber-Based Frame Model for Simulating the Post-Peak Response of Reinforced Concrete Beam-Columns." Oral presentation at the *Engineering Mechanics Institute Conference*, May 29-June 2, Cambridge, MA.

14. **Kenawy, M**., Kunnath, S.K., and Kanvinde, A. (2018) "Fiber-Based Nonlocal Formulation for Simulating Softening in Reinforced Concrete Beam-Columns." Poster presentation at the *PEER Annual Meeting*, January 18-19, Berkeley, CA.

15. **Kenawy, M**., Kunnath, S.K., and Kanvinde, A. (2017) "Nonlocal Formulation for a Displacement-Based Fiber Beam-Column Element." Oral presentation at the *ASCE Structures Congress*, April 5-8, Denver, CO.

Dissertation, Theses and Reports

1. **Kenawy, M**. (2023) "Ground Motion Selection for Analysis of Near-Fault Civil Structures using Broadband Physics-Based Earthquake Simulations," U.S. Geological Survey Final Technical Report - Grant No. G22AP00380.

2. **Kenawy, M.**, Roueche, D., Prevatt, D., Bennett, J., Kalliontzis, D., Djima, W., Nobahar, M., Reed, D., Kijewski-Correa, T., Gurley, K., and Tomiczek, T. (2023) "StEER: Hurricane Idalia Preliminary Virtual Reconnaissance Report (PVRR)," in StEER - Hurricane Idalia. DesignSafe-CI. https://doi.org/10.17603/ds2-0dax-sq27 v1.

3. **Kenawy, M**. and McCallen, D. (2022) "Nonlinear Analysis of Near-Fault Structures using Physics-Based Simulated Earthquake Ground Motions," Center for Civil Engineering Earthquake Research Report No. 22-01, University of Nevada, Reno.

4. **Kenawy, M**. and McCallen, D. (2020) "Regional-Scale Seismic Risk to Reinforced Concrete Buildings Based on Physics-Based Earthquake Ground Motion Simulations," Center for Civil Engineering Earthquake Research Report No. 20-07, University of Nevada, Reno.

5. McCallen, D., Petersson, A., Rodgers, A., Pankajakshan, R., Sjogreen, B., Tang, H., Pitarka, A., **Kenawy, M.** (2020) "ECP Milestone Report: FY2020 Q4 Annual performance/science demonstration simulations on Summit for evaluation of advancements in application performance and providing new science and engineering insight into earthquake phenomenon," Exascale Computing Project Report, Department of Energy.

6. **Kenawy, M**. (2018) "Nonlocal Computational Framework for Simulating Extreme Limit States in Reinforced Concrete Structures," Ph.D. Dissertation, University of California, Davis.

7. Slawinski A., Yoo, D., **Kenawy, M.**, et al. (2018) "Virtual Earthquake Reconnaissance Team (VERT): Immediate Response to M7.5 & Tsunami, Palu-Indonesia," *EERI Learning from Earthquakes program*.

8. **Kenawy, M**. (2014) "A Proposed Segmented Precast Concrete Spherical Cap: Geometry, Structural Stability and Construction," M.Sc. Thesis, American University in Cairo, Egypt.

Professional Articles

1. **Kenawy, M.** (2020) "A Critical Look at the Numerical Modeling of Reinforced Concrete Structures for Extreme Events," EERI Younger Members Committee Online Blog.

Datasets

1. **Kenawy, M.**, Bennett, J., Pham, H., Roueche, D., Kalliontzis, D., Reed, D., Nobahar, M. and Prevatt, D. (2023) "StEER: Hurricane Idalia Annotated Media Repository", in StEER - Hurricane Idalia. DesignSafe-CI. https://doi.org/10.17603/ds2-5525-6g70 v1.

SELECTED INVITED LECTURES

1. **Kenawy, M.** (2024). Application of Simulated Ground Motions to the Analysis of Near-Fault Buildings. Invited presentation at the *PEER-LBNL Workshop on Simulated Ground Motions for the San Francisco Bay Area*.

2. **Kenawy, M.** (2023). Regional Physics-Based Simulations of Infrastructure Vulnerabilities: Preparing for the Next Earthquake. Invited guest lecture at the *Department of Civil and Environmental Engineering, University of Vermont*.

3. **Kenawy, M.** (2022). Regional Physics-Based Simulations of Infrastructure Vulnerabilities: Preparing for the Next Earthquake. Invited guest lecture at the *Structures Seminar Series, Department of Civil Engineering, University of British Columbia, Vancouver*.

4. **Kenawy, M.** (2021). Regional-scale Structural Risk Assessment Using Physics-Based Earthquake Simulations and High-Performance Computing. Guest speaker at the *UNR Civil and Environmental Engineering Department Seminar Series*.

5. **Kenawy, M.** (2021). Are We Ready for the Next Big Earthquake? Guest speaker at the *University of Nevada Postdoctoral Seminar Series*. (YouTube recording: https://youtu.be/4GJbXGgeZSs)

6. **Kenawy, M.** (2021). Mitigating Uncertainties in Earthquake Engineering using Advanced Modeling Approaches. Invited talk at the *University of Washington, Tacoma*.

7. **Kenawy, M.** (2021). Uncertainty in Performance-Based Earthquake Engineering: Toward Resilience-Based Structural Design. Invited talk at the Department of Civil and Environmental Engineering*, Michigan State University*.

8. **Kenawy, M.** (2020). Advances in Performance Assessment of Reinforced Concrete Structures under Extreme Events. **Plenary lecture** at the *2020 Pacific Earthquake Engineering Research (PEER) Annual Meeting*, Berkeley, CA. (YouTube recording: https://youtu.be/P19PlDKtjTU)

9. **Kenawy, M.** (2020). Regional-Scale Seismic Risk to Reinforced Concrete Structures using Broadband Simulated Earthquake Ground Motions. *Earthquake Engineering Research Institute (EERI) Webinar* hosted by the Younger Members Committee. (YouTube recording: https://youtu.be/NOMmF952uXY)

10. **Kenawy, M.** (2020). Introduction to Nonlinear Modeling of Structures for Earthquake Engineering. Guest lecture at the Finite Element Methods graduate course, Department of Civil and Environmental Engineering, *University of Nevada, Reno*.

11. **Kenawy, M.** (2019). From Localized Damage to Regional Collapse Assessment: Characterizing the Performance of Reinforced Concrete Structures Subjected to Earthquakes. Civil and Environmental Engineering Research Seminar Guest Lecture, *University of Nevada, Reno*.

12. **Kenawy, M.** (2019). From Localized Damage to Global Structural Collapse: Advancing Multiscale Modeling of Civil Structures for Earthquake Engineering. Department of Civil and Environmental Engineering Seminar, *Georgia Institute of Technology*.

13. **Kenawy, M.** (2019). Advancing Multiscale Hazard-Based Computational Modeling of Civil Structures. Department of Civil and Environmental Engineering Seminar, *University of Nevada, Reno*.

14. **Kenawy, M.** (2019). Advancing Computational Modeling of Reinforced Concrete Structures for Earthquake Engineering. EERI Younger Members Committee Seminar Series, Department of Civil Engineering, *Ain Shams University,* Cairo, Egypt.

15. **Kenawy, M.** (2018). Enhanced Fiber-Based Frame Model for Simulating Cyclic Degradation of Reinforced Concrete Beam-columns. Civil and Environmental Engineering Department Seminar, *University of California, Berkeley*.

RESEARCH GRANTS

Project: **Ground Motion Selection for Analysis of Near-Fault Civil Structures using Broadband Physics-Based Earthquake Simulations** (2022 - 2023)
PI: Maha Kenawy

Funding agency: United States Geological Survey
Award amount: $52,866
Status: ***Funded and completed (Grant No. G22AP00380)***

Project: **Quantification of the Aging Deterioration of Building Structures using Strong Ground Motion Data** (2022)
PIs: Maha Kenawy and Ezra Jampole
Funding agency: California Strong Motion Instrumentation Program, California Geological Survey, Department of Conservation
Award amount: $80,000
Status: *Not selected for funding*

Project: **Prediction of the Performance of Beam-Column joints in Aging Reinforced Concrete Structures** (2021)
PI: Parker Allison (undergraduate student advisee)
Funding agency: University of Nevada Office of Undergraduate Research
Role: Primary research supervisor of the student PI
Award amount: $2,300
Status: ***Funded and completed***

Project: **Performance of Bridge Columns with High-Strength Steel under Near-Fault Earthquake Ground Motions** (2020)
PI: Maha Kenawy
Co-PI: David McCallen
Funding agency: Pacific Earthquake Engineering Research Center - Transportation Systems Research Program
Award amount: $50,000
Status: *Not selected for funding*

Project: **Nonlocal Finite Element Framework for Simulating Collapse of Reinforced Concrete Structures** (2018)
PI: Maha Kenawy
Funding agency: University of California, Office of the President Postdoctoral Fellowships
Status: *Not selected for funding*

Project: **Nonlocal Formulations for Robust Macro-Scale Simulations of Instability and Localization in Reinforced Concrete Frame Elements** (2016)
PI: Maha Kenawy
Funding agency: American Society of Civil Engineers, Structural Engineering Institute
Award amount: $8,000
Status: ***Funded and completed***

Project: **Identifying Collapse Limit States in Large Deformation Nonlinear Seismic Simulations of RC Highway Bridges** (2016)
PI: Sashi Kunnath
Funding agency: Caltrans-PEER Lifelines Research Program, Pacific Earthquake Engineering Research Center
Role: Contributed to proposing research ideas and co-authored proposal.
Status: *Not selected for funding*

HONORS AND AWARDS

Structures Congress 2023 Young Professional Award, Structural Engineering   2023
Institute, American Society of Civil Engineers (ASCE)

2022 EERI Younger Member Award, received at the 12th National Conference on Earthquake Engineering, Earthquake Engineering Research Institute (EERI)	2022
Natural Hazards Engineering Research Infrastructure (NHERI) Early-Career Travel Grant, National Science Foundation (NSF)	2022
Early-career Annual Conference Registration Grant, EERI	2019 - 2022
Professional Development Postdoctoral Award, University of Nevada, Reno	2019
NHERI Early-Career Summer Institute Grant, NSF	2019
NHERI SimCenter Programming Bootcamp Travel Award, NSF	2019
Graduate Studies Travel Award, UC Davis	2017
Finalist for the Outstanding Graduate Student Teaching Award, UC Davis	2017
O.H. Ammann Research Award in Structural Engineering, Structural Engineering Institute, ASCE	2016

TEACHING AND MENTORING

Graduate Courses

Civil and Environmental Engineering, Oklahoma State University
Performance-Based Earthquake Engineering	2024

Civil and Environmental Engineering, University of Nevada, Reno
Nonlinear Structural Analysis (guest lecture)	2021
Finite Element Methods (guest lecture)	2020

Civil and Environmental Engineering, University of California, Davis
Matrix Structural Analysis (teaching assistant)	2018

Undergraduate Courses

Civil and Environmental Engineering, Oklahoma State University
Structural Analysis	2024

Civil and Environmental Engineering, University of California, Davis
Capstone Design Project (Consultant)	2018
Earthquake Loads on Structures (teaching assistant)	2017
Engineering Statics	2016
Mechanics of Materials Laboratory	2015
Mechanics of Materials (teaching assistant)	2015

Construction Engineering, American University in Cairo, Egypt
Tall Buildings and Large Span Structures (teaching assistant)	2013
Structural Systems and Advanced Design (teaching assistant)	2012
Structural Design (teaching assistant)	2012
Structural Analysis (teaching assistant)	2011

Student Advisees

Parker Allison **Research:** Analysis of aging reinforced concrete beam-column joints **Funding:** Nevada Undergraduate Research Award, University of Nevada, Reno	2021
Several GAANN Fellowship recipients Co-advised doctoral students in structural and environmental engineering on preparing research proposals.	2020-2021

Funding: GAANN (Graduate Assistance in Areas of National Need) Fellowship, Department of Education

<u>Leslie Ramos</u> 2020
Research: Simulating damage in steel rebar in reinforced concrete structures.
Funding: Southern California Earthquake Center (SCEC)

<u>Torynne Dillan</u> 2018
Research: Creating a database of laboratory experimental test data of reinforced concrete walls
Undergraduate Student Research, University of California, Davis

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ACADEMIC AND PROFESSSIONAL LEADERSHIP

Member of the National Earthquake Hazards Reduction Program (NEHRP) Provisions Update Committee, Functional Recovery Task Force, Topic Subcommittee #5: Hazard Levels Applicable for Functional Recovery Objectives (2023 – 2025)
Participate in developing technical proposals regarding the design of new buildings to meet post-earthquake functional recovery performance objectives within the context of the 2026 NEHRP Provisions.

Structural Engineering Research Track Co-Lead, Technical Program Committee of the 12th National Conference on Earthquake Engineering (2022)
Led the planning of 26 conference sessions on structural engineering research, and managed the peer review of over 400 papers submitted for presentation in structural engineering.

Chair, Student Awards Committee, Earthquake Engineering Research Institute (2022)
Led the review and selection of outstanding technical journal articles and graduate student applicants in earthquake engineering for recognition by the annual EERI student awards.

Committee Member and Secretary, ASCE Structural Engineering Institute Technical Committee on Performance-Based Design of Structures (2021-2027)
Organize technical conference sessions and webinars, and collaborate on journal papers on performance-based engineering advances.

Technical Session Organizer: *Resilient Design for Functional Recovery: Our Profession is Taking the Lead,* 2021 EERI Annual Meeting
Organized a technical conference session on advances in seismic design of buildings featuring structural engineering professionals who implemented resilient design projects.

Chair, Honors College Subcommittee for Undergraduate Research Mentorship, University of Nevada, Reno (2021-2022)
Planned and executed a program connecting undergraduate student researchers with postdoctoral mentors to enhance undergraduate research experience at UNR.

Co-Chair, Poster Session Organizing Committee (2021)
Led the planning of the poster presentation session at the 2021 EERI Annual Meeting.

Reviewer of Technical Proposals, Nevada Undergraduate Research Award
Evaluated research proposals by undergraduate students in all STEM fields.

Community Director, Postdoctoral Association, University of Nevada, Reno (2021)
Organized events that serve the professional development of postdoctoral researchers.

Organizing Committee Member, 2020 National Earthquake Conference

Co-Chair, Younger Members Committee**,** EERI (2019 – 2021)
- Organized technical webinars on post-earthquake reconnaissance, engineering applications of earthquake simulations, and earthquake citizen advocacy.

- Planned and executed a virtual interactive workshop on effective technical writing skills.
- Organized a professional networking event for early-career professionals at the 2020 National Earthquake Conference.
- Organized a guided structural engineering tour for undergraduate engineering students.
- Participated in planning and hosting a diversity networking and awareness event.

Reviewer
- ASCE Journal of Structural Engineering (2018 – present)
- International Journal of Fracture (2020 – present)

Virtual Earthquake Reconnaissance Team Member, EERI, Learning from Earthquakes program (2018 – present)
Participated in post-earthquake reconnaissance of the 2020 Oaxaca, Mexico and the 2018 Palu, Indonesia earthquakes.

Secretary, Student Leadership Council, EERI (2017 –2018)
Co-organized and co-hosted the 2018 undergraduate Seismic Design Competition, and the Post-Earthquake Reconnaissance Workshop during the *11th National Conference on Earthquake Engineering*.

President, EERI UC Davis Chapter (2017 – 2018)
Recipient of the 2018 Friedman Family Visiting Professionals Program fellowship.

Doctoral Representative of the Structural Engineering and Structural Mechanics Group, Graduate Student Advisory Committee, University of California, Davis (2018)

Society of Women Engineers Member – UC Davis Section (2017 – 2018)
Co-organized and hosted educational outreach events for middle school students, and mentorship programs for undergraduate students.

MODELING TOOLS AND CODE REPOSITORIES
(https://github.com/mmkenawy)

1. Numerical tool for interactive structural design of reinforced concrete buildings using Jupyter Notebooks (Python-based)
2. Beam-column finite element model implementation for mesh-objective simulation of damage limit states in reinforced concrete members (C++ development in OpenSees)
3. Constitutive model implementation for mesh-objective simulation of the softening response of concrete in structural members (C++ development in OpenSees)
4. Numerical workflows for creating structural models, and running regional simulations on high-performance parallel computing platforms (Python, MATLAB, Tcl, Bash)

MEDIA FEATURES

Research work featured in professional article: Sizing Up Structural Seismic Risk: Latest Technical Performance and Risk Assessment Approaches
Recipient of the 2022 EERI Younger Member Award Article: https://www.unr.edu/nevada-today/news/2022/eeri-award
Highlighted researcher of the Pacific Earthquake Engineering Research Center (PEER) research community (June 2021). PEER Newsletter and video podcast: https://youtu.be/h5NRPCG9vLs.

TRAINING AND CERTIFICATION

Engineer-in-Training, Certificate No. EIT 176047, California Board for Professional Engineers, Land Surveyors, and Geologists

Post-earthquake Safety Evaluation of Buildings, CalOES Safety Assessment Program (SAP) Training, including Safety Evaluation of Buildings after Windstorms and Floods (ATC-20) (2023)

Earthquake Engineering for Structures course for practicing engineers, ASCE (2020)

NHERI Institute for early-career researchers in natural hazard risk reduction, NSF (2019)

PROFESSIONAL MEMBERSHIPS

Member of the Structural Engineers Association of Northern California
Young professional member of the Earthquake Engineering Research Institute
Associate member of the American Society of Civil Engineers
Member of the Structural Extreme Events Reconnaissance (StEER) Network

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