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EDUCATION

Ph.D. in Civil Engineering - Structure, University of Colorado at Boulder — May 2013

Dissertation Title: "A methodology for deriving vulnerability functions of non-structural building components for different building categories"
Advisor: Dr. Keith Porter
GPA: 3.89

M.Sc. in Structure, University of Kerman, Iran — Aug. 2008

Thesis Title: "Floating Foundation, a New Method in Isolating Structures from Earthquake Vibration"

B.Sc. in Civil Engineering, Shiraz University, Iran — Aug. 2005

RESEARCH INTEREST

Intelligent Recovery Model for Communities
Interdependent Community Networks Risk Assessment and Recovery Planning
Natural Disaster Resilience for the Built Environment

RESEARCH EXPERIENCE

Postdoctoral Research Scholar, Colorado State University — March 2017-present
Advisor: Dr. John van de Lindt

Project 1) NIST-funded Center for Risk-Based Community Resilience Planning

- ***Task 1:*** Developing Intelligent Analytical Model for Interdependent Community Networks. The model is a Python based code, hazard-independent, and examines networks typology, interdependency and fragilities. The model will merge into a robust computational environment known as IN-CORE. IN-CORE is a NIST funded Center of Excellent platform that will allow users to optimize community disaster resilience planning and post-disaster recovery strategies intelligently using physics-based models of inter-dependent physical systems combined with socio-economic systems.

- ***Task 2:*** Participating in development of functionality-based building taxonomy. The taxonomy contributes to the IN-CORE platform.

Project 2) NSF - Critical Resilient Interdependent Infrastructure Systems and Processes Program

- Participating in development of a risk-based decision support framework that incorporates the impact of infrastructure interdependencies on community and regional recovery from natural disasters, with specific focus on food security issues.

Research Scholar, Virginia Tech, USA Sept. 2016-Feb. 2017

Incorporating non-structural components in a decision support system for multi-hazard performance based design of resilient, sustainable buildings. The project aims to support early design of midrise office buildings exposed to hurricane, earthquake, and tsunami hazards.
Advisor: Dr. Madeleine Flint

Research Associate, Shiraz University Oct. 2014-June 2016

Conducting regional level seismic risk assessment for different cities, using OpenQuake seismic risk assessment tool introduced by Global Earthquake Model. The objective of the project is to provide state level decision makers with probabilistic seismic loss estimation maps in terms of dollar, death, and downtime. The estimations will guide their procedures of seismic mitigation and preparedness.

Graduate Research Assistant, University of Colorado at Boulder Oct. 2011-Aug 2013

Developed a rapid probabilistic methodology for deriving seismic vulnerability of different building categories. The objective of the methodology was performing rapid seismic risk assessment in regional levels, with worldwide applicability. The work contributed to the Global Earthquake Model (GEM) project.

TEACHING EXPERIENCE

Adjunct Professor, Shiraz University Feb. 2014-June 2016

Four semesters of teaching several undergraduate level courses within the civil engineering program. (Students satisfaction surveying result average: 4.4 out of 5)

Lab Instructor, University of Colorado at Boulder Jan. 2011-May 2011

Instructed Mechanics of Materials lab sections and held office hours for civil and architectural engineering students.

Course Grader, University of Colorado at Boulder Jan. 2013-May 2013

Performed gardening tasks for the Probability & Statistics course and held office hours for class of 78 students.

INDUSTRY EXPERIENCE

Engineer Personnel, Complimentary Military Service, Engineering Division, Iranian Police Force August 2014-June 2015

I served at the engineering division of the Iran Police Force in Tehran, Iran. This was in order to fulfill a mandatory military service requirement. My title was Structural Engineer. Military rank: First Lieutenant.

Structural Engineer, Parakuhe Consulting Engineers Company May 2008-May 2009

Analyzed and designed several buildings and structural systems including steel and concrete structures of residential buildings and commercial complexes.

Intern, Shiraz Petrochemical Complex May 2004 – May 2005

Structural performance and capacity assessment of the existing steel structure of the main warehouse at the Shiraz Petrochemical Complex (SPC). Designed additional structure as an expansion to the already existed warehouse.

CERTIFICATES AND AWARDS

Engineer in Training (EIT), State of California, 2013.

ACI Concrete Field Testing Technician- Grade I, 2009.

CU Boulder Grant, University of Colorado at Boulder, 2011, 2013

The El Mallakh Scholarship, University of Colorado at Boulder, 2010

COMPUTER SKILLS

Programming: **Python, MATLAB**
Computer Science: **Artificial Intelligence**
Structural Analysis & Design: **SAP, ETABS, SAFE, ANSYS, AutoCad**
Seismic Hazard & Risk Assessment Platform: **OpenQuake**
Community Resilient Assessment & Planning Platform: **IN-CORE**

PROFESSIONAL MEMBERSHIP

Associate Member, American Society of Civil Engineers — April 2017-present

Engineers without Borders, CU Boulder Student Chapter, Design Team Member — Nov. 2012-Aug 2014

Earthquake Engineering Research Institute, CU Boulder Student Chapter, Secretary — Jan 2012-Aug 2014

American Institute of Steel Construction, member — Sept. 2009-present

American Concrete Institute, member — Sept. 2009-present

PROFESSIONAL SERVICES

Review Editor in Earthquake Engineering, Journal of Frontiers in Built Environment — May 2017-present

Reviewer, 11th National Conference on Earthquake Engineering (11NCEE), Critical Infrastructure track. — September 2017

Subcommittee Member, Retrofit of Structures under Dynamic Loads, American Society of Civil Engineers — April 2017-present

Professional Member, Engineers without Borders USA — April 2017-present

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PRESENTATIONS

"Regional Level Seismic Risk Assessment Using OpenQuake Tool",
Graduate Student Seminar, Civil & Environmental Engineering Dept.,
Virginia Tech. February 2017

"Fragility Analysis & Risk Assessment, NSF- Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP) Program: Food Security",
Colorado State University, April 2017

"Earthquake Early Warning Systems; application to the city of Shiraz",
Shiraz City Council, Iran. January 2014

"Seismic Hazard and Risk Assessment of Shiraz City",
Civil and Technical Division of City of Shiraz, Iran. January 2016

PUBLICATIONS

Journal Papers:

- Farokhnia, K., and Porter, K., "A Methodology for Rapidly Deriving Vulnerability Functions of Different Building Categories", Earthquake Engineering, 2017 (submitted-under review)
- Farokhnia, K., Tahir, H., Flint, M., Eatherton, M. R., "Development of Loss Functions Database for Seismic-Hazard Performance Based Design Using a Simplified Approach", Engineering Structures, 2017 (pre-submission)
- Farokhnia, K., Gershfeld, M., Barbosa, A., Lomiento, G., van de Lindt, J., "Functionality-Based Building Taxonomy", 2017 (in preparation)

Technical Reports:

- Porter, K., Farokhnia, K., Vamvatksios, D., and Cho, I., "Analytical Derivation of Seismic Vulnerability Functions for Highrise Buildings", Global Vulnerability Consortium, Global Earthquake Model (GEM), 2014.
- Porter, K., Cho, I., and Farokhnia, K., "Contents Seismic Vulnerability Estimation Guidelines", Global Vulnerability Consortium, Global Earthquake Model (GEM), 2012.

Conference Papers:

- Farokhnia, K., van de Lindt, J., Gardoni, P., Maria Koliou, M., "Modeling Optimal Recovery Strategies for Interdependent Networks/Building Clusters Damaged by Earthquakes", 11th National Conference on Earthquake Engineering, Los Angeles, 2018 (accepted).
- -Farokhnia, K., and Porter, K.A., "Estimating the Non-Structural Seismic Vulnerability of Building Categories", Proc. 15th World Conference on Earthquake Engineering, paper number 3900, 24-28, Lisbon, Portugal, Sep 2012.
- -Porter, K., K. Farokhnia, I.H. Cho, T. Rossetto, I. Ioannou, D. Grant, K. Jaiswal, D. Wald, D. D'Ayala, A. Meslem, E. So, A.S. Kiremidjian& H.Y. Noh, "Global vulnerability estimation methods for the Global Earthquake Model", 15th World Conference on Earthquake Engineering, paper number 4504, Lisbon, Portugal, 2012.
- Farokhnia, K. "Fluid Pad, a New Approach in Seismic Isolation Systems", 3rd International Conference on Bridges, Tehran, Iran, 2008.
- Farokhnia, K., Rahgozar, R., "Supplemental Considerations for Stability and Lateral Displacement Control of the Super Structure in Isolated Buildings Using Floating Foundation", 4th National Congress on Civil Engineering, Tehran, Iran, 2008.
- Rahgozar, R., Farokhnia, K., "Floating Foundation, a New Method in Isolating Structures from Earthquake Vibration", 5th International Conference on Seismology & Earthquake Engineering, Tehran, Iran, 2007.