

Hesam Talebiyan | Curriculum Vitae

Ph.D. Candidate

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Education

- **Rice University** **Houston, TX**
Doctor of Philosophy in Civil Engineering, *Aug 2016–Present*
 - Thesis: Interdependent restoration of infrastructure networks with humans in the loop
 - Graduation data: May 2021, Advisor: Dr. Leonardo Duenas-Osorio
 - Honor: 2020 Robert P. and Eleanor Warden Shubinski Award
- **Sharif University of Technology** **Tehran, Iran**
Master of Science in Earthquake Engineering, *Sep 2013–Jan 2016*
 - Thesis: Optimal seismic risk mitigation by prioritization of structures for retrofit
 - GPA = 89.3%, Advisor: Dr. Mojtaba Mahsuli
- **Sharif University of Technology** **Tehran, Iran**
Bachelor of Science in Civil Engineering, *Sep 2008–June 2013*
 - Project: Study of maximum acceleration in regular steel frames using endurance time method
 - GPA = 86.1%

Research and Professional Experience

- **Rice University** **Houston, TX**
Research Assistant *Aug 2016–Present*
 - Decentralized decision making for real-world interdependent networks
 - Game-theoretic methods for decentralized decision-making: Auctions and Bayesian games
 - Bayesian Hierarchical models of network dynamics
 - Congestion and observability in cyber-physical systems
 - Databases of synthetic and realistic networks
 - Funded by ARL's MURI and NSF's CRISP 2.0, and NIST CoE Community Resilience
- **Sharif University of Technology** **Tehran, Iran**
Research Assistant *Sep 2014–Jan 2016*
 - Compiled a database of retrofit plans for school in Iran including structural properties of retrofit plan
 - Developed models for prediction of damage cost and retrofit cost of masonry structures
 - Performed risk analysis on schools of Iran and prioritized them based on optimal mitigation of risk
 - Employed a sensitivity method based on Monte Carlo sampling to prioritize buildings
- **Kasra Consulting Engineers** **Tehran, Iran**
Structural Design Engineer *Apr 2013–Dec 2013*
 - Designed the structure of various steel and concrete buildings

Other Projects

- **Risk-based Prioritization of School Buildings for Seismic Retrofit**
Collaboration with Research and Technical Department of National Organization for School Development, Renovation and Equipping, Tehran, Iran
- **Pluvial Flood Modeling and risk communication**
NSF grant proposal in collaboration with Researchers from computer science and political science at Rice University, Houston, Tx

Publications.....

- [1] H. Talebian, K. Leelardcharoen, L. Duenas-Osorio, B. J. Goodno, and J. I. Craig, "Congestion and observability across interdependent power and telecommunication networks under seismic hazards," *Earthquake Spectra (revision)*, 2020.
- [2] S. Alemzadeh, H. Talebian, S. Talebi, L. Dueñas-Osorio, and M. Mesbahi, "Resource Allocation for Infrastructure Resilience using Artificial Neural Networks," in *32th International Conference on Tools with Artificial Intelligence (ICTAI 2020) (accepted)*, (virtual), 2020.
- [3] H. Talebian and L. Duenas-Osorio, "Decentralized Decision Making for the Restoration of Interdependent Networks," *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, vol. 6, no. 2, p. 04020012, 2020.
- [4] H. Talebian and M. Mahsuli, "Sampling-Based Reliability Sensitivity Analysis Using Direct Differentiation," *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, vol. 6, no. 2, 2020.
- [5] H. Talebian and L. Duenas-Osorio, "Probabilistic Assessment of Decentralized Decision-making for Interdependent Network Restoration," in *13th International Conference on Applications of Statistics and Probability in Civil Engineering, ICASP13* (J. Song, ed.), (Seoul, South Korea), 2019.
- [6] H. Talebian and M. Mahsuli, "Risk-Based Prioritization of a Building Portfolio for Retrofit," *Journal of Structural Engineering*, vol. 144, no. 1, p. 04017181, 2018.
- [7] H. Nasrazadani, M. Mahsuli, H. Talebian, and H. Kashani, "Probabilistic Modeling Framework for Prediction of Seismic Retrofit Cost of Buildings," *Journal of Construction Engineering and Management*, vol. 143, no. 8, p. 04017055, 2017.
- [8] H. Talebian, H. Nasrazadani, and M. Mahsuli, "Probabilistic Prediction of Retrofit Cost of Masonry Buildings," in *7th International Conference of Seismology and Earthquake Engineering (SEE7)*, (Tehran, Iran), 2015.
- [9] H. Talebian and L. Duenas-Osorio, "Auctions for Resource Allocation and Decentralized Restoration of Interdependent Networks," *Structural Safety (pending submission)*, 2020.
- [10] H. Talebian, A. D. González, L. Dueñas-Osorio, J. Wu, and J. W. Baker, "Interdependent Infrastructure Network of Shelby County, TN: Database," *Earthquake Spectra (60% progress)*, 2021.
- [11] H. Talebian and L. Dueñas-Osorio, "Efficient Restoration Planning Using Statistical Models," in *13th International Conference on Structural Safety & Reliability (ICOSSAR 2021) (50% progress)*, (Shanghai, China), 2021.
- [12] R. Paredes, H. Talebian, and L. Dueñas-Osorio, "Uncertainty Quantification via Path-Integral Methods," in *13th International Conference on Structural Safety & Reliability (ICOSSAR 2021) (50% progress)*, (Shanghai, China), 2021.
- [13] S. Alemzadeh, H. Talebian, S. Talebi, L. Duenas-Osorio, and M. Mesbahi, "Deep Learning-based Resource Allocation for Infrastructure Resilience," *Arxiv*, 2020.

Oral Presentations.....

- 1. H. Talebian, A. Gonzalez, & L. Duenas-Osorio (2020), "Interdependent Infrastructure Network of Shelby County, TN: A Recovery-oriented Database," Presented at INFORMS 2020, virtual.
- 2. H. Talebian & L. Duenas-Osorio (2019), "Probabilistic Assessment of Decentralized Decision-making for Interdependent Network Restoration," Presented at ICASP13, Seoul, South Korea.
- 3. H. Talebian & L. Duenas-Osorio (2019), "Auction-based Resource Allocation for Interdependent Network Restoration," Presented at INFORMS 2019, Seattle, WA.

4. H. Talebian & L. Duenas-Osorio (2018), "Bayesian Hierarchical Models for Decentralized Decision-making across Interdependent Network Restoration," Presented at INFORMS 2018, Phoenix, AZ.
5. H. Talebian & L. Duenas-Osorio (2018), "Multi-agent decision-making for interdependent network restoration via decentralized optimization," Presented at IISE Annual Conference & Expo, Orlando, FL.
6. H. Talebian, S. Alemzadeh, L. Duenas-Osorio, & M. Mesbahi (2018), "Optimization and Control of Restoration Strategies across Interdependent Networks," Presented at NSF CRISP/RIPS Workshop, Washington, D.C.

Poster Presentations.....

1. H. Talebian, S. Perry, J. Patil, K. Shepherd, J. Wheeler, D. Subramanian, R. Stein, R. Wilson, L. Duenas-Osorio, & G. Woods, (2019), "Flood-Radar: A user-informed local pluvial flood forecasting tool," Presented at SSPEED Conference, Houston, TX.
2. H. Talebian & L. Duenas-Osorio, (2018), "Decentralized decision-making for Interdependent Infrastructure Resilience," Presented at Lloyd's day at Houston, Houston, TX.
3. H. Talebian & L. Duenas-Osorio, (2018), "Decentralized Decision-making for the Restoration of Real-world Interdependent Networks," Rice Data Science Conference, Houston, TX.
4. S. Alemzadeh, H. Talebian, M. Mesbahi & L. Duenas-Osorio, (2018), "Optimization and Control of Restoration Strategies Across Interdependent Networks," Presented at NSF CRISP/RIPS Workshop, Washington, D.C.
5. H. Talebian, H. Nasrazadani & M. Mahsuli, (2015), "Probabilistic prediction of retrofit cost for masonry structures," Presented at SEE7, Tehran, Iran.

Teaching Experience

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| <ul style="list-style-type: none"> ○ Rice University ○ <i>Teaching Assistant</i> - Uncertainty and Risk-Based Decisions for Infrastructure Systems | <p>Houston, TX
Jan 2020–May 2020</p> |
| <ul style="list-style-type: none"> ○ Sharif University of Technology ○ <i>Teaching Assistant</i> - Graduate: Dynamic of Structure, Earthquake Engineering Seminar - Undergraduate: Mechanics of Material, Statics | <p>Tehran, Iran
Sep 2013–Dec 2014</p> |
| <ul style="list-style-type: none"> ○ Self-employed ○ <i>Private Tutor</i> - Statics, Mechanics of Material, Analysis of Structure I & II | <p>Tehran, Iran
Jan 2014–July 2015</p> |

Service

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| <ul style="list-style-type: none"> ○ Journals ○ <i>Reviewer</i> - Structures (Elsevier) - Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering (ASCE-ASME) | <p>Jul 2019–Present</p> |
| <ul style="list-style-type: none"> ○ Academic and Professional Institutions ○ <i>Member</i> - Earthquake Engineering Research Institute - American Society of Civil Engineers - The Institute for Operations Research and the Management Sciences - Institute of Industrial and Systems Engineers | |
| <ul style="list-style-type: none"> ○ Educational Research and Improvement Working Group ○ <i>Chief Secretary</i> - Researched on different accreditation organizations for universities in the world such as ABET - The working group is affiliated with Sharif University of Technology | <p>Tehran, Iran
Jul 2013–Oct 2013</p> |

List of References

- **Dr. Leonardo Duenas-Osorio**
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 - Phone: (713) 348-5292
 - Email: leonardo.duenas-osorio@rice.edu
- **Dr. Satish Nagarajaiah**
Professor, Department of Civil and Environmental Engineering, Rice University
 - Phone: (713) 348-6207
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- **Dr. Mehran Mesbahi**
Professor, Department of Aeronautics & Astronautics, University of Washington
 - Phone: (206) 543-7937
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