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: August 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–July 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 Enginees** — **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

Teaching Experience

- **Rice University** — **Houston, TX**
  Teaching Assistant — *Jan 2020–May 2020*
  - Uncertainty and Risk-Based Decisions for Infrastructure Systems
- **Sharif University of Technology** — **Tehran, Iran**
  Teaching Assistant — *Sep 2013–Dec 2014*
  - Graduate: Dynamic of Structure, Earthquake Engineering Seminar
  - Undergraduate: Mechanics of Material, Statics
- **Self-employed** — **Tehran, Iran**
  Private Tutor — *Jan 2014–July 2015*
  - Statics, Mechanics of Material, Analysis of Structure I & II

Publications

Refereed journal articles

[1] **H. Talebiyan** 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.

[2] **H. Talebiyan** 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.

[3] **H. Talebiyan** and M. Mahsuli, "Risk-Based Prioritization of a Building Portfolio for Retrofit," *Journal of Structural Engineering*, vol. 144, no. 1, p. 04017181, 2018.

[4] H. Nasrazadani, M. Mahsuli, **H. Talebiyan**, 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.

Under review

[5] **H. Talebiyan**, 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*), 2021.

[6] **H. Talebiyan** and L. Duenas-Osorio, "Auctions for Resource Allocation and Decentralized Restoration of Interdependent Networks," *Reliability Engineering & System Safety* (*submitted*), 2021.

Conference proceedings

[7] S. Alemzadeh, **H. Talebiyan**, S. Talebi, L. Duenas-Osorio, and M. Mesbahi, "Resource Allocation for Infrastructure Resilience using Artificial Neural Networks," in *2020 IEEE 32nd International Conference on Tools with Artificial Intelligence* (*ICTAI*), (virtual), pp. 617–624, IEEE, nov 2020.

[8] **H. Talebiyan** 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.

[9] **H. Talebiyan**, 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.

Working papers

[10] **H. Talebiyan**, A. D. González, L. Dueñas-Osorio, J. Wu, and J. W. Baker, "Interdependent Infrastructure Network of Shelby County, TN: Database: A Restoration-oriented Database." 2021.

[11] **H. Talebiyan** and L. Duenas-Osorio, "Interdependent Network Restoration Games: Simultaneous and Bayesian." 2021.

[12] **H. Talebiyan** and L. Dueñas-Osorio, "Efficient Restoration Planning Using Statistical Models," in *13th International Conference on Structural Safety & Reliability (ICOSSAR 2021) (pending submission)*, (Shanghai, China), 2022.

[13] R. Paredes, **H. Talebiyan**, and L. Dueñas-Osorio, "Uncertainty Quantification via Path-Integral Methods," in *13th International Conference on Structural Safety & Reliability (ICOSSAR 2021) (pending submission)*, (Shanghai, China), 2022.

Other publications

[14] S. Alemzadeh, **H. Talebiyan**, S. Talebi, L. Duenas-Osorio, M. Mesbahi, L. Dueñas-Osorio, and M. Mesbahi, "Deep Learning-based Resource Allocation for Infrastructure Resilience," *Arxiv*, pp. 1–14, 2020.

[15] **H. Talebiyan**, *Optimal seismic risk mitigation by prioritization of structures for retrofit*. M.sc. thesis, Sharif University of Technology, Tehran, Iran, 2016.

Oral Presentations

1. S. Alemzadeh, **H. Talebiyan**, S. Talebi, L. Duenas-Osorio, & M. Mesbahi (2020), "Resource Allocation for Infrastructure Resilience using Artificial Neural Networks," Presented at *ICTAI 2020*, virtual.
2. **H. Talebiyan**, A. Gonzalez, & L. Duenas-Osorio (2020), "Interdependent Infrastructure Network of Shelby County, TN: A Recovery-oriented Database," Presented at *INFORMS 2020*, virtual.
3. **H. Talebiyan** & L. Duenas-Osorio (2019), "Probabilistic Assessment of Decentralized Decision-making for Interdependent Network Restoration," Presented at *ICASP13*, Seoul, South Korea.
4. **H. Talebiyan** & L. Duenas-Osorio (2019), "Auction-based Resource Allocation for Interdependent Network Restoration," Presented at *INFORMS 2019*, Seattle, WA.
5. **H. Talebiyan** & L. Duenas-Osorio (2018), "Bayesian Hierarchical Models for Decentralized Decision-making across Interdependent Network Restoration," Presented at *INFORMS* 2018, Phoenix, AZ.
6. **H. Talebiyan** & L. Duenas-Osorio (2018), "Multi-agent decision-making for interdependent network restoration via decentralized optimization," Presented at *IISE Annual Conference & Expo*, Orlando, FL.
7. **H. Talebiyan**, 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. Talebiyan**, 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. Talebiyan** & L. Duenas-Osorio, (2018), "Decentralized decision-making for Interdependent Infrastructure Resilience," Presented at *Lloyd's day at Houston*, Houston, TX.
3. **H. Talebiyan** & 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. Talebiyan**, 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. Talebiyan**, H. Nasrazadani & M. Mahsuli, (2015), "Probabilistic prediction of retrofit cost for masonry structures," Presented at *SEE7*, Tehran, Iran.

Service

- **Journals**
  Reviewer *Jul 2019–Present*

- Structures (Elsevier)
- Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering (ASCE-ASME)

Academic and Professional Institutions
Member
- Earthquake Engineering Research Institute
- American Society of Civil Engineers
- The Institute for Operations Research and the Management Sciences
- Institute of Industrial and Systems Engineers

Educational Research and Improvement Working Group **Tehran, Iran**
Chief Secretary *Jul 2013–Oct 2013*
- Researched on different accreditation organizations for universities in the world such as ABET
- The working group is affiliated with Sharif University of Technology

List of References

Dr. Leonardo Duenas-Osorio
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- Phone: (713) 348-5292
- Email: leonardo.duenas-osorio@rice.edu

Dr. Mehran Mesbahi
Professor, Department of Aeronautics & Astronautics, University of Washington
- Phone: (206) 543-7937
- Email: mesbahi@aa.washington.edu

Dr. Satish Nagarajaiah
Professor, Department of Civil and Environmental Engineering, Rice University
- Phone: (713) 348-6207
- Email: satish.nagarajaiah@rice.edu