



Curriculum Vitae

Dr. Hesam Varaee

**Assistant Professor, Department of Civil Engineering
ALE-TAHA Institute of Higher Education, Tehran, Iran**

Last Updated: *November 2025*

 **Emails:** Varaee.hesam@aletaha.ac.ir | Varaee.hesam@gmail.com

 **Tel:** +98-21-44320647 (ext. 216)

 **Profiles:**

- [Google Scholar](#)
- [ResearchGate](#)
- [Scopus](#)
- [ORCID: 0000-0001-5967-1077](#)

Education

| Degree | Field | University | Year | Honors / Thesis |
|--------|------------------------|--------------------------------------|------|--|
| Ph.D. | Structural Engineering | University of Sistan and Baluchestan | 2017 | 1st Rank; Multi-objective Life-cycle Optimization of Structures using Ideal Gas Molecular Movement Algorithm |
| M.Sc. | Structural Engineering | University of Yazd | 2009 | 1st Rank; Optimization of Gravity Dam Sections using Classical and Modern Methods |
| B.Sc. | Civil Engineering | University of Yazd | 2006 | |

Academic Positions

- Assistant Professor, Department of Civil Engineering, Ale-Taha Institute of Higher Education (2017–Present)
- Head, M.Sc. Program in Structural & Earthquake Engineering, Ale-Taha Institute (2017–Present)
- Deputy of Cultural and Student Affairs (2020–2023)
- Director of the Graduate Education Office (2021-2024)
- Director of the Faculty Affairs Office (2017–2021)
- Head of Library and Documentation Center (2018–Present)
- Academic Advisor to Civil and Architecture Student Scientific Associations (2021–Present)

Research Interests

- Optimization of Structural and Civil Systems
- Performance-Based and Life-Cycle Design
- Artificial Intelligence and Metaheuristic Algorithms
- Structural Reliability and Risk Assessment
- Construction Safety and BIM Integration
- Sustainable and Smart Infrastructures

Publications

Journal Papers (ISI / Scopus / Scientific)

1. F. Babaei Aghamaleki, **H. Varaee**, “Human Resource Productivity, Construction Project Performance, Structural Equation Modeling, Municipality, and Accidents in Civil Projects,” *Journal of New Approaches in Construction and Project Management*, 2025.
2. M. Rezaie, A. Shishegaran, **H. Varaee**, M. Rajabalinejad, “Designing Automated Digital Safety Systems for Building Health Monitoring on Construction Sites,” *Frontiers of Structural and Civil Engineering*, 2025, IF=3.1, Q2.
3. S.R. Sowlat-Tafti, M.R. Javaheri-Tafti, **H. Varaee**, “Experimental Study of Gravity Load Effect on Seismic Characteristics of Porcelain-Clad Cold-Formed Steel Shear Walls,” *Journal of Structure and Construction (ISC)*, 2025.
4. R. Khosravi, M. Rezaie, **H. Varaee**, “Mitigating Unsafe Behaviors in Construction through Structured OHS Programs: A PLS-SEM Approach,” *International Journal of Reliability, Risk and Safety: Theory and Application (ISC)*, 2025.
5. C.R. Sowlat-Tafti, M.R. Javaheri-Tafti, **H. Varaee**, “Experimental Lateral Behavior of Porcelain-Clad Cold-Formed Steel Shear Walls under Cyclic-Gravity Loading,” *Infrastructures*, 2025, IF=2.9, Q2.
6. A. Jafari, E.M. Dehcheshmeh, **H. Varaee**, Y. Zhou, “Developing a Framework for Reliability-Based Seismic Objective Performance Assessment: Implementation and Application,” *Engineering Structures*, 2025, IF=6.4, Q1.
7. A. Sabbaghzadeh, M.R. Ghasemi, **H. Varaee**, F.S. Seyed Yazdi, “Combining BIM and AR for Maintenance Applications,” *Journal of New Approaches in Construction and Project Management*, 2025.
8. A. Sabbaghzadeh Feriz, **H. Varaee**, M.R. Ghasemi, “Multi-Objective Optimization in Support of Life-Cycle Cost-Performance-Based Design of Reinforced Concrete Structures,” *Mathematics*, 2024, IF=2.3, Q1.
9. **H. Varaee**, “A Novel Center of Mass Optimization (CMO) Algorithm for Truss Design Problems,” *Journal of Soft Computing in Civil Engineering*, 2024, SJR, Q1.
10. M. Rafieizonooz, J.H.J. Kim, **H. Varaee**, Y. Nam, E. Khankhaje, “Testing Methods and Design Specifications for FRP-Prestressed Concrete Members: A Review,” *Journal of Building Engineering*, 2023, IF=6.7, Q1.

11. M. Rezaie, A. Shishegaran, N. Shamskia, **H. Varaee**, “Developing an Effective Safety Management System Functional Framework of an Educational Building Environment with a Safety Cube Approach,” *Journal of Building Engineering*, 2023, IF=6.7, Q1.
12. M. Safari, **H. Varaee**, “Opposition-Based Ideal Gas Molecular Movement Algorithm with Cauchy Mutation, Velocity Clamping, and Mirror Operator,” *Expert Systems*, 2023, IF=3.0, Q2.
13. Gholami Hosseinabadi, **Varaee**, “Effect of Torsional Irregularity on Seismic Performance of Steel MRFs,” *Advances in Civil Engineering Research*, 2023, (ISC).
14. Z. Hoseini, **H. Varaee**, M. Rafieizonooz, J.H.J. Kim, “A New Enhanced Hybrid Grey Wolf Optimizer Combined with Elephant Herding Optimization for Engineering Optimization,” *Journal of Soft Computing in Civil Engineering*, 2022, SJR, Q1.
15. M. Rezaie, N. Shamskia, **H. Varaee**, M. Rafieizonooz, J.H.J. Kim, “Integration of Failure Edges and TOPSIS for Educational Environment Safety Assessment,” *Journal of Soft Computing in Civil Engineering*, 2022, SJR, Q1.
16. F. Noori, **H. Varaee**, “Nonlinear Seismic Response Approximation of Steel Moment Frames Using Artificial Neural Networks,” *Jordan Journal of Civil Engineering*, 2022, SJR, Q3.
17. **H. Varaee**, M.R. Ghasemi, “An Improved Chaotic Ideal Gas Molecular Movement Algorithm for Engineering Optimization Problems,” *Expert Systems*, 2021, IF=3.0, Q2.
18. **H. Varaee**, A. Shishegaran, M.R. Ghasemi, “Life-Cycle Cost Analysis Based on Probabilistic Optimization Using a Novel Algorithm,” *Journal of Building Engineering*, 2021, IF=6.7, Q1.
19. A. Shishegaran, B. Karami, E. Safari Danalou, **H. Varaee**, T. Rabczuk, “Computational Prediction of Steel Shear Wall Performance under Explosive Loads,” *Engineering Computations*, 2021, IF=1.5, Q2.
20. **H. Varaee**, N.S. Hamzehkolaei, M. Safari, “A Hybrid Generalized Reduced Gradient-Based Particle Swarm Optimizer for Constrained Engineering Optimization Problems,” *Journal of Soft Computing in Civil Engineering*, 2021, SJR, Q1.
21. A. Shishegaran, **H. Varaee**, T. Rabczuk, “High Correlated Variables Creator Machine: Prediction of Concrete Compressive Strength,” *Computers & Structures*, 2021, IF=4.4, Q1.
22. **H. Varaee**, A. Shishegaran, M.R. Ghasemi, “Life-Cycle Cost Analysis Based on Probabilistic Optimization Using a Novel Algorithm,” *Journal of Building Engineering*, 2021, IF=6.7, Q1.
23. N. Shabakhty, M.H. Enferadi, M.R. Ghasemi, **H. Varaee**, “Application of Shape Memory Alloy Tuned Mass Damper in Vibration Control of Jacket-Type Offshore Structures,” *Iranian Journal of Marine Science and Technology*, 2020, (ISC).
24. A. Shishegaran, M.R. Ghasemi, **H. Varaee**, “Performance of a Novel Bent-Up Bars System Not Interacting with Concrete,” *Frontiers of Structural and Civil Engineering*, 2019, IF=2.9, Q2.
25. M.R. Ghasemi, **H. Varaee**, “Damping Vibration-Based IGMM Optimization Algorithm: Fast and Significant,” *Soft Computing*, 2019, IF=3.1, Q2.
26. M.R. Ghasemi, **H. Varaee**, “Enhanced IGMM Optimization Algorithm Based on Vibration for Numerical and Engineering Problems,” *Engineering with Computers*, 2018, IF=8.7, Q1.

27. M.R. Ghasemi, **H. Varaee**, “A Fast Multi-Objective Optimization Using an Efficient Ideal Gas Molecular Movement Algorithm,” *Engineering with Computers*, 2017, IF=8.7, Q1.
28. **H. Varaee**, M.R. Ghasemi, “Engineering Optimization Based on Ideal Gas Molecular Movement Algorithm,” *Engineering with Computers*, 2017, IF=8.7, Q1.
29. **H. Varaee**, B. Ahmadi-Nedushan, “Minimum Cost Design of Concrete Slabs Using Particle Swarm Optimization with Time Varying Acceleration Coefficients,” *World Applied Science Journal*, 2011.

Conference Papers (Selected)

1. Sabbaghzadeh, Ghasemi, **Varaee**, “Multi-Objective Seismic Design Optimization of RC Structures: Life-Cycle Cost Approach Using IGMM Algorithm,” *14th Int. Congress of Civil Engineering*, 2025, *Tehran*.
2. Jafari, Zhou, Dehcheshmeh, **Varaee**, “Reliability-Based Study of RC Base-Rocking Walls Using Equivalent SDOF Models,” *WCEE 2024, Milan*.
3. Sabbaghzadeh, Ghasemi, **Varaee**, “Integration of BIM and AR in Maintenance Operations,” *13th Int. Congress of Civil Engineering*, 2023.
4. Jafari Fesharki, **Varaee**, “Key Success Factors in Green Project Management,” *9th Int. Conf. on Industrial Engineering & Systems*, 2023.
5. Haqdoost Rad, Ghiasi, **Varaee**, “Indirect Methods for Structural Damage Detection,” *8th National Conf. on Architecture and Urban Studies*, 2021.
6. Haqdoost Rad, Ghiasi, **Varaee**, “Damage Evaluation Criteria in Structures,” *8th National Conf. on Architecture and Urban Studies*, 2021.
7. Seidi, **Varaee**, “A Review on the Application of Dampers in Structural Control,” *8th National Conf. on Sustainable Civil Engineering*, 2021.
8. Seidi, **Varaee**, “An Overview of Structural Control Methods,” *8th National Conf. on Sustainable Civil Engineering*, 2021.
9. Gholami Hosseinabadi, **Varaee**, “Optimization of Concrete Retaining Walls Using Biogeography-Based Algorithm,” *8th National Conf. on Sustainable Civil Engineering*, 2020.
10. Bakhtiari, **Varaee**, “Role of FRP Composites in Rehabilitation of Marine and Hydraulic Structures,” *8th National Conf. on Sustainable Civil Engineering*, 2020.
11. Ghasemi, Ghiasi, **Varaee**, “Quantum-Behavior Modified IGMM Algorithm,” *WCSSMO12, Braunschweig, Germany*, 2017.
12. Ghasemi, Ghiasi, **Varaee**, “Probability-Based Damage Detection Using Kriging Surrogates,” *ICAVMS 2017, Brisbane, Australia*.
13. Ghasemi, Ghiasi, **Varaee**, “Probability-Based Damage Detection Using Surrogate Models,” *WCSSMO*, 2017.
14. Azhdar, **Varaee**, “Modeling Earthquake Impact on Urban Lifeline Systems,” *3rd Int. Conf. on Seismic Retrofitting*, Tabriz, 2010.
15. Varaee, Azhdar, “Seismic Vulnerability of Historical Buildings,” *4th Conf. on Retrofitting and Preservation of Historical Structures*, 2011.

Books and Publications

1. *Project Management and Control Methods*, Joseph Horowitz (Translated by H. Varacee), Elm-e-Novin Publications, 2009.
2. *Applications of Optimization in Engineering*, Simaye Danesh Publications, 2015.
3. *Applications of Artificial Neural Networks in Civil Engineering*, Ale-Taha Publications, 2022.

Supervised Theses

1. *Optimization of Time–Cost Trade-Off in Construction Projects Using AI Algorithms*, M.Sc., Parisa Haddadi, 2025.
2. *Identification of Effective Strategies for Safety Management System Improvement in Construction Projects*, M.Sc., Somayeh Mohammadi-Madi, 2024.
3. *Human Resource Productivity in Improving Safety Performance of Municipal Projects (Tehran Region 18)*, M.Sc., Fatemeh Babaei Aghamaleki, 2023.
4. *Conceptual Model of Critical Success Factors in Knowledge Management System Implementation (Oil Drilling Co.)*, M.Sc., Soudabeh Ourak, 2023.
5. *Vital Safety Indicators for Post-Construction Resilience in Building Projects*, M.Sc., Fa’eze Tork, 2022.
6. *Two-Dimensional Steel Structure Optimization Using Enhanced Teaching–Learning-Based Algorithm*, M.Sc., Baharak Behari Khosravi, 2022.
7. *Multi-Objective Performance-Based Optimization of Eccentric Braced Frames Considering Life-Cycle Cost*, M.Sc., Mohammad Yarhosseini, 2022.
8. *Identification and Prioritization of Key Factors in Fire Crisis Management in High-Rise Buildings Using AHP and SWOT*, M.Sc., Sheida Samadi Bahrami, 2022.
9. *Multi-Objective Life-Cycle Optimization of Resilient Buildings Using BIM Approach*, Ph.D., Ali Sabbaghzadeh Feriz, 2022.
10. *Identification of Key Success Factors in Sustainable Green Procurement for Construction Projects*, M.Sc., Mahshid Fathollahi-Gol, 2022.
11. *Dynamic Model for Evaluating Environmental Impacts of Residential Projects*, M.Sc., Alemeh Fathalipour, 2022.
12. *Effect of Torsional Irregularity on Seismic Damage of Steel Moment Frames*, M.Sc., Ghazal Gholami Hosseinabadi, 2020.
13. *Response Modification Factor for Immediate Occupancy Performance Level in Steel MRFs*, M.Sc., Saba Ghazaqi, 2022.
14. *Damage Detection of Truss Structures Using Slime Mold Optimization Algorithm*, M.Sc., Marzieh Haqdoost Rad, 2022.
15. *Comparison of Cost and Duration in Top-Down Excavation Methods*, M.Sc., Mahdyeh Mohammadi-Tehrani, 2022.
16. *Optimization of Clean Energy Harvesting from Urban Water Networks (Tehran)*, M.Sc., Deniz Valipour Kavkani, 2019.

17. *Effect of Reverse Fault Rupture on Braced Pile Foundation Structures*, M.Sc., Sahar Hezavehei, 2018.

Teaching Experience

Undergraduate Courses

- Reinforced Concrete Design, I & II
- Earthquake for Artichetures
- Building Construction, I & II
- Computer Applications in Civil Engineering
- Project (Steel & Concrete Design)

Graduate Courses

- Optimization in Structural Engineering
- Advanced Reinforced Concrete Design
- Soft Computing Applications
- Research Methods and Seminar
- Seismic Design of Concrete Structures

Professional Experience

- Registered Structural Engineer, Yazd Construction Engineering Organization (License ID: 1308-0-3-31)
- Member, Iranian Concrete Institute (ICI)
- Member, Young Researchers and Elite Club (since 2016)
- Structural Design Engineer, ISTASAZE Consulting Engineers (2020–2025)
- Projects include:
 - 40-story H5 Residential Tower (Region 22, Tehran – 40,000 m², Iran Sazeh Co., 2021)
 - 22-story Mahmoodieh Commercial Tower (30,000 m², Bonyad Mostazafan, 2020 – *National Construction Award Winner*)
 - 19-story “Dastoor” Tower (15,000 m², Tehran – DAT Consulting Engineers, 2022)
 - Industrial halls design of Farda Motors Company (2025)
 - Industrial halls design of Vafa Khodro Company (2025)
 - Multiple mid-rise residential and commercial projects (over 2,000,000 m² total area)

Technical Skills

- **Software:** ETABS, SAP2000, SAFE, MATLAB, OpenSees, AutoCAD, MS Office.
- **Core Competencies:** Structural optimization, seismic performance evaluation, metaheuristic algorithms, life-cycle cost analysis, and BIM-based modeling.

Honors and Awards

- *Top Researcher*, Ale-Taha Institute of Higher Education (2021)
- *First Rank*, Ph.D. and M.Sc. in Structural Engineering
- *Developer of the Ideal Gas Molecular Movement Optimization Algorithm*
- *Co-Founder of the BARTARH Innovative Core - Structural Optimization Using Artificial Intelligence - Incubation Center of the Natural Disaster Research Institute*

Conference Organization and Editorial Roles

- **Scientific Secretary**, *8th National Conference on Sustainable Development in Civil Engineering*, March 2021
- **Scientific Secretary**, *9th National Conference on Sustainable Development in Civil Engineering*, May 2022
- **Scientific Secretary**, *10th National Conference on Modern Studies and Research in Civil Engineering, Architecture, and Future Cities*, April 2023
- Reviewer for 25 international journals including:
 - *Engineering Structures, Journal of Building Engineering, Applied Soft Computing, Mathematics, Expert Systems, Structures, Sustainability, Heliyon, Information Sciences, Neurocomputing, Cluster Computing, Information sciences, etc.*

(150 total review activities recorded)