Alireza Shirazi, CV

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Ad: Tehran, Iran

Education

Tarbiat Modares University — Tehran, Iran
M.Sc., Smart Building Engineering (17.52/20) — Expected May 2027

Thesis: "Effect of Silica Nanoparticles on Self-Healing Concrete Incorporating Lightweight Expanded Clay"
Supervisors: Dr.Sadegh Dardaei [1], and Dr.Fariborz M. Tehrani [2].
[1] Tarbiat Modares University, Tehran
[2] California State University, Fresno

University of Guilan — Rasht, Iran
B.Sc., Civil Engineering — 2019 – 2023

Research Interest

- Self-healing concrete
- Low-carbon concrete
- Nanotechnology in construction materials
- Concrete durability
- Smart materials
- sustainable construction
- Machine learning applications(optimization) in materials science

Publications

Manuscripts in Preparation / Under Review

"Self-Healing Concrete: A Review of Healing Mechanisms, Durability, Performance, and Implementation Challenges"
Alireza Shirazi, Ali A. Shakeri, Sadegh Dardaei. Submitted to Journal of Civil Engineering and Materials Application

"The Synergic Effects of Slag and Saturated Lightweight Expanded Clay Aggregate with Sodium Silicate on Self-healing Behavior of Concrete Thermal Cracks" Alireza Shirazi, Ali A. Shakeri, Ali Kadkhodaei, Sadegh Dardaei, Fariborz M. Tehrani; In preparation.

"Is implementing smart systems always appropriate? An assessment of the smart system's impact on energy consumption optimization across different climates and conditions" Ali A. Shakeri, Alireza Shirazi, Ali Kadkhodaei, Sadegh Dardaei, Fariborz M. Tehrani; In preparation

"Feasibility Study on Reducing Cement Consumption by Enhancing Concrete Recyclability through the Use of Lightweight Aggregates and Sodium Silicate" Alireza Shirazi, Ali A. Shakeri, Ali Kadkhodaei, Sadegh Dardaei, Fariborz M. Tehrani. In preparation; laboratory testing in progress.

"A Self-Learning and Adaptive Model for Deep Learning-Based Structural Health Monitoring Systems in Concrete Structures" Ali Kadkhodaei, A. Shakeri, Alireza Shirazi, Sadegh Dardaei, Fariborz M. Tehrani; In preparation.

Conference Presentations

"Machine Learning for Low-Carbon Concrete" Alireza Shirazi, Ali A. Shakeri, Nikta Hasaninasab, Sadegh Dardaei, Faroborz M. Tehrani. Presented at the Transportation Research Board Annual Meeting (TRB 2026). Link

"Towards Green Concrete: A Data-Driven Machine Learning Approach for Reducing Cement Content." Alireza Shirazi, Ali A. Shakeri, Nikta Hasaninasab, Sadegh Dardaei, Faroborz M. Tehrani. Presented at the 14th International Congress on Civil Engineering. Link

"Advanced Machine Learning Modeling of Chloride Ion Penetration and Service Life Prediction in Internally Cured Concrete" Ali A. Shakeri, Nikta Hasaninasab, Alireza Shirazi, Faroborz M. Tehrani, Sadegh Dardaei. Presented at the ACI 2025. Link

Book Chapter

"Chapter X: Foundations of Uncertainty in Concrete Durability: From Determinism to Probabilistic Thinking" Book chapter. Ali A. Shakeri, Ali Reza Shirazi, Nikta Hasaninasab, Sadegh Dardaei, and Fariborz M. Tehrani. Submitted.

"Uncertainty-Aware Conceptual Modeling of Concrete Durability" Book. Ali A. Shakeri, Ali Reza Shirazi, Nikta Hasaninasab, Sadegh Dardaei, and Fariborz M. Tehrani. Submitted.

Positions

- **Intelligent Building Student Scientific Association, Tarbiat Modares University**; (2024-2026)

Skills

- Technical Skills:

Programming & Modeling: Python, Machine Learning, MATLAB

Software: ETABS, Abaqus (basic), AutoCAD, SAP (basic), SAFE (basic)

- Soft Skills:

- Time Management, Teamwork, Adaptability, Communication, Problem Solving, Critical Thinking, Work Ethic

Work Experience

Mathematics Teacher — Daneshjoo High School **Mar 2019 - Present**

- Taught mathematics to high school students and explained mathematical concepts through structured lessons and problem-solving.
- Prepared exercises and learning materials and evaluated students' academic performance.
- Provided individual support to students to improve their understanding and problem-solving skills.

Teaching Assistant — Structural Dynamics, Tarbiat Modares University **Sep 2025 – Present**

- Assisted the instructor in teaching and delivering the Structural Dynamics course to graduate students.
- Supported students with course materials, problem-solving, assignments, and technical questions.
- Assisted with grading assignments and exams and provided academic guidance to students.

Civil Engineer — Paryaab Saze Alborz Company **Oct 2023 – Mar 2024**

- Assisted in the planning, supervision, and execution of civil engineering and construction projects.
- Prepared technical documents, reviewed project requirements, and supported engineering activities on site.
- Collaborated with engineers, contractors, and project teams to coordinate activities and ensure project requirements were met.

Editor — Raybod Publishing **Jul 2023 – Mar 2024**

- Edited Persian-language books for grammar, style, clarity, consistency, and overall readability.
- Proofread translated books and compared the Persian translations with the original texts to identify mistranslations, omissions, and inaccuracies.
- Collaborated with authors and translators to improve the quality, accuracy, and consistency of published books.