FARZAD SHAFIEI DIZAJI

Structural / Civil Engineer • Applied Mathematics & Data-Driven Modeling
Charlottesville, VA | ffs5da@virginia.edu | linkedin.com/in/farzad-shafiei-dizaji-143945a6 | Website

SUMMARY

Structural engineer and applied mathematician with two M.Sc. degrees and 15+ years of combined industry and research experience spanning structural design, seismic/vibration control, smart materials, and computational modeling. Proven track record applying optimization algorithms, machine learning, and finite element methods to real-world structural and infrastructure problems, backed by 18 peer-reviewed publications and hands-on project delivery, from bridge and school structure design/retrofit in the field to NSF-funded materials research. Skilled communicator with 7+ years teaching and mentoring technical teams.

CORE SKILLS

Engineering & Modeling: Structural analysis & design, seismic/vibration mitigation, finite element methods, nonlinear structural systems, matrix structural analysis, risk analysis, nondestructive evaluation
Data & Computation: Machine learning & artificial neural networks, optimization algorithms, stochastic modeling, statistical analysis, damage detection & system identification
Programming: MATLAB (advanced), Python, Fortran, Formian
Engineering Software: SAP2000, SAFE, Perform-3D, AutoCAD, Abaqus, ANSYS, RISA, Revit, Rhino, OpenSees
Other: Microsoft Office (Word, Excel, PowerPoint); project review, code compliance, and cross-team technical communication

PROFESSIONAL EXPERIENCE

Graduate Research Fellow — Structural Control & Smart Materials *2016 – 2019*
University of Virginia | NSF-Funded Project (Grant No. CMMI-1538770)

- Designed and characterized a novel passive vibration control device (SMARD) using high-performance superelastic NiTiHfPd shape memory alloys, addressing the limited damping capacity of conventional NiTi SMA dampers in tall, flexible structures.
- Conducted systematic compressive/uniaxial testing and DSC analysis across varied temperatures and loading frequencies to characterize the superelastic response of single-crystal and polycrystalline NiTiHfPd alloys.
- Modeled 6- and 9-story steel moment frame buildings retrofitted with the proposed damper and ran nonlinear time-history analyses against 44 FEMA P695-scaled ground motions to evaluate DBE/MCE-level seismic performance.
- Showed the damper significantly reduces inter-story and residual drift versus conventional frames, improving post-earthquake functionality; results published in Smart Materials and Structures and IMAC XXXV proceedings.

Design & Supervising Engineer *2009 – 2015*
State Organization of Schools Renovation & Development / Dept. of Road & Transportation / Private Consulting Firms — Tabriz, Iran

- Reviewed and supervised structural design calculations for reinforced concrete and steel school and bridge projects, ensuring code compliance and recommending projects for public approval.
- Investigated and authored technical reports on the collapse of two bridges; developed an Excel-based design-review tool that standardized and accelerated review across multiple concurrent projects.

Lecturer, Applied Mathematics & Engineering *Fall 2019 – Spring 2026*
University of Virginia

- Delivered technical instruction in Calculus, Differential Equations, Linear Algebra, Probability, and Engineering Statics/Mechanics to 1,000+ students across 30+ course sections.
- Managed and mentored teams of up to 9 teaching assistants per semester, coordinating assessment design and quality control across multi-section courses.

EDUCATION

M.Sc., Civil (Structural) Engineering — University of Virginia *2016 – 2019*
Thesis: Multi-Level Seismic Response Mitigation Using SMA-Based Self-Centering Control Devices | GPA: 3.97/4.0

M.Sc., Civil (Earthquake) Engineering — Iran University of Science and Technology *2005 – 2008*
Thesis: Graph-Theoretical & Algebraic Optimization of Structural Flexibility Matrices (7 original algorithms)

B.S., Civil Engineering — University of Tabriz *2000 – 2005*

SELECTED PUBLICATIONS & RECOGNITION

- Shafiei Dizaji, F. and Shafiei Dizaji, M. (2022). "Seismic Performance Assessment of Steel Frames Upgraded with Shape Memory Alloy Re-Centering Dampers… Using High-Performance NiTiHfPd Material." Smart Materials and Structures, 31, 065004.
- Saedi, S., Shafiei Dizaji, F., Ozbulut, O.E., and Karaca, H.E. (2017). "Structural Vibration Control Using High Strength and Damping Capacity Shape Memory Alloys." IMAC XXXV Conference Proceedings, Garden Grove, CA.
- 18 peer-reviewed journal articles/conference papers in Smart Materials and Structures, Engineering Computations, Neural Processing Letters, and ASEE proceedings (25+ citations, 2024–2025); Licensed P.E. (Iranian Organization for Engineering Order of Building); Member, ASCE, ACI, IEEA.