

Hadi Eidinejad

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Personal Information

Date of Birth 26.05.1992
Nationality Iranian

Education

- 08/2023 - Present **PhD in Automotive Engineering for Intelligent Mobility**
University of Bologna, Bologna, Italy
Project Title: Elastodynamic Modelling and Vibration Testing of Automotive E-Powertrain Subsystems
- **Experimental Structural Dynamics and Vibration Testing**
 - **Operational Load Characterization and Durability Assessment**
 - **Multiphysics Characterization of Energy Systems**
 - **Data-Driven Modelling, State Estimation, and Prognostics**
 - **Experimental–Numerical Verification and Validation**
 - **Sustainable Composite Materials and Structures**
 - **Human Biodynamics and Shock Mitigation**
- 09/2017 - 09/2020 **M.Sc. in Mechanical Engineering (Solid Mechanics)**
University of Guilan, Guilan, Iran
Final Project Title: Finite Element Exterior Calculus
GPA: 17.37/20 (3.88/4)
- **Nonlinear Structural Dynamics and Stability:** Investigated thermally induced nonlinear vibrations, large-deflection responses, and dynamic snap-through of shallow arches, shallow spherical shells, and annular plates subjected to rapid heating and thermal shock.
 - **Thermomechanics of Functionally Graded Structures:** Modelled the response of temperature-dependent functionally graded material (FGM) structures, accounting for nonlinear heat conduction.
 - **Generalized Thermoelasticity and Wave Propagation:** Analysed nonlinear thermomechanical wave propagation in viscoelastic layers within the Lord–Shulman generalized thermoelasticity framework.
 - **Advanced Computational Mechanics:** Formulated nonlinear governing equations using first-order shear deformation theory, von Kármán nonlinearity, Donnell kinematic assumptions, and Hamilton’s principle, and implemented VDQ and GDQ solution schemes combined with Newmark time integration and Newton–Raphson iteration.
- 08/2011 – 02/2017 **B.Sc. in Mechanical Engineering**
Razi University, Kermanshah, Iran

Publications

- 2026 **H. Eidinejad**, A. Rivola, G. Silvagni & A. Martini, **“Experimental Dynamic Characterization of a PEM Fuel Cell System for Aeronautical Applications”**.
First draft under internal review prior to conference submission
- 2026 **H. Eidinejad**, T. M. Brugo, C. Rossi, A. Rivola, M. Troncossi, & A. Martini, **“Vibration Testing and Numerical Validation of Lithium Iron Phosphate Battery Modules for Electric Vehicles”**.
First draft under internal review prior to journal submission.
- 2026 **H. Eidinejad**, A. Rivola, J. Röschar, & A. Martini, **“A Quantitative Assessment of Standardized and Operational Vibrations in Electric Light Commercial Vehicle Battery Packs”**.
Under review at the ENGINEERING Mechanical Engineering journal
- 2026 L. Calervo, T. Ternelli, F. Mongioì, F. Madaro, **H. Eidinejad**, P. Bettini, A. Martini, T. M. Brugo, & R. Palazzetti, **“Direct reuse of uncured CFRP prepreg scraps for structural applications: experimental qualification and numerical validation of an automotive battery case”**.
Under review at the Polymer Composites journal
- 2026 **H. Eidinejad**, A. Rivola, M. Troncossi, & A. Martini, **“Coupled Electro-Mechanical Performance Analysis of an Electric Powertrain Battery Pack Subjected to Real-World Vibration Profiles”**.
Forthcoming at ISMA-USD (Leuven, Belgium), September 2026
- 2026 **H. Eidinejad**, F. Madaro, T. Maria Brugo, C. Rossi, A. Rivola, M. Troncossi, & A. Martini, **“Vibration assessment of a LFP battery module for e-powertrains with innovative rCFRP enclosure ”**.
IEEE MetroAutomotive (Brescia, Italy), June 2026
- 2026 A. Martini, **H. Eidinejad**, & A. Rivola, **“Investigation on the whole-body vibration’s mitigation effectiveness of a marine shock isolation seat for high-speed crafts”**.
Forthcoming at ISMA-USD (Leuven, Belgium), September 2026
- 2025 **H. Eidinejad**, A. Rivola, & A. Martini, **“Characterization of the Dynamic Response of a Fuel Cell through EMA and Vibration Testing”**.
IEEE MetroAutomotive
- 2025 **H. Eidinejad**, A. Rivola, M. Troncossi, & A. Martini, **“Vibration Analysis of Lithium-Ion Batteries and Proton Exchange Membrane Fuel Cells in Electric Vehicles: A Comprehensive Survey ”**.
IEEE Access
- 2024 **H. Eidinejad**, F. Madaro, T. Maria Brugo, C. Rossi, A. Rivola, M. Troncossi, & A. Martini. **“Pre-compliance vibration testing of a LFP battery pack prototype for electric powertrains”**.
IEEE MetroAutomotive

Research Projects

- 2022 Nonlinear vibration behavior of rapidly heated temperature-dependent piezo-FGM arches and annular plates with porosity using VDQ and GDQ techniques.
Guilan University
- 2022 Propagation of nonlinear thermomechanical wave in a media based on the Lord-Shulman theory using the GDQ approach.
Guilan University
- 2022 An electrochemical device for detection of CD4 T cells using a combination of paper and 3D-printed plastic
SAVIS HighTech Co.
- 2020 Evaluated nonlinear deformations and developed codes for Nonlinear Elasticity using Total and Updated Lagrangian approaches, implementing Timoshenko beam elements for structural analysis in MATLAB.
University of Guilan

WORK EXPERIENCE

- 03/2026 - Present **Battery T&D / DVP Support Intern**, *IVECO Deutschland AG*, Ulm, Germany
- 12/2020 - 01/2023 **QA/QC Mechanical Inspector**, *National Iranian Oil Refining and Distribution Company (niordc)*, Tehran, Iran
- 06/2021 - 11/2023 **CAD/CAE Engineer**, *SAVIS High Technology Company*, *Tehran University of Medical Science*, Tehran, Iran
- 07/2015 - 12/2015 **Internship** , *Gas Refinery*, Ilam, Iran

Presentations

- 2026 Vibration assessment of a LFP battery module for e-powertrains with innovative rCFRP enclosure.
IEEE MetroAutomotive, Brescia, Italy
- 2026 PSD standards review with a focus on standard selection for vibration tests based on eDaily case.
IVECO, Ulm, Germany
Presented to Battery Safety and Standards and Battery System Engineering teams
- 2025 Characterization of the Dynamic Response of a Fuel Cell through EMA and Vibration Testing.
IEEE MetroAutomotive, Parma, Italy
- 2024 Pre-Compliance Vibration Testing of a LFP Battery Pack Prototype for Electric Powertrains.
IEEE MetroAutomotive, Bologna, Italy
- 2024 A Geometrical Approach in Solving PDEs Using Discrete Exterior Calculus (DEC).
Guilan University, Iran

Teaching Assistant Experiences

University of Bologna: Mechanics and Dynamics of Machines, Vibration Analysis, Machine Dynamics and Vibration Laboratory

Guilan University: Continuum Mechanics I, Nonlinear Finite Element Modeling, Mechanical Vibrations.

CERTIFICATES

- 2025 **125 hours of Deep Learning Specialization:** Neural Networks and Deep Learning, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models
Coursera Inc
- 2024 **MATLAB Course:** Image Processing, Machine Learning and Deep Learning and Simulation Techniques for Dynamic Systems
MathWorks Srl
- 2020 **SOLIDWORKS Software**
Maktabkhooneh Organization
- 2023 **Design and Manufacturing with 3D Printers**
Sharif University of Technology

Other Activities

- 2022 An electrochemical device for detection of CD4 T cells using a combination of paper and 3D-printed plastic.
Patent: S. Radfar, H. Eidinejad

Research Interests

Automotive and Sustainable Transportation Engineering
Electrified Powertrain Systems: Lithium-Ion Batteries and Fuel Cells
Experimental and Computational Structural Dynamics, Modal Analysis, and Vehicle NVH
Vibration and Shock Testing, Fatigue, and Durability Assessment
Computational Mechanics, Finite Element Analysis
Machine-Learning-Based Vibration Analysis and Structural Health Monitoring
Whole-Body Vibration, Repeated-Shock Exposure, and Shock-Mitigation Systems for High-Speed Marine Craft

Skills

Languages **English:** Fluent, **Italian:** Basic (A2)

Computer Skills **Software:** nCode, BMSmonitor, Canspy, iTech systems, MS Office, SolidWorks, ANSYS, Abaqus, HyperMesh, COMSOL.

Programming: Python, MATLAB

Other Tools: Microsoft Office, LaTeX