

Dimitrios A. Giagopoulos

Personal Information

Date and Place of Birth	25/ 09/ 1976, Kastoria, Greece
Business Address	Aristotle University of Thessaloniki School of Mechanical Engineering Building E14, 1st Floor University Campus, 54124, Thessaloniki, Greece
Contact Data	Phone: +30 2310 994219, +30 6977715515 e-mail: dgiagopoulos@auth.gr, dgiagopoulos@gmail.com https://lmd.meng.auth.gr/
Nationality	Greek
Languages	Greek (native), English
Military Service	March 2006 - March 2007, Hellenic Air Force

Current position

Professor	Aristotle University of Thessaloniki**,** Faculty of Engineering, School of Mechanical Engineering, Machine Dynamics Laboratory **MDL,** https://lmd.meng.auth.gr/ **Expertise:** *Analysis of Mechanical Structures and Dynamic Systems*

Education

Oct 2000 – Defended Feb 2006	PhD in Aristotle University of Thessaloniki**,** Faculty of Engineering, School of Mechanical Engineering, Design and Structures Division. Title: "**Dynamic Analysis and Modeling of Complex Structures with Linear and Nonlinear Components using Numerical and Experimental Methods**" Supervisor: Professor Sotirios Natsiavas
Oct 1995 – June 2000	Diploma in Mechanical Engineering, University of Patras, Faculty of Engineering, Department of Mechanical Engineering and Aeronautics.

Professional / Academic Experience

4/2026-Present	Professor, School of Mechanical Engineering, Faculty of Engineering, Aristotle University of Thessaloniki, Greece
5/2022-4/2026	Associate Professor, School of Mechanical Engineering, Faculty of Engineering, Aristotle University of Thessaloniki, Greece

10/2020-5/2022	Associate Professor, Department of Mechanical Engineering, University of Western Macedonia, Greece
2019-5/2022	Director of Laboratory of Vibration and Machine Dynamics ***LVMD,*** http://lvmd.mech.uowm.gr/
2019-5/2022	Director of Graduate Program "Advanced Engineering of Energy Systems" ***ADVENS***
2018-2020	Assistant Professor (Tenured), Department of Mechanical Engineering, University of Western Macedonia, Greece
2015–2018	Assistant Professor, Department of Mechanical Engineering, University of Western Macedonia, Greece
2011–2015	Lecturer, Department of Mechanical Engineering, University of Western Macedonia, Greece
2009–2011	Visiting Lecturer, Mechanical Engineering, University of Western Macedonia, Greece
2007-2009	Visiting Lecturer, Department of Production and Management Engineering, Democritus University of Thrace, Greece
2007-2011	Mechanical Engineer in the Directorate of Technical Department of the Prefecture of Kastoria, Greece
2006-2011	Research Fellow, Aristotle University, Greece
2000-2006	Research and Teaching Graduate Assistant, Aristotle University, Greece
2000-2009	Freelance Mechanical Engineering, with a large number of applications in planning and construction of electromechanical works, Greece

Fields of Study - Expertise

- Application of Analytical Numerical/Computational Methods in the Dynamic Analysis of Mechanical Devices and Systems.
- Description of Dynamic Response and Vibrations, Determination of Dynamic Strength, Identification of Parameters and Optimization of Structures, Machines and Mechanisms.
- Processing of Vibration signals, Determining the Structure of Dynamic Models and Optimal Updating Numerical Models through Measurements.
- Optimal Design and Dynamic Analysis of Structures with Finite Elements (FEA).
- Structural Health Monitoring (SHM) and Fatigue Analysis of Structures.
- Vibration and Control of Linear and Nonlinear Dynamic Systems and Mechanisms.
- Damage Detection using Machine Learning and data-driven decision support systems.
- Dynamic Analysis, Fault Diagnosis and Balancing of Gear-Bearing and Rotating Systems.
- Dynamic Analysis of Multi-Body systems, through Analytical, Computational and Experimental methods.
- Noise, Vibration and Harshness (NVH) of Vehicle Models.
- Numerical Modeling and Dynamic Analysis of Motors, Mechanisms, Powertrain Systems and Rotating Systems.

Research Grants – Funded by Industry

1. 2026 – 2026: "Controlling the Vibration Behavior of a Fiber Optic Sensor", **BTComposites S.A.** (Scientific Coordinator – Program Leader)
2. 2026 – 2026: "Measurement of deformations in an aggregate storage unit", **SPANOS**

GROUP IKE. (Scientific Coordinator – Program Leader)

3. 2026 – 2026: "Computational Strength Analysis of a Subsea Pipeline and Electrical Insulator Support via Finite Element Analysis (FEA)", **Paralos Marine & Industry / Supply & Engineering S.A.** (Scientific Coordinator – Program Leader)
4. 2024 – 2025: "Characterization of properties and optimal modeling of materials for the construction of refrigerator bodies on vehicles", **DOUNAS ABEE – STATHIS**. (Scientific Coordinator – Program Leader)
5. 2025 – 2025: "Computational Analysis and Optimal Design of a Fuse Cut Out through the Method of Multi-Body Dynamics (MBD) and Element Analysis (FEA)", **Paralos Marine & Industry / Supply & Engineering S.A.** (Scientific Coordinator – Program Leader)
6. 2024 – 2025: "Application of artificial intelligence and machine learning in vehicle dynamics", **Altair Engineering Inc.**, USA. (Deputy Scientific Coordinator – Program Leader)
7. 2023 – 2024: "Application of artificial intelligence and machine learning in multibody dynamics for vehicle applications", **Altair Engineering Inc.**, USA. (Deputy Scientific Coordinator – Program Leader)
8. 2022 – 2023: "Application of artificial intelligence and machine learning in multibody dynamics", **Altair Engineering Inc.**, USA. (Deputy Scientific Coordinator – Program Leader)
9. 2022 – 2023: Dynamic Analysis of Elevator Machine Shaft, **KLEEMANN S.A.** (Scientific Coordinator)
10. 2022 – 2023: Development of Anomaly Detection System in a Complete Elevator System, **KLEEMANN S.A.** (Scientific Coordinator)
11. 2021 – 2023: AUTH research subcontract from the Hellenic Aerospace Industry, **Hellenic Aerospace Industry S.A.** (Principal Research Associate)
12. 2022 – 2023: Development / Extension of Structural Monitoring Tools for Optimal Design and Monitoring of Existing Structures using Machine Learning Methods, **SURE S.A.** (Scientific Coordinator)
13. 2021 – 2021: Measurement of vibrations level in city bus seats and assessing the exposure to vibrations of the whole body of drivers, **OASTH S.A.** (Scientific Coordinator)
14. 2020 – 2021: Finite Element Method in Design Process of Elevator Systems, **KLEEMANN S.A.** (Scientific Coordinator)
15. 2020 – 2021: Stress, Load and Displacement Measurements in TRUCK MOUNTED ANTENNA MAST GROUP (AMG) (Raytheon PATRIOT Program Antenna Mast Group). **INTRACOM S.A. Defense Electronic Systems**. (Scientific Coordinator)
16. 2020 – 2021: Development of a Diagnostic - Damage Prediction Method for Elevator Systems through Optimal FEA Models and Machine Learning, **KLEEMANN S.A.** (Scientific Coordinator)
17. 2019 – 2020: Scientific Response and Preliminary Data Analysis for an Expert Opinion and Optimization Study using Finite Element Analysis in the City Bus Frame U18. **Solaris Bus & Coach S.A.** (Scientific Coordinator)
18. 2018 – 2019: Optimal Modeling of Elevator Frame Impact to Elastic Buffer using Numerical and Experimental Methods, **KLEEMANN S.A.** (Scientific Coordinator)
19. 2018 – 2019: Modification of the Bus Body in order to reduce Aerodynamic Drag and the Phenomenon of Self-Soiling., **Solaris Bus & Coach S.A.** (Deputy Scientific Coordinator – Program Leader)
20. 2017 – 2018: Aerodynamic Analysis and Design Optimization of a City Bus, Solaris Bus & Coach S.A., **Solaris Bus & Coach S.A.** (Deputy Scientific Coordinator – Program Leader)

21. 2017 – 2018: Dynamic Response Estimation, Fatigue Prediction and Optimal Redesign of a Linear Steel Substructure of the Entire Body of a Lignite Grinder Assembly at Meliti Power Plant, **Public Power Corporation S.A.** (Scientific Coordinator)
22. 2016 – 2017: Configuration and Optimization of Methods for Design and Construction of Insulations in Refrigerated Vehicles, **DOUNAS ABEE – STATHIS.** (Principal Research Associate – Program Leader)
23. 2015 – 2017: Optimum Design and Dynamic Analysis of a Panoramic Elevator Frame through Numerical and Experimental Methods, **KLEEMANN S.A.** (Scientific Coordinator)
24. 2015 – 2016: Measurement of Acceleration Time Histories of an Elevator Chassis in Real Operating Conditions. **BLAU EI**. (Scientific Coordinator)
25. 2015 – 2016: Measurement the Dynamic Response of the Hybrid Generator GFS II, (Mobility Tests). **INTRACOM S.A. Defense Electronic Systems**. (Scientific Coordinator)
26. 2014 – 2015: Dynamic Analysis and Optimization of Systems of the company Kleemann S.A., **KLEEMANN S.A.** (Scientific Coordinator)
27. 2013 – 2014: Dynamic Response and Stress Measurements in a Large Military Vehicle (Raytheon PATRIOT Program Antenna Mast Group – Mobility Tests), **INTRACOM S.A. Defense Electronic Systems**. (Scientific Coordinator)
28. 2012 – 2013: Verification of structural integrity of hydraulic lift by using progressive safety gear of the company Kleemann S.A., **KLEEMANN S.A.** (Principal Research Associate – Program Leader)
29. 2012 – 2014: Calculation and Measurement of Stresses in the superstructure of the city bus ELVO B9L, **Hellenic Vehicle Industry S.A.** (Principal Research Associate – Program Leader)
30. 2011 – 2014: Integrated assessment approach of lifetime, of vehicle modern emission control devices, **DTECH S.A.** (Principal Research Associate – Program Leader)
31. 2010 – 2011: Dynamic Response and Stress Measurements in a Large Military Towed Vehicle (Raytheon PATRIOT Launcher Trailer – Mobility Tests), **METKA S.A.** (Principal Research Associate – Program Leader)
32. 2009 – 2010: Calculation and Measurement of Stresses in a New Military Vehicle of the Hellenic Vehicle Industry, **Hellenic Vehicle Industry S.A.** (Principal Research Associate – Program Leader)
33. 2008 – 2009: Measurement of axle and gearbox torsional vibrations and acceleration level in a passenger ship, **DTECH O.E.** (Principal Research Associate – Program Leader)
34. 2008 – 2009: Measurement of Stresses in an Aluminum Frame of a Truck, **DOUNAS ABEE – STATHIS.** (Principal Research Associate – Program Leader)
35. 2007 – 2008: Numerical Evaluation and Measurement of Stresses in the Frame Structure of a Military Vehicle of the Hellenic Vehicle Industry, **Hellenic Vehicle Industry S.A.** (Principal Research Associate – Program Leader)
36. 2002 – 2003: Measurement of Stresses and Strains in the Frame Structure of a Commercial City Bus, **Sarakakis AEBE** (Principal Research Associate – Program Leader)

Research Grants – Funded by the Greek General Secretariat for Research and Technology

1. 2024 – 2025: "Development of an Eco-Efficient AI-based Digital Platform for Fault Diagnosis in Drivetrain Systems Under Varying Environmental and Operating Conditions - EEDRIVEN" under the call **Basic Research HFRI** (project code: 16381), with **UPatras and NTUA** (AUTh Scientific Coordinator - Principal Research Associate)

2. 2020 – 2023: “Development of New Innovative Low-Carbon Energy Technologies to Enhance Excellence in the Region of Western Macedonia” (MIS 5047197), WP5 “Structural Health Monitoring and Performance Optimization of Energy Systems and Metal Structures through Destructive & Non-Destructive Methods”. (WP5 Scientific Coordinator - Principal Research Associate)
3. 2019 – 2021: “Hydraulic Cylinders with Special High Strength from Carbon Fiber Composite Materials for Widespread use in Industrial Applications – HYCACY”, under the call **INDUSTRIAL MATERIALS** (project code: Τ6ΥΒΠ-00478) with **B&T Composites and MaxMetal**, (Scientific Coordinator)
4. 2018 – 2021: “Implementation of Novel Carbon-Fiber Composite Vessels for Gas Storage – CAVESGA”, This research has been co-financed by the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call **RESEARCH – CREATE – INNOVATE** (project code: T1EDK-05393) **with B&T Composites**, (Scientific Coordinator)
5. 2019 – 2021: “Structural Health Monitoring and Damage Detection of Bridges based on Vibration Measurements - ΠροΓεΤαΣ”, under the call Development of Human Resources, Education and Lifelong Learning "(EDBM) "Support for Researchers with Emphasis on Young Researchers - Cycle B" of the Operational Program "Development of Human Dynamics, Education and Lifelong Learning", (Scientific Coordinator)
6. 2005 – 2008: Determination of Dynamic Response and Optimal Design of Ground Vehicles Structures (PENED 2003). (Principal Research Associate)
7. 2003 – 2005: Vibration Identification and Fault Detection in Geared Systems Supported on Bearings with Rolling Elements, Greek Ministry of Development (PENED 2001). (PhD Candidate)

Educational Research Projects

1. 2025 – 2027: Participation of Student Team Panther Racing AUTh in the competition **MotoStudent IX** (2027). (Scientific Coordinator)
2. 2024 – 2025: Participation of Student Team Panther Racing AUTh in the competition **MotoStudent VIII** (2025). (Scientific Coordinator)
3. 2018 – 2021: Participation of Student Team ΤυΦοon Motoracing in the competition **MotoStudent VI** (2020). (Scientific Coordinator)
4. 2017 – 2018: Participation of Student Team ΤυΦοon Motoracing in the competition **MotoStudent V** (2018). (Scientific Coordinator)
5. 2015 – 2016: Participation of Student Team ΤυΦοon Motoracing in the competition **MotoStudent IV** (2016). (Scientific Coordinator)
6. 2016 – 2016: Traineeship of Students of the Department of Mechanical Engineering of UOWM in company BETA CAE Systems, **BETA CAE Systems.** (Scientific Coordinator)

Teaching Experience - Undergraduate Courses

Academic Years 2022-present	*Instructor* - Aristotle University of Thessaloniki (AUTH)**,** School of Mechanical Engineering • Mechanical Vibration and Machine Dynamics (Course and Laboratory) • Engineering Dynamics (Course) • Structural Dynamics (Course and Laboratory) • Numerical Methods in Vibrations of Mechanical Systems. (Course

	and Laboratory) • Computational Dynamics of Deformable Bodies (Course and Laboratory)
Academic Years 2009-2022	*Instructor* - University of Western Macedonia (UOWM), Department of Mechanical Engineering • Mechanical Vibration and Machine Dynamics (Course and Laboratory) • Engineering Dynamics (Course) • Numerical Methods in Design of Mechanical Structures. (Course Course and Laboratory) • Structural Dynamics - Rotordynamics (Course and Laboratory)
Academic Years 2000–2006	*Teaching Assistant* - Aristotle University of Thessaloniki (AUTH), School of Mechanical Engineering • Machine Dynamics and Vibrations (Course and Laboratory) • Engineering Dynamics (Course) • Experimental Methods in Vibration (Course and Laboratory) • Automatic Control Systems (Course)
Academic Years 2007–2008	*Instructor* - Aristotle University of Thessaloniki (AUTH), School of Mechanical Engineering • Experimental Methods in Vibration (Course and Laboratory)
Academic Years 2007–2009	*Instructor* - Democritus University of Thrace (DUTH), Department of Production and Management Engineering • Engineering Mechanics I: Statics (Course) • Engineering Mechanics II: Dynamics (Course) • Engineering Mechanics III: Strength of Materials (Course)
Academic Years 2009-2011	*Instructor* - University of Western Macedonia (UOWM), Department of Mechanical Engineering • Statics (Course)
Academic Years 2011-2012	*Instructor* - University of Western Macedonia (UOWM), Department of Mechanical Engineering • Automatic Control Systems (Course)

Teaching Experience - Graduate Courses

Academic Years 2025-2026	*Instructor* – Aristotle University of Thessaloniki (AUTh), School of Mechanical Engineering – AERIAL AUTONOMOUS SYSTEMS. • Dynamics and Control I (Course) • Dynamics and Control II (Course)
Academic Years 2020-2024	*Instructor* - University of Western Macedonia (UOWM), Department of Mechanical Engineering – Advanced Engineering of Energy Systems, (Advens). • ADMES13 - Computational Methods for the Design and Optimization of Structures (Course and Laboratory) ADMES23 - Stress Analysis Methods: Theory, Simulation, Experiment (Course and Laboratory) • ADMES24 - Structural Health Monitoring of Mechanical Systems (Course and Laboratory)
Academic Years 2016-2018	*Instructor* - University of Western Macedonia (UOWM), Department of Mechanical Engineering - Energy Resources Technologies and Management, (Entex). • S1_C5-Reverse Engineering and Computational Methods in Design of Structures (Course and Laboratory)

	• S2_C3- Structural Integrity Analysis of Engineering Systems (Course and Laboratory)
Academic Years 2011-2016	*Instructor* - Aristotle University of Thessaloniki (AUTH)**,** School of Mechanical Engineering - Erasmus Mundus programme in Aeromechanics, (THRUST - TurbomacHinery AeRomechanical UniverSity Training). • TH32-Experimental Methods in Vibration (Course and Laboratory)

Graduate and Undergraduate Students Supervised

Supervision of Postdoctoral Fellows

- **Seventekidis, P.,** Postdoctoral Researcher, School of Mechanical Engineering, Faculty of Engineering, Aristotle University of Thessaloniki, Postdoctoral Title: "Development and Evaluation of Fault Detection and Identification Techniques using Machine Learning and Finite Element Models". **Successfully Finished** - *Started September 2022-Finished April 2026.* (AUTh).
- **Markogiannaki, O.,** Postdoctoral researcher who are involved in three research projects of (LVMD), funded by the Greek General Secretariat for Research and Technology (project code: Τ6ΥΒΠ-00478, project code: Τ1ΕΔΚ-05393) and in the program "(EDBM) "Support for Researchers with Emphasis on Young Researchers - Cycle B", with title "Structural Health Monitoring and Damage Detection of Bridges based on Vibration Measurements". **Successfully Finished**, *Started June 2018 – Finished July 2022*. (UoWM)
- **Arailopoulos, A.**, Postdoctoral researcher who are involved in three research projects of (LVMD), funded by the Greek General Secretariat for Research and Technology (project code: Τ6ΥΒΠ-00478, project code: Τ1ΕΔΚ-05393) and in the program "(EDBM) "Support for Researchers with Emphasis on Young Researchers - Cycle B", with title "Structural Health Monitoring and Damage Detection of Bridges based on Vibration Measurements". **Successfully Finished**, *Started November 2019 – Finished July 2022*. (UoWM)

Supervision of Doctoral Thesis

- Arailopoulos, A., "Optimal Finite Element Modeling of Mechanical Systems with Linear and Nonlinear characteristics using Numerical and Experimental Methods", **Successfully Defended**, *Started June 2015 – Defended October 2019*. (UoWM)
- Seventekidis P., "Structural Health Monitoring through Computational and Experimental Methods as a Generic Approach to the Damage Detection problem", **Successfully Defended**, Started *May 2019 – Defended July 2022*. (UoWM)
- Zacharakis I., "Estimation and Damage Detection of Composite Structures using Optimal Modeling and Vibration Measurements from a Limited Number of Smart Sensors", Ph.D. Candidate. **Successfully Defended**, *Started August 2018 – Defended September 2023*. (UoWM)
- Karyofyllas G., "Damage Detection of Complex Mechanical Systems under Varying Operating Conditions and Uncertainty through Vibration Measurements and Computational Methods", Ph.D. Candidate. **In Progress** - *Started September 2022*. (AUTh)
- Koutsoupakis J., "Machine learning algorithms for damage diagnosis and prognosis of mechanical systems using vibration measurements and computational methods", Ph.D. Candidate. **In Progress** - *Started September 2023*. (AUTh)
- Biliousis A., "Dynamic response reconstruction for structural health monitoring of mechanical systems and structures", Ph.D. Candidate. **In Progress** - *Started March 2024*. (AUTh)

Participation in three-member Doctoral Thesis Supervision Committees

- Chatziparasidis, I., "Automatic Assembly-Model Synthesis in Mechanical Design using simulated Dynamic Finite-Element Experiments", **Successfully Defended July 2017**. (UoWM)
- Papadioti, D-Ch., "Management of Uncertainties in Structural Response and Reliability Simulations using Measured Data", **Successfully Defended July 2015.** (Uth)
- Ntinopoulos, I., "Analytical and numerical study on flexible multibody dynamics", **Successfully Defended December 2024**. (AUTh)
- Kriatsiotis, Ilias-Marios, "Machine Learning Methods for Robust Structural Health Monitoring for Aircraft Fleets", **In Progress** - *Started October 2020*. (UPat)
- Kryfos, Dimitrios, "Reverse Engineering of Cad Models for Mechanical Structures", **In Progress** - *Started September 2021*. (UoWM)
- Kambourakis, Georgios., "3D printed continuous Fiber Reinforced Polymer (FRP) Composites with unique structural and functional properties", **In progress** - *Started October 2021. (HMU)*
- Papapostolou, L., "Development of fast and robust numerical integration methodologies for multi-member mechanical systems", **In Progress** - *Started Octomber 2024*. (AUTh)
- Filippitzi, E., "Diagnostics in Air Conditioning Networks with the assistance of Digital Twins", **In Progress** - *Started Novmber 2024*. (UTh)
- Poulidis, E., "Decarbonizing the battery industry using biogenic carbon dioxide and recycling waste materials using data analysis methods", **In Progress** - *Started September 2025*. (AUTh)
- Kartalis, N., "Calculation of mechanical behavior and fatigue of components in vehicle load-bearing structures", **In Progress** - *Started September 2025*. (AUTh)
- Xenitopoulos, Th., "Modeling, Optimization and Control of Integrated Enzymatic CO2 Capture Systems in Rotating Bed Reactors and Electrocatalytic Reduction of CO2 with Artificial Intelligence Algorithms", **In Progress** - *Started January 2025*. (AUTh)

Participation in 7-member examination committees of Doctoral Theses: 14 (Aristotle University of Thessaloniki (4), University of Thessaly (3), University of Patras (3), The Hong Kong University of Science and Technology (1), University of Western Macedonia (3)**)**.

Supervision of Completed Graduate MSc Diploma Thesis: 8

Supervision of Completed Undergraduate Diploma Thesis: >75

International Refereed Journal Papers

*Corresponding Author

1. Karyofyllas G., ***Giagopoulos, D.**, "Optimal Reduced-Order Model for Vehicle-Bridge Interaction and Bridge Damage Detection using Model Based SHM-ML Techniques", Mechanical Systems and Signal Processing, Volume 250, 2026.
2. Bourdalos, D.M., Konstantinou, X.D., Koutsoupakis, J., Iliopoulos, I.A., Kritikakos, K., Karyofyllas, G., Spiliotopoulos, P.E., Saramantas, I.E., Sakellariou, J.S., ***Giagopoulos, D.**, Fassois, S., Seventekidis, P., Natsiavas, S.,, "An AI Digital Platform for Fault Diagnosis and RUL Estimation in Drivetrain Systems Under Varying Operating Conditions", Machines 14, no. 1: 26.
3. Koutsoupakis, I., ***Giagopoulos, D.**, Development of a Bearing Contact Force Model for Simulation-Driven Intelligent Condition Monitoring, Mechanical Systems and Signal

Processing (MSSP), Volume 241, 2025.

4. Seventekidis P., ***Giagopoulos, D.**, A data-driven vibration response reconstruction for damping uncertainties when generalizing from the numerical model to the experimental problem, Engineering Structures, Volume 350, 2026, 121969.
5. Karyofyllas, G., ***Giagopoulos, D.**, Jia, X., and Papadimitriou, C., "A digital twin-driven machine learning framework for structural condition monitoring using multi-datasets", Structural Health Monitoring (SHM), Vol. 0 (0):14759217251324110, 2025 doi: 10.1177/14759217251324110.
6. Koutsoupakis J., ***Giagopoulos, D.**, Seventekidis P., Karyofyllas G., Giannakoula A., Damage Detection and Identification on Elevator Systems Using Deep Learning Algorithms and Multibody Dynamics Models, Sensors, Vol. 25 (1), 2025.
7. Seventekidis P., ***Giagopoulos, D.** Generalization gap estimation for damage classification tasks when finite element simulated data is used for training: A numerical study and experimental validation on a steel truss, Engineering Structures, Vol 319, 2024.
8. Zacharakis, I., ***Giagopoulos, D.**, "Optimal Sensor Placement for Vibration-Based Damage Localization Using the Transmittance Function", Sensors, Vol. 24 (5), 2024.
9. Karyofyllas G., ***Giagopoulos, D.**, "Condition Monitoring Framework for Damage Identification in CFRP Rotating Shafts using Model-Driven Machine Learning Techniques", Engineering Failure Analysis Vo. 158, 2024.
10. Koutsoupakis J., ***Giagopoulos, D.**, "Drivetrain Response Prediction Using AI-Based Surrogate and Multibody Dynamics Model", Machines, 11, 514, 2023.
11. Koutsoupakis J., ***Giagopoulos, D.**, Chatziparasidis, I. "AI-based condition monitoring on mechanical systems using multibody dynamics models", Engineering Applications of Artificial Intelligence, Vol. 123, 2024.
12. Zacharakis, I., ***Giagopoulos, D.**, Model-Based Damage Localization Using the Particle Swarm Optimization Algorithm and Dynamic Time Wrapping for Pattern Recreation, Sensors, Vol. 23 (2), 2023.
13. Koutsoupakis J., Seventekidis P., ***Giagopoulos, D.**, "Machine learning based condition monitoring for gear transmission systems using data generated by optimal multibody dynamics models", Mechanical Systems and Signal Processing (MSSP), Vol. 190, 2023.
14. Seventekidis. P., ***Giagopoulos, D.**, Model error effects in supervised damage identification of structures with numerically trained classifiers, Mechanical Systems and Signal Processing (MSSP), Vol. 184, 2023.
15. Markogiannaki, O., Arailopoulos, A., ***Giagopoulos, D.**, Papadimitriou, C., Vibration-based Damage Localization and Quantification Framework of Large-Scale Truss Structures, Structural Health Monitoring (SHM), Vol. 22 (2), 1376-1398, 2023
16. Zacharakis, I., ***Giagopoulos, D.**, Vibration-Based Damage Detection Using Finite Element Modeling and the Metaheuristic Particle Swarm Optimization Algorithm, Sensors, Vol. 22 (14), 2022.
17. Zyganitidis, I., Arailopoulos, A., ***Giagopoulos, D.**, Composite Material Elastic Effective Coefficients Optimization by Means of a Micromechanical Mechanical Model, Applied Mecanics, Vol. 3(3), 779-798, 2022.
18. ***Giagopoulos, D.**, Arailopoulos, A., Chatziparasidis, I., Optimal Modeling of an Elevator Chassis under Crash Scenario Based on Characterization and Validation of the Hyperelastic Material of Its Shock Absorber System, Applied Mecanics, Vol. 3(1), 227-243, 2022.
19. Seventekidis. P., ***Giagopoulos, D.**, Model-based damage identification with simulated transmittance deviations and deep learning classification, Structural Health Monitoring

(SHM), Vol. 21(5) 2206–2230, 2022.

20. Zacharakis, I., ***Giagopoulos, D.**, Arailopoulos, A., Markogiannaki, O., Optimal Finite Element Modeling of Filament Wound CFRP Tubes, Engineering Structures, Vol. 253, 2022.
21. Zacharakis, I., ***Giagopoulos, D.**, Response-Only Damage Detection Approach of CFRP Gas Tanks Using Clustering and Vibrational Measurements, Applied Mecanics, Vol. 2(4), 1057-1072, 2021.
22. Seventekidis. P., ***Giagopoulos, D.**, A combined Finite Element and Hierarchical Deep Learning approach for Structural Health Monitoring: Test on a pin-joint composite truss structure, Mechanical Systems and Signal Processing (MSSP), Vol. 157, 2021.
23. ***Giagopoulos, D.**, Arailopoulos, A., Natsiavas, S., A Model-Based Fatigue Damage Estimation Framework of Large Scale Structural Systems, Structural Health Monitoring (SHM), Vol. 20(3) 834–847, 2021.
24. Seventekidis. P., ***Giagopoulos, D.**, Arailopoulos, A., Markogiannaki, O., Structural Health Monitoring using deep learning with optimal finite element model generated data, Mechanical Systems and Signal Processing (MSSP), Vol. 145, 2020.
25. Arailopoulos, A., ***Giagopoulos, D.**, Nonlinear constitutive force model selection, update and uncertainty quantification for periodically sequential impact applications, Nonlinear Dynamics (NODY), Vol. 99, 2623–2646, 2020.
26. ***Giagopoulos, D.**, Arailopoulos, A., Chatziparasidis, I., Sapidis, N., Optimum design of large-scale systems considering material nonlinearities and uncertainties, Computers and Structures, Vol. 223, 106102, 2019.
27. ***Giagopoulos, D.**, Arailopoulos, A., Ntertimanis, V., Papadimitriou, C., Chatzi, E., Grobanopoulos, K., Structural Health Monitoring and Fatigue Damage Estimation using Vibration Measurements and Finite Element Model Updating, Structural Health Monitoring (SHM), Vol. 18, 1189-1206, 2019.
28. Arailopoulos, A., ***Giagopoulos, D.**, Zacharakis, I., Pipili, E., Integrated Reverse Engineering Strategy for Large-Scale Mechanical Systems: Application to a Steam Turbine Rotor, Frontiers Built Environment – section Computational Methods in Structural Engineering, Vol.4, 55, 2018.
29. ***Giagopoulos, D.**, Chatziparasidis, I., Sapidis, N., Dynamic and Structural Integrity Analysis of a Complete Elevator System through a Mixed Computational-Experimental Finite Element Methodology, Engineering Structures, Vol. 160, 473-487, 2018.
30. Chatziparasidis, I., **Giagopoulos, D.**, Sapidis, N., Simulated Dynamic Finite Element Experiments and Automatic Assembly Synthesis for Mechanical Design Automation, International Journal of Product Lifecycle Management, Vol. 11, 19–46, 2018.
31. ***Giagopoulos, D.**, Arailopoulos, A., Computational Framework for Model Updating of Large Scale Linear and Nonlinear Finite Element Models using State of the Art Evolution Strategy, Computers and Structures, Vol. 192, 210-232, 2017.
32. Kitsakis, K., Kechagias, J., Vaxevanidis, N., **Giagopoulos, D.**, Tolerance Assessment of Polyjet Direct 3d Printing Process Employing the IT Grade Approach, Academic Journal of Manufacturing Engineering, Vol. 14, 62-68, 2016
33. ***Giagopoulos, D**. and Natsiavas, S., Dynamic Response and Identification of Critical Points in the Superstructure of a Vehicle using a Combination of Numerical and Experimental Methods, Experimental Mechanics, Vol. 55, 529-542, 2015.
34. Papadimitriou, C., Ntotsios, E., **Giagopoulos, D.**, Natsiavas, S., Variability of updated finite element models and their predictions consistent with vibration measurements, Structural Control and Health Monitoring, 19(5), 630-654, 2012.
35. **Giagopoulos, D.** and Natsiavas, S., Hybrid (Numerical-Experimental) Modeling of Complex Structures with Linear and Nonlinear Components, Nonlinear Dynamics (NODY), Vol. 47,

193-217, 2007.

36. **Giagopoulos, D.**, Salpistis, C. and Natsiavas, S., Effect of Nonlinearities in the Identification and Fault Detection of Gear-Pair Systems, International Journal of Non-Linear Mechanics, Vol. 41, 213-230, 2006.

Chapters in Books

- **Giagopoulos, D.** and Natsiavas, S., Nonlinear Dynamics of Gear Meshing and Vibro-impact Phenomenon, Invited Chapter in the Book Tribology and Dynamics of Engine and Powertrain, (edited by H. Rahnejat), 107-116, 7, 2010.
- **Giagopoulos, D.**, Salpistis, C. and Natsiavas, S., Dynamics and Parametric Identification of Geared Rotordynamic Systems, Invited Chapter in the Book Chaotic Dynamics and Control of Systems and Processes in Mechanics (edited by G. Rega and F. Vestroni), Springer, Netherlands, 107-116, 2005.

International Referred Conference Proceedings Papers

1. Konstantinou, X., Bourdalos, D., Kritikakos, K., Sakellariou, J., Fassois, S., Koutsoupakis, J., Karyofyllas, G., **Giagopoulos, D.**, A time series global model method for random vibration modeling and generation in rotating machinery under any operating speed, Proceedings of the SMART 2025, 11th ECCOMAS Thematic Conference on Smart Structures and Materials, 01-03 July 2025, Linz, Austria, 2025.
2. Koutsoupakis, J., **Giagopoulos, D.**, Natsiavas, S., Karyofyllas, G, Seventekidis, P., Advanced gear contact modeling for drivetrain condition monitoring applications, Proceedings of the Fourth International Nonlinear Dynamics Conference (NODYCON 2025), June 22 - 25, Stevens Institute of Technology, Hoboken, New York, USA, 2025
3. Koutsoupakis, J., Ribaric, A., Nolden, I., Karyofyllas, G., **Giagopoulos, D.**, Hydro Bushing Model Identification Using Physics-Informed Neural Network, SAE Technical Paper (2025-01-8263), WCX SAE World Congress Experience, April 8-10, Detroit, USA 2025.
4. Koutsoupakis, J., **Giagopoulos, D.**, Karyofyllas, G, Seventekidis, P., Natsiavas, S., Damage identification on gear drivetrains using neural networks trained by high-fidelity multibody simulation data, Proceedings of the IMAC-XLIII International Conference and Exposition on Structural Dynamics 2025, February 10-13, Orlando, USA 2025.
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6. Karyofyllas, G., Koutsoupakis, J., Seventekidis, P., **Giagopoulos, D.**, Dynamics and Simulation of non-linear Vehicle-Bridge Interaction in Multi-Body Systems, Proceedings of the ENOC 2024, 11th ENOC Conference, 22-26 July 2024, TU Delft, Netherlands, 2024.
7. Koutsoupakis, J., Karyofyllas, G., Seventekidis, P., **Giagopoulos, D.**, Advanced Gear Contact Force Model including the Effects of Time Varying Mesh Stiffness, Proceedings of the ENOC 2024, 11th ENOC Conference, 22-26 July 2024, TU Delft, Netherlands, 2024.

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9. Koutsoupakis, J., **Giagopoulos, D.**, Optimal modeling of deep groove ball bearings for application in multibody dynamics simulations, Proceedings of the IMAC-XLII International Conference and Exposition on Structural Dynamics 2024, January 29 - February 2, Orlando, USA 2024.
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11. Karyofyllas, G., Koutsoupakis, J., Seventekidis, P., **Giagopoulos, D.**, Condition Monitoring Framework for Damage Identification in CFRP Rotating Shafts using Model-Driven Machine Learning Techniques, Proceedings of the ICEAF, 7th International Conference of Engineering Against Failure, 21-23 June 2023, Spetses Island, Greece, 2023.
12. Seventekidis, P., Karyofyllas, G., **Giagopoulos, D.**, Parametric Study on Structural Damage Classification with Numerically Simulated Vibration Data, Proceedings of the EURODYN 2023, XII International Conference on Structural Dynamics, 03-05 July 2023, Delft, Netherlands, 2023.
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16. Koutsoupakis, J., Seventekidis, P., **Giagopoulos, D.**, Machine Learning based Condition Monitoring with Multibody Dynamics Models for Gear Transmission Faults, Proceedings of the IMAC-XL International Conference and Exposition on Structural Dynamics 2022, February 7-10, Orlando, USA 2022, Virtual.
17. Seventekidis, P., **Giagopoulos, D.**, Transmittance Anomalies for Model-Based Damage Detection with Finite Element Generated Data and Deep Learning, Proceedings of the IMAC-XL International Conference and Exposition on Structural Dynamics 2022, February 7-10, Orlando, USA 2022, Virtual.
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27. Arailopoulos, A., **Giagopoulos, D.**, Chatziparasidis, I., Characterization and Validation of Shock Absorbing Hyperelastic Material using Numerical and Experimental Methods, Proceedings of the ICOVP 2019, 14th International Conference on Vibration Problems, September 1-4, 2019, Crete Island, Greece, 2019.
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30. Zacharakis, I., Arailopoulos, A., Markogiannaki, O., **Giagopoulos, D.**, Damage Detection in Composite Carbon Fiber Tubes based on Experimental Measurements and Finite Element Model Updating Techniques, Proceedings of the COMPDYN 2019, 7th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, June 24-26, 2019, Crete Island, Greece, 2019.
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34. **Giagopoulos, D.**, Arailopoulos, A., Markogiannaki, O., Damage Identification of Large Scale Linear and Nonlinear Structural Systems using Finite Element Model Updating Techniques and Vibration Measurements, Proceedings of the ICEAF V, 5th International Conference of Engineering Against Failure, June 20-22, Chios, Greece, 2018.
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48. **Giagopoulos, D.**, Arailopoulos, A., Parameter Identification of Complex Structures Using Finite Element Model Updating Techniques, Proceedings of the ASME 2015 International Design Engineering Technical Conferences & Computers and Information in Engineering, IDETC/CIE 2015, August 2-5, 2015, Boston, Massachusetts, USA, 2015.
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50. **Giagopoulos, D.**, Chatziparasidis, I., Sapidis, N., Structural Integrity Analysis and Optimization of an Elevator Frame, through FE Modeling and Experimental Tests, Proceedings of the COMPDYN 2015, 5th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, May 25-27, 2015, Crete Island, Greece, 2015.
51. **Giagopoulos, D.** and Natsiavas, S., Dynamic Analysis of Complex Mechanical Structures using a Combination of Numerical and Experimental Methods, Proceedings of the IMAC-XXXIII International Conference and Exposition on Structural Dynamics 2015, February 2-5, 2015, Orlando, Florida, USA, 2015.
52. **Giagopoulos, D.**, Papadimitriou, C. and Natsiavas, S., Nonlinear Identification and Health Monitoring of Gear-Pair System, Proceedings of the ENOC 2014, 8th European Nonlinear Dynamics Conferences, July 6-11, 2014, Vienna, Austria, 2014.
53. **Giagopoulos, D.**, Papadimitriou, C. and Natsiavas, S., Finite Element Model Validation, Updating and Uncertainty Quantification for a Nonlinear Gear Transmission System, Proceedings of the EURODYN 2014, 9th International Conference on Structural Dynamics, 30 June – 2 July, Porto, Portugal, 2014.
54. **Giagopoulos, D.**, Papadimitriou,C. and Natsiavas, S., Nonlinear Gear Transmission System Numerical Dynamic Analysis and Experimental Validation, Proceedings of the IMAC-XXXII International Conference and Exposition on Structural Dynamics 2014 , February 3-6, 2014, Orlando, Florida, USA, 2014.
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64. **Giagopoulos, D.**, Salpistis, C. and Natsiavas, S., On Some Peculiarities Encountered in the Identification of Gear-Pair Systems, 20th Biennial ASME Conference on Mechanical Vibration and Noise, Long Beach, California, USA, 2005.
65. Papalukopoulos, C., **Giagopoulos, D.**, Metallidis, P. and Natsiavas S., Comparison of Substructuring Methodologies in Large Scale Mechanical Models, EURODYN 2005 Conference, Paris, France, 2005.
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2. Ntertimanis, V., **Giagopoulos, D.**, Chatzi, E., Nonlinear Analysis of Gear Transmission Systems using Substructuring and Joint State & Parameter Estimation, Proceedings of the 2016 Engineering Mechanics Institute (EMI) International Conference, October 25-27, 2016, Metz, France, 2016.
3. Spiridonakos, M., **Giagopoulos, D.**, Chatzi, E., Ntertimanis, V., Finite Element Metamodeling for Nonlinear Systems with Uncertain Properties, EMI 2015 – Engineering Mechanics Institute Conference – Stanford University, June 16-19, 2015, San Francisco, California, 2015.
4. **Giagopoulos, D.**, Arailopoulos, A., Identification and Finite Element Model Updating of a Light-Weight Geometrically Complex Structure, Proceedings of the GRACM 2015, 8th International Congress on Computational Mechanics, July 12-15, Volos, Greece, 2015.
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6. **Giagopoulos, D.**, Papadioti, D-Ch., Papadimitriou, C. and Natsiavas, S., Nonlinear Identification of a Gear Transmission System Using Numerical and Experimental Methods, Proceedings of the COMPDYN 2013, 4th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, June 12-14, 2013, kos, Greece, 2013.
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1. Tsironas, S., Kaisef, S., Tiliopoulos, T., **Giagopoulos, D.**, Diagnosis and Prognosis of Faults in Powertrain Systems using Vibration Measurements, EuroMaintenance 2016, May 30 -June 1, 2016, Athens, Greece, 2016.
2. **Giagopoulos, D.**, Metallidis, P. and Natsiavas, S., Hybrid Modeling of Complex Structures Involving Nonlinear Components, Eleventh Conference on Nonlinear Vibrations, Stability and Dynamics of Structures, Blacksburg, Virginia, USA, 2006.
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5. **Giagopoulos, D.**, Papalukopoulos, C., Salpistis, C. and Natsiavas, S., Parametric Identification of Systems with Piecewise Linear Characteristics, Fifth EUROMECH Solid Mechanics Conference, Thessaloniki, Greece, 2003.
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1. Tourlidakis, A., **Giagopoulos, D.** R&D Collaboration between Universities and Vehicle Industry: The Solaris and UoWM example, Electric Urban Mobility, November 20, Athens, Greece, 2017.
2. **Giagopoulos, D.**, Arailopoulos, A., Structural Health Monitoring Using Vibration Measurements, National Instruments and Epsilon Metrisys Technical Seminar, NI Energy Forum, Thessaloniki, Greece, 2016.
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2. Τιριακίδης, Ν., **Γιαγκόπουλος, Δ.**, Έλεγχος δομικής ακεραιότητας μέσω τεχνολογίας FBG, Μετάδοση Ισχύος, Νο 265, Τεύχος Σεπτέμβριος - Οκτώβριος 2025.
3. Άρθρο Επιστημονικής Ομάδας από το Πανεπιστήμιο Πατρών, ΑΠΘ και ΕΜΠ στα πλαίσια του έργου ΕΛΙΔΕΚ-EEDRIVEN, Ανάπτυξη ψηφιακής πλατφόρμας με χρήση τεχνητής νοημοσύνης για συστήματα μετάδοσης κίνησης, Νο 262, Τεύχος Μάρτιος-Απρίλιος 2025.
4. Κουτσουπάκης, Ι., Καρυοφύλλας, Γ., Σεβεντεκίδης, Π., **Γιαγκόπουλος, Δ.**, Νατσιάβας, Σ., Διάγνωση και πρόβλεψη βλαβών σε συστήματα μετάδοσης ισχύος, Μετάδοση Ισχύος, Νο 258, Τεύχος Ιούλιος-Αύγουστος 2024.

Technical Reports

Full Technical Reports in the context of research projects: 32

Professional and Scientific Service

Special Issue Editor, "Advanced Techniques for Fault Detection, Diagnosis, and Prognosti Machinery", Machines, MDPI (2024-2025)**.**

Special Issue Editor, "Vibration and Acoustic Analysis of Components and Machines", Machines, (2022-2024)**.**

Guest Associate Editor of the Frontiers, "Structural Sensing" (since 2017).

Reviewer Editor of the Frontiers, "Structural Sensing" (since 2015).

Reviewer Editor of the Frontiers, "Computational Methods in Structural Engineering" (since 2017).

Editor of the Research Topic - **Vibration-Based Structural Health Monitoring**, of the Fron "Structural Sensing", 2019-2020.

Editor of the Research Topic - **Innovations in Damage Detection Methods for the Built Environme** the Frontiers, "Frontiers in Built Environment Structural Sensing, Control and Asset Management", 2024.

Organizer of the **Minisymposium** "Nonlinear Phenomena in Mechanical and Structural Systems", 2027 - 12th European Nonlinear Dynamics Conference, Scotland, 2027.

Organizer of the **Minisymposium** "Nonlinear Phenomena in Mechanical and Structural Systems", 2024 - 11th European Nonlinear Dynamics Conference, Netherlands, 2024.

Organizer of the **Minisymposium** "Advances in Computational Structural Dynamics", EURODYN 202 International Conference on Structural Dynamics, Germany, 2026.

Organizer of the **Minisymposium** "Advances in Computational Structural Dynamics", EURODYN 202 International Conference on Structural Dynamics, Netherlands, 2023.

Organizer of the **Minisymposium** "Advances in Computational Structural Dynamics", EURODYN 202 International Conference on Structural Dynamics, Greece, 2020.

Organizer of the **Minisymposium** "CST 16 -Vibration Based Structural Health Monitoring", Civil Press Conferences 2020, The Fourteenth International Conference on Computational Struc Technology, Spain, 2020.

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Κριτής (**Technical Reviewer)** εργασιών στα παρακάτω έγκριτα επιστημονικά περιοδικά:

- Computers and Structures
- Nonlinear Dynamics
- Structural Health Monitoring
- Mechanical Systems and Signal Processing
- Engineering Structures
- Journal of Vibration and Control.
- Journal of Sound and Vibration.
- International Journal of Powertrains
- Engineering Applications of Artificial Intelligence
- ASME Journal of Computational and Nonlinear Dynamics
- ASME Journal of Pressure Vessel Technology
- ASCE Journal of Engineering Mechanics

- Mechanism and Machine Theory
- Advances in Tribology
- Applied Mechanics
- Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multibody Dynami
- International Journal of Structural Integrity
- Journal of Low Frequency Noise, Vibration and Active Control
- International Journal of Computer Aided Engineering and Technology
- Advances in Mechanical Engineering
- Measurement
- Sensors
- Machines
- Materials
- Ocean Engineering
- as well as for ASME, EURODYN, ENOC Conference papers.

Associations

- Engineering Mechanics Institute (EMI) (since 2015)
- Society for Experimental Mechanics (sem.org) (since 2013)
- American Society of Mechanical Engineering (ASME) (since 2012)
- Technical Chamber of Greece (since 2000)

Key Skills

- Excellent Knowledge of Finite Element Modeling and Analysis simulation software in Structural Dynamics - MSC. NASTRAN, MSC. PATRAN, MSC. ADAMS, MSC. MARC, MSC DYTRAN, DYNAMIS, EPILYSIS, ANSA, META Post, ANSYS, ALTAIR HYPERWORKS, OPTISTRUCT.
- Good Knowledge of CAD software - AUTOCAD, INVENTOR, SOLIDWORKS.
- Excellent Knowledge of programming in mathematical, simulation and data acquisition software - MATLAB, SIMULINK and LABVIEW.
- Excellent Knowledge in measurement systems and equipment of National Instruments, Bruel & Kjaer, HBM, Kistler, PCB, SpectraQuest, Labworks, MTS, VTS, LDS, Componous.