UNIVERSITÀ
POLITECNICA
DELLE MARCHE

Supervisor: Prof. Francesco Clementi

Dept. of Civil Engineering, Construction and Architecture (DICEA)

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Short CV of the supervisor

DICEA

- **Full Professor of Structural Engineering** at Università Politecnica delle Marche (UnivPM), Italy, since 2024.
- Previously Associate Professor (2019–2024) and Assistant Professor (2012–2019) at UnivPM.
- Included in the top **2% most cited scientists worldwide** according to Stanford University ranking.
- **Reviewer** for over 100 journals, 10 conferences, and competitive **research projects at national and international level**.
- **Editorial board member** of 12 journals and 12 congresses.
- **Organizer** of more than 30 **mini-symposia at international and national conferences**.
- **Lecturer at 8 summer/winter schools** on seismic vulnerability, structural consolidation, and Structural Health Monitoring (SHM).
- **Research and teaching experience** at the Universities of Ancona, Camerino, Lublin, and São Paulo.
- **Board member** of "Accademia Marchigiana di Scienze, Lettere ed Arti, Classe I" (since 2019).
- **Deputy Manager** of the Official Laboratory for Materials and Structures Testing (Giovanni Menditto Laboratory, DICEA, UnivPM) (2019–2021).
- **Board member** of the Italian Society of "Scienza delle Costruzioni" (SISCo) (2021–2024).
- **Founder, CEO, and technical director of UnivPM spin-off "iSD Engineering"** (seismic safety and structural control).
- **Tutor/co-tutor for more than 9 PhD candidates** and supervisor of over 180 Master's theses on dynamic monitoring, seismic vulnerability, structural health monitoring, and numerical modeling.

ORCID profile: http://orcid.org/0000-0002-9705-777X
Scopus profile: https://www.scopus.com/authid/detail.uri?authorId=35837136800
ResearcherID profile: http://www.researcherid.com/rid/M-2922-2015
UnivPM: https://www.univpm.it/francesco.clementi

SUN RISE SMALLER (STRATEGIC) UNIVERSITIES NETWORK FOR REGIONAL INNOVATIVE AND SUSTAINABLE EVOLUTION

HR EXCELLENCE IN RESEARCH

UNIVERSITÀ POLITECNICA DELLE MARCHE

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Research topics, Main Research Projects

DICEA

Research topics

- Specialist in Structural Engineering, focusing on static and dynamic behavior of structures and materials.
- Research interests:
  - Structural health monitoring
  - Advanced numerical modeling
  - Integration of digital twin technologies with Artificial Intelligence and Machine Learning
- Recent projects:
  - Development of quality-based automated procedures for operational modal analysis
  - Long-term health monitoring data analysis
  - Bayesian modal updating using surrogate models
- Utilizes both continuous and discontinuous numerical modeling approaches.
- Expertise in a wide range of construction materials: brick, mortar, composites, r.c., precast elements, timber.
- Experience in both experimental investigation and numerical analysis.
- Proficient in non-destructive testing (NDT) and monitoring techniques for repair and maintenance of bridges, civil structures, masonry buildings, and trees.

Main Italian and European research projects

2026–2028: Supervisor of the MSCA fellowship "Re-BUILD-EU: Resilient BUILDings: Integrated Loss & Damage Decision-support for Earthquake Recovery in Europe."

2024–2026: Coordinator (with Prof. Lenci) of UR33 UnivPM for the Reluis MARS-CARTIS project.

2022–2025: PNRR VITALITY – Innovation Ecosystems "Environmental, economic, and social sustainability of living and working environments." Head of Group 1 – Solutions for self-diagnosing structural health.

2017–2019: Principal Investigator and Coordinator of "Building Resilience to Flood Impact Derived from Global Warming in Europe (BRIDGE)," a strategic UnivPM project funded with €182,000.

He has participated in several national and international projects, including FP6, FP7, PRIN, Pompei Project, CARIVERONA, RELUIS CARTIS, among others.

reluis

Marie Skłodowska-Curie Actions Postdoctoral Fellowship

VITALITY

FONDAZIONE CARIVERONA

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Publications, Paper Selection, and Bibliometric Indices

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Publications

- Author of 75 scientific papers, mainly in leading international journals (mostly first quartile).
- Collaborations with international researchers, including award recipients: ERC Advanced Grant (1), ERC Consolidator Grant (1), MSCA (1).
- Presented over 100 contributions at international conferences.

Selection of papers (2024–2026)

- Standoli G, Di Giosaffatte M, Schiavoni M, Roscini F, **Clementi F**. *Sustainable structural health assessment of heritage masonry towers using artificial intelligence and data-driven monitoring: Insights from the civic tower of Matelica*. Eng Appl Artif Intell **2026**;163:113097. https://doi.org/10.1016/j.engappai.2025.113097.
- Monchetti S, Bartoli G, Betti M, Casolo S, **Clementi F**. *Refining the masonry shear modulus in masonry towers via Bayesian model updating*. Probabilistic Engineering Mechanics **2026**:103903. https://doi.org/10.1016/j.probengmech.2026.103903.
- Schiavoni M, Roscini F, **Clementi F**. *Comparative analysis between continuous and discontinuous methods for the assessment of a cultural heritage structure*. Meccanica **2025**;60:1957–82. https://doi.org/10.1007/s11012-024-01885-0.
- Schiavoni M, Di Giosaffatte M, Roscini F, **Clementi F**. *Mechanisms detection by nonlinear finite and distinct element simulations of a historical religious masonry complex*. Bulletin of Earthquake Engineering **2025**. https://doi.org/10.1007/s10518-025-02125-w.
- Salachoris GP, Standoli G, Betti M, Milani G, **Clementi F**. *Evolutionary numerical model for cultural heritage structures via genetic algorithms: a case study in central Italy*. Bulletin of Earthquake Engineering **2024**;22:3591–625. https://doi.org/10.1007/s10518-023-01615-z.

Bibliometric Indices:

	Scopus	WOS	Google Scholar
***h*-index**	39	33	42
n. documents	166	109	205
citations	3824	2780	4389

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Research Group Description

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Members of the research group of Structural Engineering

- Prof. Eng. Fabrizio Davì (Full Professor)
- Prof. Eng. Stefano Lenci (Full Professor)
- Prof. Eng. Francesco Clementi (Full Professor)
- Prof. Eng. Giovanni Lancioni (Associate Professor)
- Prof. Eng. Michele Serpilli (Associate Professor)
- Prof. Eng. Pierpaolo Belardinelli (Associate Professor)
- Prof. Arch. Valeria Settimi (Associate Professor)
- 3 Post-doc fellows
- 2 PhD students
- *iSD Engineering s.r.l.* Spin-Off of UnivPM, the CEO and founder is Prof. Francesco Clementi

Topics

- Conducts advanced research in both theoretical and applied mechanics, covering classical and innovative topics.
- Main research areas:
  - Advanced materials and fracture mechanics
  - Metamaterials and structural optimization
  - Integration of machine learning for predictive modeling and dynamic identification
  - Seismic vulnerability assessment
  - Energy harvesting solutions for structures
  - Monitoring techniques for structural health
  - Nonlinear dynamics, computational mechanics, and thermo-mechanical behavior
- Research activities range from nanoscale materials to large-scale structural systems.
- Mission: revolutionize engineering practices by combining innovation, sustainability, and resilience, aiming to create safer, smarter, and more efficient structures for the future.

https://dicea.univpm.it/en/thematic-sections/structural-mechanics

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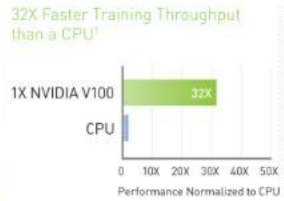
Infrastructures and tools

- **State-of-the-art instrumentation for advanced dynamic testing of structures, both in the laboratory and on-site:**
  - high-precision accelerometers, specialized hardware, and cutting-edge software for structural analysis.
- **Privileged access to the university's Materials and Structure Testing Laboratory equipped with:**
  - hydraulic pumps, actuators, and reaction walls for comprehensive static and dynamic testing under realistic conditions.
- **High-performance computational infrastructure**:
  - Cluster with two Dell GPUs for demanding numerical and analytical methods;
  - Supports large-scale finite element modeling and advanced simulations of structural behavior under dynamic loads.
- **Extensive experience in real-world applications**:
  - Deployment of static and dynamic monitoring systems on existing structures.
- **Unique combination of advanced instrumentation, computational power, and practical expertise**:
  - Enables the group to solve challenging problems in structural analysis and monitoring;
  - Drives innovation, resilience, and safety in structural engineering.

Static

Dynamic

Computation



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