EUROPASS CURRICULUM VITAE

PERSONAL INFORMATION

First names / Surname	**DANILO ANTONELLO RENZO**
Address	
Phone	
E-mail	
Nationality	Italian
Date of birth	
Websites	

PROFESSIONAL EXPERIENCE

Dates (from – to)	May 2024 – April 2025
Name and address of employer	Sapienza, University of Rome - Department of Chemical Engineering, Materials and Environment, Via Eudossiana 18, Rome, Italy.
Type of employment	**Postdoctoral researcher fellow**
Research activity	Data driven methods for fatigue assessment of structural components

Dates (from – to)	February 2024 – September 2024
Name and address of employer	University of Calabria - Department of Mechanical, Energy and Management Engineering, Rende, Italy.
Type of employment	**Teaching assistent**
Teaching subject	Machine design elements

Dates (from – to)	February 2023 – January 2024
Name and address of employer	University of Calabria - Department of Mechanical, Energy and Management Engineering, Rende, Italy.
Type of employment	**Postdoctoral researcher fellow**
Research activity	Application of machine learning methods to estimate the fatigue life of additive manufactured materials.

Dates (from – to)	October 2019 - September 2021

Name and address of employer	University of Calabria - Department of Mechanical, Energy and Management Engineering, Rende, Italy.
Type of employment	**Teaching assistent**
Teaching subject	Machine design
Dates (from – to)	March 2017 - November 2018
Name and address of employer	University of Calabria - Department of Mechanical, Energy and Management Engineering, Rende, Italy.
Type of employment	**Predoctoral researcher fellow**
Research activity	Thermo-mechanical characterization of SMA (Shape Memory Alloys) - polymer composite.

EDUCATION

Dates (from – to)	December 2018 – September 2022
Name and type of institution providing education and training	University of Calabria - Department of Mechanical, Energy and Management Engineering, Rende, Italy.
Qualification awarded	**Ph.D. in Civil and Industrial Engineering**.
Date	July 2018
Qualification awarded	Qualification for the profession of Industrial Engineer – Section A.
Dates (from – to)	October 2015 – December 2017
Name and type of institution providing education and training	University of Calabria - Department of Mechanical, Energy and Management Engineering, Rende, Italy.
Qualification awarded	**Master's degree in mechanical engineering**
Graduation grade	110 cum laude

PERSONAL SKILLS AND COMPETENCIES

Mother tongue(s)	**ITALIAN**
Other languages	**ENGLISH**
Reading	B1 LEVEL CERTIFIED

Writing	B1 LEVEL CERTIFIED
Speaking	B1 LEVEL CERTIFIIED

SOCIAL SKILLS

- GOOD ABILITY TO ADAPT IN MULTICULTURAL ENVIRONMENTS;
- GOOD COMMUNICATION SKILLS DEVELOPED IN THE WORKPLACE;

ORGANIZATIONAL SKILLS

- PREDISPOSITION TO PURSUIT SET OBJECTIVES;
- ATTITUDE TO MANAGE AND PLAN PROJECTS AND OBJECTIVES;
- EXPERIENCE IN TEAMBUILDING AND TEAMWORKING;
- ABILITY TO WORK UNDER STRESS.

COMPUTER AND TECHNICAL SKILLS

1. **Technical skills and software:**
   - **Operating Systems:** Windows.
   - **Web Browsers:** Google Chrome, Safari, Mozilla Firefox, Microsoft Edge.
   - **Programming Languages:** Python, MATLAB, Java.
   - **Integrated Development Environments (IDEs):** PyCharm, Jupyter Notebook, Google Colab notebook.
   - **Machine Learning Libraries:** NumPy, Pandas, Scikit-learn, TensorFlow (with Keras), PyTorch, Matplotlib, Fuzzy Logic, and others.
   - **Model-Based Systems Engineering Tools:** Simulink.
   - **Geographic Information Systems (GIS):** QGIS.
   - **Cost Estimation Software (MER):** ACCA Software for Architecture, Engineering, and Construction.
   - **Finite Element Method (FEM) Software:** MSC Nastran, Marc, Patran, SolidWorks Simulation.
   - **Computer-Aided Design (CAD) Software:** SolidWorks, Pro/ENGINEER.
   - **Data Acquisition (DAQ) Software:** HBM Catman.
   - **Forming Process Simulation Software:** Deform-3D, SolidWorks Plastics.
   - **Digital Image Correlation Software:** Vic-Snap, Vic-2D, Vic-3D.
   - **Thermography Software:** FLIR tools+.
   - **Image Processing Software:** Fiji (ImageJ).
   - **Embedded boards:** Arduino.

2. **Laboratory equipment experience:**
   - **Expertise in mechanical characterization** of alloys and composite materials, including fatigue and multiaxial fatigue testing.
   - **Full-Field Measurement Techniques:** Digital Image Correlation (DIC-2D and DIC-3D), and thermography.
   - **3D Printing for rapid prototyping of polymer components.**

3. **Laboratory equipment and tools used:**
   - **Static and dynamic testing machines**: Instron Electropulse E10000, MTS Criterion C42 & C45.
   - **Strain measurement**: installation and setup of HBM resistive strain gauges.
   - **Environmental testing**: Instron climatic chamber.
   - **Thermal imaging**: FLIR thermal camera.
   - **Optical systems**: AVT Prosilica GX camera, Leica S6D stereomicroscope, Leica DM 4000 M optical microscope.
   - **Surface characterization**: TAYLOR HOBSON Surtronic 25 surface roughness tester.

4. **Experience in writing technical reports and scientific publications:**
   - **Productivity Software:** Microsoft Office Suite (Word, Excel, PowerPoint, etc.), OriginPro, LaTeX, Overleaf, TeXstudio.

Patent

B

ACADEMIC INFORMATION

1. RESEARCH INTERESTS AND ACTIVITIES

Research activity is primarily focused on the mechanical behavior of materials under complex loading conditions, with emphasis on the multiaxial fatigue behavior of additive manufactured alloy. Studies include also crack propagation analysis using X-ray computed microtomography. Additional investigations involve NiTi shape memory alloys, with focus on their fatigue behavior and thermo-mechanical behavior, especially within Shape memory alloys-polymer composites. Recent efforts are dedicated to applying machine learning techniques for fatigue life prediction, with a focus on dataset preparation and model validation.

2. AUTHOR AND CO-AUTHOR OF SCIENTIFIC PUBLICATIONS:

- Di Maggio L. G., Renzo, D. A., Gastaldi C., Delprete C., Furgiuele F. (2025). A robust methodology for dataset preparation and algorithm performance assessment in machine learning prediction of the fatigue life of additive manufactured components. Engineering with Computers. Spriger Nature. (Proofs state).

- Renzo, D. A., Crocco, M. C., Maletta, C., Pagnotta, L., Sgambitterra, E., Berto, F., ... & Formoso, V. (2023). X-ray computed μ-tomography analysis to evaluate the crack growth in an additive manufactured Ti-6Al-4V alloy sample stressed with in-phase axial and torsional loading. International Journal of Fatigue, 175, 107727. https://doi.org/10.1016/j.ijfatigue.2023.107727

- D. A. Renzo, C. Maletta, E. Sgambitterra, F. Furgiuele, F. Berto. Surface roughness effect on multiaxial fatigue behavior of additively manufactured Ti6Al4V alloy. International Journal of Fatigue, 107022, 2022. https://doi.org/10.1016/j.tafmec.2019.102260

- D. A. Renzo, C. Maletta, E. Sgambitterra, F. Furgiuele, C. Biffi, J. Fiocchi, A. Tuissi, Multiaxial fatigue behavior of SLM Ti6Al4V alloy under different loading conditions. Fatigue & Fracture of Engineering Materials & Structures, Wiley, June 2021; https://doi.org/10.1111/ffe.13518

- D. A. Renzo, E. Sgambitterra, P. Magarò, F. Furgiuele, C. Maletta, C. Biffi, J. Fiocchi, A. Tuissi, Multiaxial fatigue behavior of additively manufactured Ti6Al4V alloy: axial-torsional proportional loads, Material Design & Processing Comunications, Wiley, May 2019; https://doi.org/10.1002/mdp2.190

- D. A. Renzo, E. Sgambitterra, P. Magarò, F. Furgiuele, C. Maletta, C. Biffi, J. Fiocchi, A. Tuissi, Multiaxial fatigue behavior of additive manufactured Ti-6Al-4V under in-phase stresses, Structural Integrity Procedia, January 2019; https://doi.org/10.1016/j.prostr.2019.08.243

- E. Sgambitterra, P. Magarò, F. Niccoli, D. A. Renzo, C. Maletta, Novel insight into the strain-life fatigue properties of pseudoelastic NiTi shape memory alloys, Smart Materials and Structures, September 2019; DOI 10.1088/1361-665X/ab3df1

- E. Sgambitterra, P. Magarò, D. A. Renzo, C. Maletta, Effects of Temperature on Fatigue Crack Propagation in Pseudoelastic NiTi Shape Memory Alloys, Shap. Mem. Superelasticity, August 2019; https://doi.org/10.1007/s40830-019-00231-8

- E. Sgambitterra, C. Maletta, P. Magarò, D. Renzo, F. Furgiuele, H. Sehitoglu, Low-to-high cycle fatigue properties of a NiTi shape memory alloy, Structural Integrity Procedia, January 2019; https://doi.org/10.1016/j.prostr.2019.08.242

- Sgambitterra, E., Curcio, E., Rodinò, S., Renzo, D., Magarò, P., Furgiuele, F., ... & Maletta, C. (2021). Shape memory alloys-polymer composites: interfacial strength under mechanical and thermal loading. Procedia Structural Integrity, 33, 1073-1081. https://doi.org/10.1016/j.prostr.2021.10.119

- Rodinò S, Curcio EM, Renzo DA, Sgambitterra E, Magarò P, Furgiuele F, Brandizzi M, Maletta C. Shape Memory Alloy—Polymer Composites: Static and Fatigue Pullout Strength under Thermo-Mechanical Loading. Materials. 2022; 15(9):3216. https://doi.org/10.3390/ma15093216

3. **SPEAKER IN CONFERENCES AND WORKSHOPS**:

- 53° Convegno Nazionale AIAS. Title of presentation: Metodologie sviluppate per la preparazione del dataset e per la valutazione di algoritmi di intelligenza artificiale per la stima della resistenza a fatica. Centro Congressi Federico II, Napoli, Italy, 4-6 September 2025.

- Spoke 6 Multiscale Modelling & Engineering Applications Centro Nazionale di Ricerca in HPC, Big Data and Quantum Computing. Title of presentation: MACHINE LEARNING APPLIED TO FATIGUE LIFE PREDICTION OF ADDITIVE MANUFACTURED MATERIALS. Roma 22 – 23 February 2024.

- CENTRO NAZIONALE HPC, UNICAL WORKSHOP. Title of presentation: Application of artificial intelligence methods to damage recognition of machine elements. Sala Convegni TechNest, University of Calabria, Rende, Italy, 30 May 2024.

- 3° Giornata Studio del Gruppo di Lavoro- MEAS, Workshop Tematico «Metodi Termografici nella Caratterizzazione di Materiali/Componenti e Macchine» Stato dell'Arte, Innovazione, Casi Studio Aziendali. Title of presentation: Analisi della crescita dei difetti mediante μ-tomografia computerizzata a raggi X in un campione in lega Ti-6Al-4V additivata. Bari, Italy, 29 May 2023.

- ROMECUP 2023, Robotics Award "Advancing technology for humanity award. Most promising researcher in robotics and artificial intelligence", Roma 5 May 2023.

- 1st workshop on Structural Integrity of Additively Manufactured Materials - SIAMM21. Title of presentation: Multiaxial fatigue of additive manufactured Ti6Al4V specimens. Timisoara & online, 2021.

- IGF 26 – 26th International Conference on Fracture and Structural Integrity. Title of presentation: Surface roughness effect on multiaxial fatigue behavior of additively manufactured Ti6Al4V alloy. Turin & web, 2021.

- VCSI1 2020 - Virtual conference on Structural Integrity. Title of presentation: Assessment of fatigue behavior of additive manufactured Ti6Al4V under proportional stresses. 2020.

- 48° CONVEGNO NAZIONALE AIAS, Fatica multiassiale di provini in lega Ti6Al4V ottenuti mediante tecnologia additiva, Assisi, 2019.

- IGF 25 – 25th International Conference: “Fracture and Structural Integrity”. Title of presentation: Multiaxial fatigue behavior of Ti6Al4V alloy obtained by additive manufacturing. Catania, Italy, 2019.

- La ricerca italiana nel settore dei Materiali Intelligenti e MEMS – 8° EDIZIONE – MIMEMS 2019. Title of presentation: Propagazione dei difetti a fatica in leghe pseudoelastiche, Pizzo Calabro, Italy, 2019.

4. **POSTGRADUATION COURSES AND SCHOOLS WITH PARTECIPATION CERTIFICATES**:

   - European Innovation Council – EIC: lo strumento EIC Pathfinder. SAPIENZA University of Rome, Roma, 2025.

   - PhD SUMMER SCHOOL AIAS 2020: “ADVANCES IN EXPERIMENTAL METHODS”. Prof. Laura Vergani, 2020;

   - PhD SUMMER SCHOOL AIAS 2019: “Mechanics and Multiphysics Modelling of Intelligent Materials and Micro Electro-Mechanical Systems”. Prof. Laura Vergani. IUSS Ferrara, 2019.

   - Modelli e metodi matematici, Prof. Giuseppe Alì. University of Calabria, 2019.

   - Wolfram Mathematica per l'Ingegneria, Prof. Luigi Bruno. University of Calabria, 2019.

   - Introduction to stochastic and mathematical modelling of discrete systems, Prof. Vittorio Astarita. University of Calabria, 2020.

   - Tools for the scientific calculation, programming and dynamic simulation. Application in the renewable energy field – Modulo 1- MATLAB for the scientific calculation (1CFU). Ing. PhD Domenico Mazzeo. University of Calabria, 2020.

   - Tools for the scientific calculation, programming and dynamic simulation. Application in the renewable energy field – Modulo 2 – TRNSYS for the dynamic simulation of renewable systems (1CFU), Ing. PhD Domenico Mazzeo. University of Calabria, 2020.

   - Objectives and methods for systematic literature review. Prof.ssa Marilena De Simone. University of Calabria, 2020.

   - English Language Course – Academic Skills (6CFU), Prof.ssa Carmen Argondizzo, University of Calabria, 2019-20.

   - Publishing in a scientific journal. Prof. Vincenzo Corvello, University of Calabria, 2021.

5. **Member of ADI - Associazione Dottorandi e Dottori di Ricerca in Italia.**

6. **REVIEWER FOR SCIENTIFIC JOURNALS**.

Autorizzo il trattamento dei dati personali contenuti nel mio curriculum vitae in base al D. Lgs. 196/2003 e al Regolamento UE 2016/679

Rome, 09/04/2025