



## Fabio Salmeri

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### ABOUT ME

I am a research fellow engaged in the field of engineering, with a broad portfolio of skills. A fundamental element of my work is Life Cycle Assessment (LCA). My research activity also concerns reverse engineering, where I use 3D scanning techniques, deviation analysis, and 3D print. I also work on virtual modelling and topological optimisation, and deal with experimental tests and numerical simulation in the mechanical field. I have earned a PhD in Engineering and Chemistry of Materials and Constructions at the University of Messina, where I previously graduated with a Master's degree in Mechanical Engineering. Equipped with excellent abilities to work both in a team and independently, the qualities that define me are: utmost commitment, seriousness, flexibility, a desire to learn and grow professionally. I possess excellent problem-solving abilities and the capacity to adapt to places, occasions, and situations with a high level of stress. Additionally, I am proud to be a co-founder of KnoWow, an innovative University spin-off that embodies my passion and experience in the field of engineering.

### EDUCATION AND TRAINING

#### **PhD in Engineering and Chemistry of Materials and Constructions, XXXIV cycle.**

*University of Messina* [ 2017 – 2021 ]

Level in EQF: EQF level 8

Thesis: "Development of Topological Optimization Algorithms for Additive Manufacturing" (SSD: ING/IND-15)

#### **Master's Degree in Mechanical Engineering (LM-33)**

*University of Messina - Department of Engineering* [ 2018 ]

Final grade: 110/110 e lode – Level in EQF: EQF level 7

Thesis: "Safety assessment of a UIM X - CAT Powerboat" Conducted in collaboration with Union Internationale Motonautique (UIM)

Generation of electrical energy from thermoelectric power plants and renewable sources, experimental and numerical analyses for mechanical design, advanced computer modeling, automotive design, mechanical design, mechanical process and product technologies, dynamics of mechanical systems (Vibration Analysis), experimental methods and measurement instrumentation.

#### **First level degree Industrial Engineering**

*University of Messina* [ 2015 ]

Final grade: 103/110 – Level in EQF: EQF level 6

Thesis: "Development of biosensors based on nanostructured materials."

Fluid machines, electric machines and drives, industrial design, machine construction, mechanical systems, naval construction technology, mechanical and thermal measurements, metallurgy.

#### **high school - Industrial Technical Expert**

*Industrial Technical Expert G. Marconi Messina (ME)* [ 2006 ]

Final grade: 96/100 – Level in EQF: EQF level 4

## WORK EXPERIENCE

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### Research Fellow

**University of Messina** [ 01/05/2023 – Current ]

City: Messina

Country: Italy

Research Fellow, for the optimization of multiphase fluid dynamic

### Research Fellow

**University of Messina** [ 01/05/2022 – 30/05/2023 ]

City: Messina

Country: Italy

Research Fellow, for the study of the mechanical performance of sandwich panels and laminates reinforced with basalt fiber.

### Design - Life Cycle Assessment (LCA)

**NTET S.P.A., Technical Department** [ 2022 – Current ]

City: Catania

Country: Italy

Realization of Life Cycle Assessments (LCA) of composite material poles.

### Design - Life Cycle Assessment (LCA)

**NTET S.P.A., Technical Department** [ 2022 – Current ]

City: Catania

Country: Italy

Realization of life cycle assessment of components for the distribution and management of electrical energy (Panel BT-N0CE0177)

### Design - Life Cycle Assessment (LCA)

**NTET S.P.A., Technical Department** [ 2021 ]

City: Catania

Country: Italy

Realization of life cycle assessment of components for the distribution and management of electrical energy (auxiliary panels and TA complexes).

### Design

**C.R.P.S. S.r.l. Unipersonale** [ 09/2017 – 04/2018 ]

City: Catania

Country: Italy

Collaboration activity for the evaluation of the cold molding process of laminates and optimization of the latter.

### Stage

**Office of Engineer F. Ceraolo.** [ 10/2013 – 12/2013 ]

City: Messina

Country: Italy

The activity, carried out at the aforementioned office, consisted of the design of an electrical and air conditioning system for an associated dental practice.

## LANGUAGE SKILLS

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Mother tongue(s): **Italiano**

**Other language(s):**

**Inglese**

**LISTENING C2 READING C2 WRITING C2**

**SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2**

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## DIGITAL SKILLS

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Open LCA: excellent knowledge / Solidworks: excellent knowledge / Siemens NX: excellent knowledge / AutoCAD: excellent knowledge / Ansys: : excellent knowledge / MATLAB (Intermediate knowledge) / Hyperworks: good knowledge / Microsoft Office / EIPASS 7 MODULES USER, obtained in 2019. / PEKIT EXPERT, obtained in 2019

## AWARDS AND RECOGNITIONS

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### **Scholarship for Master's degree thesis "UIM technical - structural & medical topics"**

[ 2018 ]

Scholarship winner, for the thesis conducted in collaboration with "UIM" in the field of powerboat safety in the sector of Industrial Design and Mechanical Engineering.

## TEACHING ACTIVITIES

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### **Collaborations and assistance with courses and exams conducted by other professors**

- Subject expert for the discipline "Advanced Computer Modeling" (SSD ING/IND-15) of the Master's Degree in Mechanical Engineering - University of Messina – Department of Engineering - Appointment valid from 01/10/2021
- Collaboration, as a subject expert, with the exams of "Advanced Computer Modeling" (SSD ING/IND-15) of the Master's Degree in Mechanical Engineering - University of Messina on the following dates: 08/01/2022, 01/02/2022, 22/02/2022, 09/05/2022, 13/06/2022, 27/06/2022, 11/07/2022, 08/09/2022, 23/09/2022, 21/11/2022.

### **Thesis Co-advisor**

A.Y. 2018/2019 "Development of a topological optimization algorithm using Voronoi tessellation" – Advisor: Prof. Filippo Cucinotta, Student: Roberta Delia – Bachelor's Program in Industrial Engineering, University of Messina – Department of Engineering

### **Thesis Co-advisor**

A.Y. 2021/2022 "Realization and industrialization of a prototype for a vehicle damage recognition platform" – Advisor: Prof. Giacomo Risitano, Student: Carlo Novello – Master's Program in Mechanical Engineering, University of Messina – Department of Engineering

### **Thesis Co-advisor**

A.Y. 2021/2022 "Research activity on optimization of distributed 3D printing techniques" – Advisor: Prof. Filippo Cucinotta, Student: Gabriele Marabello – Master's Program in Mechanical Engineering, University of Messina – Department of Engineering

## ADDITIONAL TITLES, CERTIFICATES, AND QUALIFICATIONS

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### **EPD Course**

[ 18/05/2023 – 19/05/2023 ]

Environmental Product Declaration: The Tool to Understand, Measure, and Communicate Environmental Impacts.

## Qualification for the profession of Engineer - Industrial sector - section A

[ 2019 ]

### PARTICIPATION AS A SPEAKER IN NATIONAL AND INTERNATIONAL CONFERENCES

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#### International Conferences

- JCM 2020 (International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing). Cucinotta, F., Raffaele, M., Salmeri, F.: A Well-to-Wheel Comparative Life Cycle Assessment Between Full Electric and Traditional Petrol Engines in the European Context. Lect. Notes Mech. Eng. 188–193 (2020). [https://doi.org/10.1007/978-3-03070566-4\\_30](https://doi.org/10.1007/978-3-03070566-4_30).
- ADM 2021 (International Conference of the Italian Association of Design Methods and Tools for Industrial Engineering). Barberi, E., Cucinotta, F., Raffaele, M., Salmeri, F.: A Hollowing Topology Optimization Method for Additive and Traditional Manufacturing Technologies. 422–430 (2021). [https://doi.org/10.1007/978-3-030-91234-5\\_43](https://doi.org/10.1007/978-3-030-91234-5_43).
- JCM 2022 (International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing). Barberi, E., Chillemi, M., Milardi, D., Cucinotta, F., Raffaele, M., Salmeri, F., Sfravara, F.: Posture Interactive Self Evaluation Algorithm Based on Computer Vision. Lect. Notes Mech. Eng. 1516-1526 (2023). [https://doi.org/10.1007/978-3-031-15928-2\\_132](https://doi.org/10.1007/978-3-031-15928-2_132).

### TECHNICAL AND PROFESSIONAL SKILLS

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#### TECHNICAL AND PROFESSIONAL SKILLS

- Use of software for the processing of LCA "Life Cycle Assessment" analysis (OpenLCA)
- Use of laboratory instrumentation for additive rapid prototyping (3D printing)
- Use of laboratory instrumentation and software for reverse engineering
- Use of laboratory instrumentation for mechanical testing
- Application of non-destructive techniques
- Use of software for finite element modeling (HyperWorks, Ansys)
- Use of software for computational fluid dynamics simulation (Fluent, STAR-CCM+)
- Use of software for 2D and 3D technical drawing (AutoCAD, SolidWorks, Rhino, NX Siemens)
- Good understanding of design and management issues, from the manufacturing process to plant services
- Adequate knowledge of the methodological-operational aspects of engineering sciences, both in general and in-depth regarding mechanical engineering, and the ability to identify, formulate, and solve problems using up-to-date methods, techniques, and tools.
- Photo, video, and multimedia presentation processing

### BIBLIOMETRIC INDICATORS

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#### Source: Scopus (as of 31/07/2023)

Number of documents on Scopus: 20

Total number of citations: 186

h-index: 9

### SCIENTIFIC PUBLICATIONS

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#### International Journals with Impact Factor

Prestipino, M., Salmeri, F., Cucinotta, F., Galvagno, A.

“Thermodynamic and environmental sustainability analysis of electricity production from an integrated cogeneration system based on residual biomass: A life cycle approach”

Appl. Energy. 295, 117054 (2021)

DOI: <https://doi.org/10.1016/j.apenergy.2021.117054>.

Scopus ID: 2-s2.0-85105566118

Cucinotta, F., Raffaele, M., Salmeri, F., Sfravara, F.

"A comparative Life Cycle Assessment of two sister cruise ferries with Diesel and Liquefied Natural Gas machinery systems"

Appl. Ocean Res". 112, (2021).

DOI: <https://doi.org/10.1016/J.APOR.2021.102705>.

Scopus ID: 2-s2.0-85106621811

Di Bella, G., Alderucci, T., Salmeri, F., Cucinotta, F.

"Integrating the sustainability aspects into the risk analysis for the manufacturing of dissimilar aluminium/steel friction stir welded single lap joints used in marine applications through a Life Cycle Assessment"

Sustainable Futures Volume 4, 2022, 100101

DOI: <https://doi.org/10.1016/j.sftr.2022.100101>.

Altadonna, A., Cucinotta, F., Raffaele, M., Salmeri, F., Sfravara, F.

"Environmental Impact Assessment of Different Manufacturing Technologies Oriented to Architectonic Recovery and Conservation of Cultural Heritage"

Sustainability (Switzerland), 2023, 15(18), 13487

DOI: <https://doi.org/10.3390/su151813487>

Cucinotta, F., Raffaele, M., Salmeri, F.

"A stress-based topology optimization method by a Voronoi tessellation Additive Manufacturing oriented"

International Journal of Advanced Manufacturing Technology, 2019, 103(5-8), pp. 1965–1975

DOI: <https://doi.org/10.1007/s00170-019-03676-4>.

Scopus ID: 2-s2.0-85064605981

Lo Giudice, R., Galletti, C., Tribst, J. P.M., Perez Melenchón, L., Mataresi, M., Miniello, A., Cucinotta, F., Salmeri, F.

"In Vivo Analysis of Intraoral Scanner Precision Using Open-Source 3D Software"

Prosthesis 2022, 4(4), 554-563

DOI: <https://doi.org/10.3390/prosthesis4040045>.

Cucinotta, F., Mineo, R., Raffaele, M., Salmeri, F., Sfravara F.

"Customized Implant of Cervical Prostheses Exploiting a Predictive Analysis of Range of Motion"

Computer-Aided Design and Applications - Open Access - Volume 20, Pages 122 – 133 - October/December 2022

DOI: <http://doi.org/10.14733/cadaps.2023.S6.122-133>

Barberi, E., Chillemi, M., Cucinotta, F., Raffaele, M., Salmeri, F.

"A hollowing algorithm for a parametric optimisation method of structural components"

International Journal on Interactive Design and Manufacturing, 2023

DOI: <https://doi.org/10.1007/s12008-023-01606-z>

Salmeri, F., Barberi, E., Lipari, F., Nicita, F.

"A Novel Quality Assessment Method for the Clinical Reproduction of Orthodontic Attachments Based on Differential Entropy"

Engineering Proceedings, 2023, 56(1), 15

DOI: <https://doi.org/10.3390/ASEC2023-15245>

Somma, R., Spoto, S.E., Raffaele, M., Salmeri, F.

"MEASURING COLOR TECHNIQUES FOR FORENSIC COMPARATIVE ANALYSES OF GEOLOGICAL EVIDENCE"

AAPP Atti della Accademia Peloritana dei Pericolanti, Classe di Scienze Fisiche, Matematiche e Naturali, 2023, 101, A14

DOI: <https://doi.org/10.1478/AAPP.101S1A14>

Somma, R., Altadonna, A., Cucinotta, F., ...Spagnolo, E.V., Sapienza, D.

"THE TECHNOLOGIES OF LASER SCANNING AND STRUCTURED BLUE LIGHT SCANNING APPLIED TO CRIMINAL INVESTIGATION: CASE STUDIES"

AAPP Atti della Accademia Peloritana dei Pericolanti, Classe di Scienze Fisiche, Matematiche e Naturali, 2023, 101, A15

DOI: <https://doi.org/10.1478/AAPP.101S1A15>

Somma, R., Baldino, G., Altadonna, A., ...Spagnolo, E.V., Sapienza, D.

"EDUCATION AND TRAINING ACTIVITIES IN FORENSIC AND BIOMEDICAL SCIENCES: THE LASER SCANNER TECHNOLOGY"

AAPP Atti della Accademia Peloritana dei Pericolanti, Classe di Scienze Fisiche, Matematiche e Naturali, 2023, 101, A16

DOI: <https://doi.org/10.1478/AAPP.101S1A16>

Baldino, G., Spagnolo, E.V., Fodale, V., ...Asmundo, A., Sapienza, D.

"THE APPLICATION OF 3D VIRTUAL MODELS IN THE JUDICIAL INSPECTION OF INDOOR AND OUTDOOR CRIME SCENES"

AAPP Atti della Accademia Peloritana dei Pericolanti, Classe di Scienze Fisiche, Matematiche e Naturali, 2023, 101, A17

DOI: <https://doi.org/10.1478/AAPP.101S1A17>

## **Contributions in Proceedings of International Conferences**

Cucinotta, F., Raffaele, M., Salmeri, F.

"A Well-to-Wheel Comparative LifeCycle Assessment Between Full Electric and Traditional Petrol Engines in the European Context"

JCM 2020 (International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing).Lect. Notes Mech. pag. 188–193 (2020).

DOI: [https://doi.org/10.1007/978-3-03070566-4\\_30](https://doi.org/10.1007/978-3-03070566-4_30).

Scopus ID: 2-s2.0-85106202252

Cucinotta, F., Raffaele, M., Salmeri, F.

"A Topology Optimization of a Motorsport Safety Device"

Lecture Notes in Mechanical Engineering, pages 400 – 409, International Conference on Design Tools and Methods in Industrial Engineering, ADM 2019

DOI: [https://doi.org/10.1007/978-3-030-31154-4\\_34](https://doi.org/10.1007/978-3-030-31154-4_34).

Scopus ID: 2-s2.0-85081546558

Cucinotta, F., Raffaele, M., Salmeri, F.

“A Topology Optimization Method for Stochastic Lattice Structures”

Lecture Notes in Mechanical Engineering, pages 235 – 240, 2021 10th International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing, JCM 2020

DOI: [https://doi.org/10.1007/978-3030-70566-4\\_38](https://doi.org/10.1007/978-3030-70566-4_38).

Scopus ID: 2-s2.0-85106199418

Cucinotta, F., Mineo, R., Raffaele, M., Salmeri, F.

“Assessment of the Run-Out of an Intervertebral Cervical Cage Fabricated by Additive Manufacturing Using Electron Beam melting”

Proceedings of the ASME Design Engineering Technical Conference, 2021

DOI: <https://doi.org/10.1115/DETC202170241>.

Scopus ID: 2-s2.0-85120007815

Barberi, E., Cucinotta, F., Raffaele, M., Salmeri, F.

“A Hollowing Topology Optimization Method for Additive and Traditional Manufacturing Technologies”

ADM 2021 (International Conference of the Italian Association of Design Methods and Tools for Industrial Engineering), pages 422–430 (2021).

DOI: [https://doi.org/10.1007/978-3-030-91234-5\\_43](https://doi.org/10.1007/978-3-030-91234-5_43).

Scopus ID: 2-s2.0-85121777470

Barberi, E., Chillemi, M., Milardi, D., Cucinotta, F., Raffaele, M., Salmeri, F., Sfravara, F.

“Posture Interactive Self Evaluation Algorithm Based on Computer Vision”

JCM 2022 (International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing). Lect. Notes Mech. Eng. 1516-1526 (2023)

DOI: [https://doi.org/10.1007/978-3-031-15928-2\\_132](https://doi.org/10.1007/978-3-031-15928-2_132).

Scopus ID: 2-s2.0-85140484484

Calì, M., Cucinotta, F., Raffaele, M., Salmeri, F., Sfravara, F.

“Voronoi Tessellation Application for Controlling Frequency Domain of a Titanium Plate”

31st International Conference on Flexible Automation and Intelligent Manufacturing, FAIM 2022 – Detroit - 19 June 2022 through 23 June 2022

DOI: [http://doi.org/10.1007/978-3-031-17629-6\\_14](http://doi.org/10.1007/978-3-031-17629-6_14)

## **COMMUNICATION AND INTERPERSONAL SKILLS**

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### **Student Representative**

Student representative of the Department of Engineering at the University of Messina.

## Social skills and competences

- Ability to work in a team
- Ability to adapt to multicultural environments
- Excellent communication skills
- Excellent socialization skills

Developed both through the training provided by the university and through sports and relational activities carried out.

## ADDITIONAL INFORMATION

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### Design and implementation

[ 2020 ]

Design and implementation through 3D printing of personal protective equipment supplied to the G. Martino Policlinic in Messina during the Covid-19 emergency

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

*Messina, 29/01/2024*

