

# CONTACT

Nationalit	: Italian	
Date of b	rth: February 11, 1994	
Domicile:	Bologna	
Phone:	3472600284	
E-mail:	paolo.cosseddu2@unibo.it	

# SKILLS

Mechanical Design, Finite Element Simulation, Testing, Microscopy and Fractography, 3D Scanning, Design and Lamination of Composite Materials, 3D Printing, Smart Materials

**Programs:** Dragonfly Switch hub, Fusion, Netfabb, Materialize Magics, Creo, Ansys, ACP, Altair Inspire, nTopology, Matlab, Simulink, Cura, Simplify 3d, PrusaSlicer, Office, Word, Power Point, Excel, C++

# LINGUISTIC SKILLS

Italian: Mother tongue

**English:** B2 level English course obtained at the University as an examination of the degree course

Spanish: Basic knowledge

## PATENTS AND PATENTS

Automotive and Motorcycle: A and B

UAS pilot license: A1-A3 ENAC

Diver's License: Esa Worldwide Open Driver

# PAOLO COSSEDDU

# FORMATION

## - Professional training (2023/2024), on the use and maintenance of:

- NANODIMENSION DRAGONFLY LDM2 and DRAGONFLY IV (electronic 3D printing \_ INKJET technology)
- STRATASYS ORIGIN ONE (Polymer/Ceramic 3D Printing \_ DLP Technology)
- **MELTIO** (metal 3D printing \_ WAAM technology)
- KEYENCE VHX-7000 N (Optical Microscope)
- ABB Robotics, basic programming course

#### - 4th International Summer School On Fatigue and Damage Mechanics of Composite Materials, University of Padua

- <u>PhD (2022-2025) University of Bologna</u> and **bi-rex**, research topic: "Integrated Mechatronic-IT Design for Cyber-physical Smart Components and Systems in composite materials and Additive Manufactured Electronics"

- Qualification to the profession of engineer (2022) Industrial Engineer, Sector A, Grade 56 / 60

- <u>Master's degree in Mechanical Engineering</u> (2022), University of Bologna, degree course in motorcycle engineering, Grade: 100 / 110, Thesis: Shape Memory Alloy Hybrid Composite, integration and application of SMAHC foils

- <u>Bachelor's degree in Mechanical Engineering (2018)</u>, University of Bologna, Bachelor's degree in Mechanical Engineering

- Scientific High School (2012), Liceo scientifico E. Fermi, Nuoro, Scientific High School Diploma

# PROFESSIONAL EXPERIENCE

## 2022-Current) Ph.D. research topics :

- **Study and research** on the integration of shape memory alloys (SMA) in composite materials (CFRP and GFRP)

- **Study and research** on 3D printing (Additive Manufacturing Electronics) of strain sensors and their integration into composite materials (CFRP) for self-sensing applications

- **Study and research** on the integration of electronic components and sensors (AME) in structures produced with additive technology through the use of DED / WAAM (metals) or FDM (polymers) technology

- Testing and mechanical characterization of AM polymeric materials, elastomers, shape memory alloys and composite materials (carbon fiber and fiberglass), and **electro mechanical** characterization of 3D printed electronic components

- **Testing of adhesive joints** through Pull-Out tests, study of the adhesion interface and fracture through FEM simulations

#### -Articles:

- "Enabling martensitic transformation in Shape Memory Alloy Hybrid Composites via an elastomeric interface", Journal: **Composite Part B**
- "Experimental and numerical investigation of shape memory alloy hybrid composites with elastomeric interface", (ICCM23 \_ International Conference on Composite Materials) Belfast

#### HOBBIES AND INTERESTS

Motorcycles, mechanics and automotive. 20 years of experience as an amateur rider of road, cross and enduro motorcycles. Interests in scuba diving and freediving, swimming, flying and aircraft, boating, travel and sports. Former rugby player

Music and amateur bass and drum musician. Interests in music production and video making. Technology in general, such as gaming, 3D printing.

Interests in astronomy and space exploration

### 2022-Current) Bi-rex consultations on:

- Study and production of innovative prototypes using **additive technologies** for electronic, metallic and polymeric components for customers in the Defense and Space sector

- Design/manufacture of **electronic components integrated** into carbon/glass fiber structures for customers in the Automotive sectors

- Design/production of carbon fiber components for customers in the Drone sector

**2022-Current) 3D printing** with: Nanodimension Dragonfly LDM2 and LDM4 (Inkjet), Stratasys Origin One (DLP), Sisma MYSINT 300 (SLM), Markforged X7 (FDM), Prusa Mk4 (FDM), Makerbot Method (FDM), Sintratec (SLS), Meltio (WAAM)

**2021-2022)** Curricular internship, University of Bologna, DIN Department: study of the integration of shape memory alloys in carbon fiber (SMAHC) and prototyping of an SMAHC foil for aerodynamic application in the automotive sector (racing)

**2021)** Composite materials laboratory: design and engineering, FEM simulations (Ansys ACP), lamination of the carbon fiber prototype (swingarm of a racing scooter)

2020) Unibo Motostudent Team : mechanical component design and FEM simulation

**2018-Current) ODV Association "adessobasta"**: studies in road safety, experience in conferences as a speaker, production of videos to raise awareness of the danger of Sardinian roads

## SKILLS

- Design of mechanical components, topological optimization, finite element

- studies (Statics, cohesive modeling of the CZM interface, CFD) and rendering
- Optical micrography, SEM electron micrography, Fractography and 3D scanning
- 3D print: Inkjet, SLM, FDM, DLP, SLS, DED, WAAM

- **Design and lamination of composite materials**, finite element analysis / design (ANSYS ACP) and lamination of carbon fiber/glass/Kevlar components

- **FEM testing and modeling** of shape memory alloys (SMA), adhesive joints, polymeric, elastomeric and composite materials, 3D printed electronic components

- Knowledge in automatic controls and robotics (Matlab and Simulink), experience in university robotics laboratories, ABB basic course, laboratory of calibration of endothermic engines and detonation study, control of electric motors

University studies in: metallurgy, machine construction, robot and vehicle mechanics, motorcycle dynamics, fluid dynamics, aerodynamics, hydraulics and pneumatics, thermodynamics and combustion processes, modeling and calibration of endothermic and electric engines

The undersigned is aware that, pursuant to art. 26 of Law 15/68, false declarations, falsity in documents and the use of false documents are punishable under the Criminal Code and special laws. Furthermore, the undersigned authorizes the processing of personal data, in accordance with the provisions of Law 675/96 of 31 December 1996

Engineer.

Paolo Cosseddu