



RANIA SALEM

Cotutelle PhD Student in
Mechanical Engineering

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04 June 1997

Tunisian

Driving license



RESEARCH EXPERIENCE

Curent|PhD thesis research topic title:

"Experiments-based modelling of bio-inspired lattices fracture mechanics with the Virtual Element Method"

The PhD project aims to develop the Virtual Element Method (VEM) for predicting fracture properties of lattices with cellular topologies and dimensions inspired by nature.

The work involves both numerical (UniPa) and experimental (INSA Rouen Normandie) aspects of the topic.

18-20 May 2023| **Oral presentation** of a submitted paper entitled: "Multi-objective parameters optimization of PLA 3D printed parts using the Box Behnken method and Grey Relational Analysis." at the "Advances in Additive Manufacturing, AIAM'23" conference in Tunisia

2022|**Master's thesis project: "Experimental investigation of the additive manufacturing process: Effects of FDM 3D-printing parameters on the structures' behavior and development of an optimization strategy"**

- State of the art on the additive manufacturing technology, with a focus on FDM technique.
- Experimental set-up: compression testing on FDM 3D-printed specimens using PLA material.
- Results and analysis: Optimization of FDM 3D printing parameters

2022| **Mini-project: "Simulation of PINET Hinges"**

Simulation of types of hinges in a collaboration between the Mechanical Engineering Laboratory of the National School of Engineers of Monastir and PINET industry.

2020| **Multidisciplinary project: "Analysis of evolution of the mechanical properties of the hip prosthesis by the Finite Element Method"**

- State of art of the hip joint anatomy and defects, hip implants and their manufacturing methods.
- Numerical simulation of the femoral stem using Cobalt-chromium, Ti-6Al-4V alloy, carbon fiber reinforced under static and dynamic loads.
- Results and analysis of the evolution of the obtained mechanical properties.

HIGHER EDUCATION

Doctor of Philosophy - PhD

November 2023 - November 2026

PhD : Mechanical, Manufacturing, Management and Aerospace Innovation
Departement of Engineering
Università degli Studi di Palermo
Viale delle Scienze, Edificio 8
90128 Palermo, PA, , Italy

PhD : Mechanical Engineering
Groupe de Physique des Matériaux, CNRS UMR 6634
INSA Rouen Normandie
685 Av. de l'Université, BP8, F-76800 Saint Etienne du Rouvray, France

National School of Engineers of Monastir; ENIM, Tunisia

2020 - 2022 | Research Master's degree in Mechanical Engineering
Option: Numerical Mechanics

Higher Institute of Applied sciences and Technology of Sousse, ISSAT, Tunisia

2016 - 2020| National Diploma of Fundamental Bachelor's Degree in Mechanical Engineering
Option: Mechanical Design

Gadsden State Community College, AL (USA)

2018 - 2019 | Short Term Certificate in Mechanical Design Technology

SKILLS

- Simulation: Abaqus CAE
- CAD/CAM: SolidWorks (CSWA/CSWPA-DT/ CSWP-simulation) / CATIA/ Inventor/ AutoCAD/ MasterCAM
- Programming: MATLAB/ Python
- Management: Lean Six Sigma yellow belt
- AM: FDM / IdeaMaker / Ntopology
- Office: Microsoft Office Specialist (MOS2016)
- Communication & Leadership
- Machining: turning & milling

WORK EXPERIENCE

2022-2023|**Substitute teacher/ lecturer-National School of Engineers of Monastir, Tunisia and the Higher Institute of Technological Studies of Mahdia, Tunisia**

- Computer Aided Design CAD
- Course of : Production flow simulation
- Course of : Industrial Maintenance Methods

2022-2023|**Assistant teacher -Higher Institute of Applied Sciences and technology of Sousse & National School of Engineers of Monastir, Tunisia**

- Metallic materials: Turning & Milling
- AutoCAD I CAD-CAM

2019| **Intern - KTH Leesburg Products (United States)**

- Measurements and verification before moving a robot cell which minimizes the need for additional teaching/touchups needed on the startup using AutoCAD software.
- Knowledge of the programming types of the robots used and their functionalities.
- Observation and monitoring of stamping and bending operations with precision control in the advanced measurement laboratory.
- Testing and observation of welding techniques.

2017 |**Intern - Sabena Technics MIR (Tunisia)**

- Getting familiar with the different types of aeronautical visits (visit A, B, C, D).
- Contribution to the Non-Destructive Testing (NDT) of landing wheels.
- Learning some techniques of coating, painting, and stock management of aeronautical products.

VOLUNTEERING EXPERIENCE

- First aid certificate from the red crescent
- Communication and Digital Marketing trainer within
- Insaf- fem program for the benefit of Tunisian women entrepreneurs.
- Personal development and training manager within the Charitable Engineers Club "Caritatif" (ENIM)
- Board organization member of the TJSP Alumni Summit Conference, March 2022.
- Local past president and trainer within the JCI (Junior Chamber International).
- CAD software mentor in a robotics competition for the "Best Robotics" in the United States
- French and Arabic mentor at "Birmingham Southern College" in the United States
- Active member within both of the international Kiwanis club and "Students Without Borders" at "Gadsden State" campus (USA).
- Volunteer English teacher for kids.
- Volunteer with the Christian association "Father's Love" for the distribution of meals. (USA)
- Volunteer at the International Festival of Young Students (ISWIT), Djerba, Tunisia.
- Participant in the "S4C" program: Students For Change, for the student-entrepreneur projects.

HONOURS AND AWARDS

2022 |**Agent of local dynamization, technology management and social innovation**|

Erasmus+ (U. Cádiz/ U. Galatasaray/ U. Naples Parthenope/ U. Monastir)

2021 | **Soliya Connect Program**

Online exchange program

2018 - 2019 | **Thomas Jefferson Scholarship**

Program | US Department of State|

Graduation: President's list at GSCC

2018 |**National literature award of short story** | Ministry of Cultural Affairs, Tunisia

LANGUAGES

Arabic	Native language
French	DELFB2
English	TOEIC / TOEFL
German	A2
Italian	A1

INTERESTS

- Additive Manufacturing
- Aerospace and innovation
- Material Science
- Artificial Intelligence and programming languages
- Literature and poetry

REFERENCES

Pr. Ivano Benedetti

Full Professor of Construction and Aerospace Structures

Department of Engineering, Università degli Studi di Palermo

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Pr. Fabrice Barbe

Professor of Metallurgy, Microstructures, Mechanics

Groupe de Physique des Matériaux, CNRS UMR 6634

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