

# Zaki AlOmar

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## Education

PhD student Nov 2019 - Present

Free University of Bozen/Bolzano

Thesis: Development of a lean design approach (1D beam or spring) based on the micro-scale modeling of representative volume elements for MAM lattice structures topologies  
Supervisor: Dr. Franco Concli

The aim is to speed up the full-scale adoption of metallic lattice structures by developing a numerical model that can accurately represent their mechanical response in a reasonable amount of time

Master of Science (MSc), Mechanical Engineering 2015 - 2018

University of Balamand, Lebanon

Thesis: Aerodynamic Assessment of the Baseline Configuration of a Rocket  
Supervisor: Prof. Oussama Jadayel  
Grade (92/100) Graduated with Distinction and won the Elma Maalouf Award for excellent engineering research

Bachelor of Technology, Aircraft Maintenance Engineering 2012 - 2015

University of Balamand, Lebanon

Grade (91.06/100) Graduated with High Distinction

## Work Experience

Research Assistant 2018 - 2019

University of Balamand, Lebanon

The research focusses mainly on improving the efficiency of the SAVONIUS wind turbine by optimizing and analyzing its various design parameters, including the blade size, overlap ratio, end-plates, shielding, etc.

Graduate Assistant 2017 - 2018

University of Balamand, Lebanon

Finite Element Analysis of a replica of the RAYACK-43, a two-seater monoplane aircraft that is currently being manufactured at the University of Balamand. The aim was to determine the behavior of the aircraft structures under different load cases and flight scenarios using the Patran - Nastran software.

Internship Spring - 2017

University of Bologna, Italy

The internship activities focused mainly on getting familiar with the hardware and software tools of the virtual reality and simulation lab. It also provided the experience of designing and developing a digital model using a variety of software mainly "Blender" and technologies like CAD and CAID.

## Publications

1- [A Review of the Selective Laser Melting Lattice Structures and Their Numerical Models](#), Z Alomar, F Concli - Advanced Engineering Materials, 2020.

2- [Compressive behavior assessment of a newly developed circular cell-based lattice structure](#), Z Alomar, F Concli - Materials and Design, 2021.

3- [Numerical modeling of selective laser melting lattice structures: A review of approaches](#), Z Alomar, F Concli - IOP Conference Series: Materials Science and Engineering, 2021.

## References

Available upon request.

## Core Competencies

- Finite Element Analysis
- CFD Analysis
- Additive Manufacturing
- Materials Characterization
- Mechanical Engineering
- Composite Structure
- Experimental Aerodynamics
- Rocket Technology

## Technical Summary

### Applications



- Microsoft Word
- Excel
- PowerPoint
- GIMP
- Python
- C++

### Software



- Patran-Nastran
- Code\_Aster
- Ansys
- SolidWorks
- Matlab
- Blender
- AutoCAD
- OpenRocket

## Languages

- Arabic (Native Language)
- English (C1)
- French (B2)
- Italian (A2)