

# Ebba Matewos Tera

Lecco, Italy

+393514274554 | <https://www.linkedin.com/in/ebbatera> | [ebbamatews@gmail.com](mailto:ebbamatews@gmail.com)

## PROFESSIONAL SUMMARY

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I am a second-year master's student in Mechanical Engineering, specializing in Smart and Sustainable Industry. I am looking for research or internship opportunities, especially an in-company thesis. During more than five years of mechanical engineering studies, I worked on many engineering projects and gained hands-on experience. This includes experimental work in manufacturing, materials science, and metallurgy, as well as engineering design, CAD work, numerical modeling (FEA), and model validation. I am interested in practical engineering problems and enjoy working with data and real results. I am open to relocation and comfortable working in international teams.

## EDUCATION

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### Politecnico Di Milano

Master of Science in Mechanical Engineering

- **GPA:** 27/30

Lecco, Italy

September 2024 – December 2026

### Khalifa University

Bachelor of Science in Mechanical Engineering

- **GPA:** 4.0/4.0
- **Honors:** President's List

Abu Dhabi, United Arab Emirates

January 2020 – January 2024

## SKILLS

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**Technical:** CAD (SolidWorks, Creo Parametric), FEA (ABAQUS, ANSYS), MATLAB, 3D Printing, Prototyping, Microsoft Office Suite, LabVIEW

**Languages:** English (Proficient), Italian (Beginner), Amharic (Native)

## EXPERIENCE

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### ADNOC L&S

Intern, Oil Spill and HNS Response

- Collaborated with cross-functional technical teams to implement oil spill and hazardous substance response plans.
- Conducted inspections of oil spill booms to ensure their effectiveness in containing and controlling oil spills.
- Tested and maintained water pumps used in emergency response operations.
- Operated and tested weir skimmers to ensure readiness for real-world oil spill response.

Abu Dhabi, United Arab Emirates

June 05, 2023 – July 28, 2023

### MATE ROV

Team Member, Gripper Design

- Collaborated with a team of 15+ students to represent Khalifa University in an international competition.
- Designed the gripper/arm of the ROV using SolidWorks.

Abu Dhabi, United Arab Emirates

October 2022 – January 2024

## PROJECTS

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### Senior Capstone Project: Simple Solar Engine, Khalifa University

February 2023 – December 2023

- Worked with a team of four other students to build a system that uses solar energy to generate electricity through thermal and flow kinetic energy.
- Responsible for designing, simulating, and manufacturing a parabolic trough collector with a single glass absorber tube.
- Skills: research, ray tracing software, CFD, manufacturing

### Manufacturing: Robotic Gripper, Khalifa University

February 2023 – May 2023

- Collaborated with a team of four other students to design a single DOF robotic gripper using SolidWorks and manufactured it using three different techniques: 3D printing, CNC, and laser cutting.

#### **CAD: Electric Guitar, Khalifa University**

*September 2021 – December 2021*

- Collaborated with a team of three other students in disassembling an electric guitar, drawing all the parts, and creating the final assembly using Creo Parametric.
- Became familiar with traditional plus/minus tolerancing, as well as basic GD and T principles.

#### **Modal Analysis: Beam and Ski, Politecnico di Milano**

*October 2023 – February 2024*

- Performed modal analysis of a constrained beam, identifying the first three modes from experimental tests and comparing results with FEM and analytical model (using MATLAB), including sensitivity analysis on joint types, element count, and lumped parameters.
- Conducted modal analysis of a Ski with experimental correlation and sensitivity analysis; performed dynamic analysis including FRFs and synchronous time integration for external loads and imposed DOFs.

#### **DC Motor: PID Controller for Position and Velocity, Politecnico di Milano**

*October 2023 – February 2024*

- Designed and tuned PID controllers for DC motor using numerical models (Simulink/MATLAB).
- Validated control strategy through experimental testing.
- Performed stability and performance analysis and tuned the PID controllers accordingly for both velocity and position control.

#### **Tennis Racket: Vibration Analysis, Politecnico di Milano**

*October 2023 – December 2023*

- Collaborated with a team of four other students to analyze the vibration response of a tennis racket under impact using experimental testing and FEM modeling in MATLAB.
- Validated simulation results through experimental testing.
- Conducted a vibration transmissibility study to assess how impact forces influence racket handle response and identify critical natural frequencies linked to hand/arm injuries.
- Gained hands-on experience in experimental data acquisition and structural dynamics analysis, including familiarity with vibration sensors.

#### **Drone-Based Target Tracking: Object Detection, Politecnico di Milano**

*September 2025 – December 2025*

- Implemented an in-plane target tracking system in MATLAB using a drone camera, compensating for drone motion via classical computer vision algorithms.
- Applied projective transformation (homography), color segmentation, blob analysis, and post-processing to isolate and track the target's trajectory.
- Validated system accuracy by comparing detected positions with known ArUco marker distances

### **VOLUNTEER**

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#### **Peer Tutoring**

*January 2021 – January 2023*

- Volunteered as a tutor to provide academic support in math and engineering courses for students, assisting with problem-solving, concept understanding, and exam preparation.
- Dedicated over 30 hours of service, positively impacting the academic performance and confidence of the students.
- Received a distinguished peer tutor award for my service.

### **AWARDS**

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- Fully funded UAE government scholarship for BSc studies, Khalifa University – 2020
- Italian Ministry of Foreign Affairs scholarship for MSc studies, *Invest Your Talent in Italy* – 2024