



ZAKARIA EL MLILAH

MECHATRONICS ENGINEER | ROBOTICS & MECHANICAL DESIGN



Mechatronics Engineer specialized in Mechanical Design and Robotics Systems, with experience in automotive engineering, product development, and prototyping. Skilled in CAD modeling, design for manufacturing (DFM), and system integration, with hands-on experience in developing functional robotic systems and mechanical components.

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- Tan-tan 82000, Morocco
- UTAC Test Track Driving Certification

EDUCATION

Mechatronics Engineering Degree
ENSA TETOUAN 2019-2024

SKILLS & TOOLS

Mechatronics & Engineering Design

- Robotic Mechanism Design
- GD&T, DFM, DFA
- Prototyping & Product Development

Calibration and vehicle preparation

- Calibration updating & CMM Flashing
- configuration & interventions coordination.

System engineering & modeling

- Requirement definition and modeling
- High-level and low-level functional and structural modeling

SOFTWARE

- **CAD:** CATIA V5, Fusion 360, SolidWorks, Blender
- **Simulation & Modeling:** MATLAB, Simulink, Cameo, SysML.
- **Automotive:** INCA, MDA, DiagAlyzer, IDVH, SAP
- **Programming:** Python
- **Prototyping:** Cura, FDM 3D Printing

CERTIFICATS

- Autodesk CAD/CAM/CAE for Mechanical Engineering
- Manufacturing Process Selection And Design For Manufacturing
- Generative Design for Additive Manufacturing
- Automotive Product Design Using CATIA V5
- Introduction to Model-Based Systems Engineering (MBSE)

LANGUAGES

- **Arabic** Native.
- **English** Advanced
- **French** Intermediate
- **German** Basic

WORK EXPERIENCE



Mechanical Design Engineer | Internal Projects

Ennopulse

Since July 2025

- Designed and optimized mechanical components for crash and safety simulations
- Translated CAE feedback into design iterations to improve structural performance
- Contributed to development of components for safety systems and impact test setups



Powertrain Calibration Engineer

Ennopulse for FEV

Since Jul 2024

Vehicle Configuration & Testing Engineer

Since Feb 2026

- Coordinated with rolling pilots and workshop teams to calibrate and prepare vehicles for test missions, ensuring technical readiness
- Performed calibration flashing on ECU and executed post-flash diagnostics to verify system integrity and readiness for testing.

Fleet Configuration Management, Technical Referent & Pilot

Jul 2025 - Jan 2026

- Acted as technical referent and quality gate, improving FTR by +20% and reducing NFTR by -5%
- Coordinated with stakeholders to align deliverables with requirements and timelines
- Trained 3 team members and developed internal GCONF documentation and KPI dashboards
- Managed high workload, handling ~26% of team deliverables (~400+ tasks)

Hardware Configuration Management

Jul 2024 - June 2025

- Implemented and tracked hardware modifications on multi-platform test vehicles (ICE, BEV, HEV); top contributor (27%) in a team of 5
- Ensured configuration consistency using mechanical drawings and technical documentation.
- Coordinated parts and vehicle logistics across Stellantis' technical centers and suppliers



End of Study Internship | SCR Modelization & Calibration

FEV North Africa

Fév 2024 - Août 2024

- Modeled and calibrated an SCR catalyst system for exhaust NOx reduction using MATLAB/Simulink and INCA, including calibration map generation and optimization.



Application Internship | ADAS MBSE system engineering

Capgemini Engineering

Aug 2023 - Sept 2023

- Modeled an ADAS pedestrian collision avoidance system using MBSE and the Vmodel, developing requirements, structural, and functional models with Cameo and SysML.

HIGHLIGHTED PROJECTS

Quadruped Spider Robot

Since Dec 2025

- Designed and 3D printed a quadruped robot with 3-DOF leg mechanisms for surveillance and interaction
- Optimized actuator placement and implemented mixed transmission systems for improved weight distribution and mobility

Animatronic Scarlet Macaw Parrot

Sept 2025 - Jan 2026

- Designed a 12-DOF animatronic system replicating realistic macaw movements
- Developed compact mechanical architectures for efficient space and load distribution
- Integrated multiple transmission mechanisms and prototyped using PLA and TPU

Educational 6 axis Robot Arm

May 2023 - Aug 2024

- Designed a 6-axis robotic manipulator for robotics control, actuation, and power transmission applications.
- Performed FEA-driven optimization to enhance structural performance while meeting FDM manufacturing constraints.

Automotive interior component Redesign

Since March 2026

- Designed and 3D printed improved automotive interior components for various vehicles (e.g., Mercedes-Benz 190D (W201)).
- Applied reverse engineering to enhance functionality and durability
- Optimized designs for additive manufacturing and real-world use