



Zee Marquez Wehmeyer

Spanish: Native
English: Proficient (C1)

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Mechanical Engineer with a specialization in structural analysis, design optimization, and predictive maintenance. A rapid learner who applies advanced computational and software skills to solve complex engineering challenges, proven by reducing material costs in manufacturing and leading product development from concept to launch in an award-winning startup

Core Competencies

- **Leadership & Strategy:** Product Lifecycle Management (PLM), Technology Roadmapping, Agile Project Management, Stakeholder Communication.
- **Engineering & Analysis:** Finite Element Method (Abaqus, HyperWorks, ANSYS, CALCULIX), Computational Fluid Dynamics (OpenFoam, Fluent,), Structural Analysis (SAP, Revit), CAD (SolidWorks, CATIA, SolidEdge, FreeCAD), Topology Optimization, Fatigue Life Prediction, Parametric Design, Compliance (Eurocodes, DNV)
- **Software, Data & AI:** Python, C#, C++, MATLAB, AI/ML Model Development, Predictive Maintenance Algorithms, Data Pipelines, Backend Development (FastAPI, Django, GraphQL), Cloud Infrastructure (AWS, Google Cloud, Azure, Firebase).
- **IoT & Hardware:** End-to-End IoT Architecture, Raspberry Pi, Arduino, PCB Design, Low-Power Sensor Networks (MQTT, LoRA, OpenThread).
- **Databases & Visualization:** PostgreSQL, InfluxDB, MongoDB, Power BI, Grafana, Dash, Streamlit.

Professional Experience

Technical Manager @ Vulkano Engineering · Madrid, Spain

Nov 2023 - Present

- Led structural consulting projects, performing detailed structural and frequency analysis of solar tracker structures to ensure design integrity.
- Conducted comprehensive wind load analysis on solar panels and trackers to optimize for aerodynamic stability and material efficiency.
- Designed and delivered a full-stack asset monitoring solution (STOWAI) from hardware concept to cloud deployment in under 4 months.
- Developed client-facing dashboards to provide actionable, real-time insights into asset performance.
- Forged strategic partnerships with leading Spanish solar energy companies.
- Secured prestigious awards and funding from top programs like Actua UPM, CAM, Wayra and La Caixa.

Structural Engineer @ GRI (Gestamp Renewable Industries) · Madrid, Spain

Jan 2023 - Oct 2023

- Reduced manufacturing material costs by 10% by implementing advanced optimization algorithms within FEM-based parametric tools to identify optimal wind tower designs.
- Slashed software licensing costs by migrating legacy FEM/CFD analyses to open-source alternatives, enhancing both automation and flexibility.
- Resolved critical manufacturing discrepancies by applying targeted FEM simulations, ensuring design integrity and preventing production delays.

Software & Control Engineering Intern @ +D (masdediagram) · Madrid, Spain

Jun 2019 - Jan 2021

- Programmed PLCs and developed software for crash testing & certification machines.
- Designed and assembled industrial automation control systems.

Education

BSc Mechanical Engineering (English) · University Carlos III, Madrid, Spain

Sept 2018 – Jun 2022

- Exchange: **Case Western Reserve University & California State University Long Beach** (USA) with 4.0 GPA.
- Final Grade 7,6. Honors in Physics & Python programming.
- University Moto-Student Team (designed sensorization and data acquisition systems for racing motorcycles)

Accomplishments & Certifications

- Utility model (ES1315071U) for a self-powered mechanical monitoring and predictive maintenance device.
- Hackathon Datafest 2025 (Santander & Talent Hackers real-world business challenges on large datasets using NLP and deep learning).
- Project Akademia (Fundación Bankinter).
- Deep Learning Course (Fundación Universidad Carlos III).
- Master courses on aerodynamics, computer fluid dynamics and wind resource assessment (TU Delft).

Volunteering & Personal Projects

- **Fundación África Directo** (since 2018): Volunteer in Uganda school project and support from Spain.
- **Fundación Proyecto Persona** (since 2021): Coordinated year-round activities and served as a camp monitor for children with disabilities.
- **Personal finance & expenses sharing app:** splitbilly.com
- **AI Fitness app:** Integrated pose detection models into Flutter for real-time fitness guidance.
- **Self-Balancing PID System:** Built a self-stabilizing propeller hinge using PID controllers.