

Ing. Pedro I. Aguilera

MECHANICAL ENGINEER · DATA SCIENTIST

Germany

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Multidisciplinary professional bridging data science, mechanical engineering, and music.

Languages

English		Professional Working (C1)
Spanish		Native (C2)
German		Professional Working (C1)

Education

WBS Coding School

Germany

DATA ANALYTICS BOOTCAMP

03/2025 – 06/2025

- Data cleaning, exploration, and visualization using Python and Pandas.
- SQL querying, joining, and modeling relational data.
- Interactive dashboards and reports with Tableau to support business decisions.
- Collaborative teamwork using Agile Methodologies and version control with GitHub.

freeCodeCamp

Remote

MACHINE LEARNING DEVELOPER WITH PYTHON

01/2021 – 04/2021

- 300+ hours of project-based work on 5 machine learning projects.
- Projects: NLP text classifier, image classifier, book recommendation engine, health cost regression model.

Universidad Central de Venezuela

Venezuela

MECHANICAL ENGINEER

08/2007 – 06/2017

- Thesis: "Design and construction of a prototype for transporting equipment for cycletourism," utilizing 3D modelling and finite element analysis (FEA).
- Elective courses: Mechatronics, Introduction to Robotics, Quality Control, Business Economics, Engineering and Society.

Experience

Theater in den Bergen

Ehrsberg, Germany

MUSICIAN

09/2025 – 10/2025

- Performed live music for *Ehrsberg ist Überall*, collaborating with actors, directors, and technical teams.
- Adapted musical arrangements for theater performances, ensuring artistic coherence and meeting production deadlines.

1st Flow Energy Solutions GmbH

Malterdingen, Germany

MECHANICAL DESIGNER / CONSTRUCTOR

07/2024 – 01/2025

- Designed flow plates for vanadium redox flow batteries (VRFB), focusing on stack optimization to enhance performance.
- Developed a VBA-based product data management (PDM) software integrated with SolidWorks for part numbering and classification.
- Completed specialized training in SolidWorks piping design to improve project accuracy and quality.

Ernst Knoll Feinmechanik GmbH

Umkirch, Germany

MECHANICAL DESIGNER / CONSTRUCTOR

06/2023 – 05/2024

- Development and constructive improvement of series components in the sports machinery division.
- Design and implementation of software solutions in the energy sector, including a communication interface for decentralized energy storage systems.
- Commissioning of communication interfaces on embedded Linux systems (RevPi Core).
- Source code management using GIT and technical documentation in Atlassian Confluence.

Medireha GmbH

Umkirch, Germany

ASSEMBLY WORKER

06/2021 – 06/2023

- Assembled medical devices aimed at restoring leg mobility, contributing to a daily production of up to 20 units.
- Inspected components and finished products according to testing plans to ensure functionality and safety.
- Managed material handling and initiated reorder processes when inventory levels fell below minimum stock.

South America

MUSICIAN (INDEPENDENT)

- Toured South America performing live music across various genres.
- Independent management of presentations, logistics, and international travel.

South America

12/2017 – 05/2021

Maquiriegos Esagar

SERVICE ENGINEER

- Design, installation, maintenance, and repair of automatic irrigation systems.
- Programming and adjustment of automatic systems to ensure efficient irrigation.
- Diagnosis and troubleshooting of irrigation systems, including valves, pumps, and controllers.

Acarigua, Venezuela

12/2016 – 12/2017

Projects

From Headlines to Headphones

DATA SCIENCE & NLP PROJECT

06/2025

- Investigation of the interplay between global events and musical success by integrating and analyzing data from large-scale events and music datasets between 1990 and 2024.
- Use of modern data processing, NLP, and embedding techniques to extract insights on how real-world events influence music popularity over time.

Soundguallee

POPSTEADY SKA

- Live performances, rehearsals, and studio recordings.

Freiburg, Germany

11/2023 – Present

Self-hosted Homelab

SELF-HOSTED HOMELAB / DOCKER INFRASTRUCTURE

2025 – Present

- Automated deployment and orchestration of containerized services via Docker Compose.
- Management of networks, volumes, reverse proxies, and service discovery for self-hosted services.
- Automated backups, monitoring, and rolling updates for highly available self-hosted infrastructure.

SmartSync

SMARTSYNC / DATA SYNCHRONIZATION

2024 – Present

- Shell-based synchronization tool for bidirectional sync between servers and storage backends.
- Supports incremental syncs, conflict resolution, bandwidth throttling, and fault recovery.
- Deployed for automated backups and multi-server data consistency in Homelab infrastructure.

Certifications

Data Analytics Bootcamp · WBS Coding School
Using Python for Automation · LinkedIn Learning
Statistics Foundations 1: The Basics · LinkedIn Learning
The Data Science of Experimental Design · LinkedIn Learning
Neural Networks and Deep Learning · Coursera / DeepLearning.AI
Building Your Career in Music: Developing a Brand · Coursera / Berklee
Pro Tools Basics · Coursera / Berklee
The Art of Music Production · Coursera / Berklee
Mindshift: Break Through Obstacles to Learning · Coursera
Successful Negotiation: Essential Strategies and Skills · Coursera / University of Michigan
Machine Learning Developer with Python · freeCodeCamp
Songwriting: Writing the Lyrics · Coursera / Berklee
Professional Recognition · Ingenieurkammer Baden-Württemberg
Life in Germany Test · BAMF

Skills

Design	Diseño conceptual, Design Thinking, System Design, Mechanical Design, Audio & Production
Mechanical Engineering	3D Modelling, FEM, CFD, Technical Drawing · SolidWorks, CREO Elements, FreeCAD
Data Science	Analysis & Visualization, Scripting, NLP, Machine Learning · Python (Matplotlib, Seaborn, Pandas, NumPy, spaCy, scikit-learn, TensorFlow, PyTorch), Tableau, Grafana, Docker, Git, Bash
Music & Audio	Theory, Production, Composition · Bass, Cuatro, Reaper, Ardour, Audacity, LMMS, MuseScore, DAW, RaySession, Live performance