

Juan Sebastian Mendez Hernandez

Electronic Engineer & MSc Music and Acoustic Engineering

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Professional Summary

Electronic Engineer and Master of Science in Music and Acoustic Engineering from Politecnico di Milano, combining rigorous engineering principles with creative problem-solving. Experienced in powering solutions with AI, specifically through the implementation of LLMs and Vector Databases. Driven by a first-principles approach to research, I seek to push the boundaries of AI capabilities in a challenging environment, delivering robust, scalable code and refining data foundations to create extraordinary value.

Work Experience

Data Science Intern

01/2025 – 10/2025

Musixmatch, Bologna, Italy

- Conducted comparative analysis between traditional DSP audio descriptors and semantic features from Large Language Models to evaluate performance in music retrieval tasks.
- Managed the training data lifecycle and implemented ChromaDB (vector database) to optimize semantic search accuracy and recommendation system performance.
- Systematized complex databases to ensure models were trained on clean, high-quality datasets, directly impacting the robustness of production-level music analysis tools.
- Fine-tuned and deployed LLMs using Hugging Face Transformers for specialized music NLP tasks, achieving higher accuracy on domain-specific benchmarks.

Co-founder & Technical Lead

04/2022 – Present

EtnoDJ, Remote, Colombia

- Founded a Colombian sound exploratory merging sonic heritage from diverse Colombian territories with bleeding-edge interactive technologies.
- Designed the user experience (UX/UI) in Figma and developed the full-stack of a web-based interactive audio mixing console using JavaScript, HTML, and CSS, implementing version control workflows with GitHub to ensure code scalability.
- Engineered an immersive audiovisual installation, integrating the web console with TouchDesigner to generate real-time, audio-reactive visual illustrations based on user interactions.
- Secured the 2025 National Stimulus for transmedia content project development granted from the Colombian Ministry of Culture, Arts and Knowledge, validating the project's technical innovation and contribution to digital heritage.

Bilingual Contact Center Supervisor

09/2019 – 06/2022

Teleperformance, Bogotá, Colombia

- Applied Lean Six Sigma and DMAIC methodologies to optimize team workflows, significantly improving operational effectiveness.
- Managed execution and priorities for a large team, ensuring strict adherence to performance metrics (KPIs) in a fast-paced environment.
- Conducted coaching and training sessions to develop technical and soft skills within the team.
- Developed interactive dashboards and presentations to present results and insights for cross-functional stakeholders.

University Teaching Assistant

02/2020 – 12/2020

Pontificia Universidad Javeriana, Bogotá, Colombia

- Assisted students in using laboratory equipment and digital devices for the Digital Systems Design course.
- Simplified complex computational logic and ALU concepts for students, demonstrating strong reasoning ability and clarity of thought.
- Supervised and evaluated class projects.

Education

MSc in Music and Acoustic Engineering

10/2025

Politecnico di Milano, Milan, Italy

- Digital Signal Processing for audio analysis and synthesis.
- Implementation of Machine Learning and Deep Learning algorithms for computer vision and audio projects.
- Development of applications and software solutions through diverse programming languages such as Python, JavaScript, React Native, HTML, CSS, P5.js.

BS in Electronic Engineering

03/2021

Pontificia Universidad Javeriana, Bogotá, Colombia

- Design and implementation of logic and analog circuits in PCB.
- Implementation of SQL for database design and management.
- Measurement and processing of signals acquired by sensors.
- Design and implementation of IoT solutions.

Diploma in Web Application Development

12/2020

Universidad Tecnológica de Pereira, Remote, Colombia

- Design and implementation of User Interface and Experience (UI/UX).
- Front-end and back-end development for web applications.
- Experience with Agile methodologies such as Scrum.

Areas of Expertise

- **Professional Skills:** Signal Processing | Data Analysis | Large Language Models | Computer Vision | UX/UI Design | Front-end Development | GitHub | Hugging Face | ChromaDB | Cross-functional collaboration | People leadership.
- **Technical Skills:** Python | SQL | JavaScript | React Native | HTML | CSS | C++ | Java | P5.js | Git | \LaTeX | MATLAB | Figma | Canva | TouchDesigner | SuperCollider | Processing | Ableton Live | Arduino.

Languages

- **Spanish:** Native
- **English:** Advanced (C1)
- **Italian:** Upper Intermediate (B2)