

IVÁN SOTILLO DEL HORNO

Software Engineer & AI Researcher

📍 Madrid, Spain | Open to Relocation

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EDUCATION

Universidad Autónoma de Madrid

Master's in Data Science

Madrid, Spain

Sep. 2024 – Sep. 2025

- GPA: 8.41/10. Highest Honors in Recommendation Systems.
- Thesis (10.0/10.0): automated exploration and profiling of conversational agents using LLMs and LangGraph.

Universidad Autónoma de Madrid

Bachelor's in Computer Science Engineering (Bilingual)

Madrid, Spain

Sep. 2020 – Jun. 2024

- GPA: 8.31/10. Highest Honors in Data Structures and Mobile App Development.
- Excellence Scholarships in 2nd and 4th year.

Northwestern Polytechnical University (Spring School)

Gray Systems Theory

Xi'an, China

Spring 2024

University of Helsinki (Erasmus+)

AI, Business, Algorithms

Helsinki, Finland

Aug. 2023 – Dec. 2023

EXPERIENCE

Researcher – SATORI-UAM / MISO Lab

Universidad Autónoma de Madrid

Dec. 2024 – Present

Madrid, Spain

- Designed and developed **TRACER**, a tool that uses LLMs and LangGraph to converse with chatbots, infer their functionalities, and generate DSL-based user profiles for systematic testing.
- Developed **Chatbot Dojo**, a full-stack web app (React, Tailwind, Django REST, Celery, PostgreSQL, Docker) that orchestrates TRACER and SENSEI so users can test their chatbots and inspect the results.

KEY PROJECTS

TRACER | Python, LangGraph, LLMs

2024 – 2025

- Designed and developed **TRACER**, an LLM-driven system that explores and models chatbot behaviour by conducting conversations, inferring supported functionalities, and synthesizing DSL user profiles for reproducible testing.

Drumscribe AI | PyTorch, Deep Learning for Audio

2024

- Designed a model that transcribes drumset audio into MIDI using mel spectrograms, a CNN feature extractor, and a bidirectional LSTM.
- Used dual heads for onset detection and velocity estimation for each drum element

U.D.I.N. | C#, WPF, Microsoft Word Automation

2025

- Windows desktop app for mechanical engineers that captures vehicle modification data and generates official Word documents for homologation.
- Used in production by professionals in the automotive sector (closed-source).

PUBLICATIONS

Automated Exploration and Profiling of Conversational Agents. ICTSS 2025, Cyprus. [doi:10.1007/978-3-032-05188-2_14](https://doi.org/10.1007/978-3-032-05188-2_14)

TECHNICAL SKILLS

Programming Languages: Python, JavaScript/TypeScript, Java, C, C++, C#, Kotlin, SQL, Bash, R, HTML/CSS, LaTeX

ML & AI: TensorFlow, PyTorch, Scikit-learn, LangGraph, NLP, LLMs, classical ML, Deep Learning

Web & Backend: React, Astro, Vue, Tailwind CSS, Django, Fast API, Celery, Docker, PostgreSQL

Tools: Git, Linux, Jupyter, VS Code, Vim, Obsidian

Languages: Spanish (Native), English (Bilingual), French (Conversational)