

Julián Marrades

Founding Engineer · Software, Data & AI · Building Things That Matter

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I build systems that are fast, scalable, and meaningful. From molecular force-field libraries and ML pipelines to ambient AI architectures, IoT hardware protocols, and open-source tooling. I moved across Europe for the work that challenged me most. Then I left a comfortable senior role to go build something real. I am building now.

EXPERIENCE

Founding Engineer & Research Lead | Stealth Ambient AI Startup Sep 2025 - Mar 2026

Research & Architecture · Confidential

- Designed and built the technical architecture and research direction of an ambient AI platform from the ground up, working alongside the CTO across the full stack.
- Defined two core research problems for the AI layer: selective intervention (when to act based on context and prior feedback) and memory consolidation (how ephemeral context becomes durable knowledge).
- Explored physics-based approaches to knowledge graph simulation, applying computational methods from scientific computing to semantic memory structures.
- Led the investor pitch deck end-to-end: problem framing, three-moat differentiation strategy, market sizing, and go-to-market roadmap.

AI Specialist | MetaNautical Sep 2025 - Dec 2025

Nautical tech startup · Mediterranean · Automation & engagement

- Built automated data-refresh pipelines to keep operator listings current: voice outreach via ElevenLabs + SIP trunk, WhatsApp Business templates, and MCP server integrations.

Senior Data Engineer | Signaturit Sep 2023 - Aug 2024

Legaltech · Valencia, Spain

- Saved the firm €50k+ per year by optimizing cloud pipelines; reduced daily execution from 14 hours to less than 1.
- Built ML churn/downsell detection models and a CI/CD-versioned data lakehouse integrating 10+ sources via AWS Lambda, Airflow, and ETL.
- Together with the analysts, established BI dashboards and process monitoring, improving reliability across the group.

Research Software & Data Engineer | Freelance Sep 2022 - Aug 2023

Uppsala University · University of València · Prehistory Museum of València · Dédalo · Signaturit

- Built a D3.js statistical analysis toolkit (violin plots, KDE, box plots) for monedaiberica.org, later published as peer reviewed research.
- Modernized VirtualChemistry web platform (Angular + Express); migrated Nutshell CRM to Salesforce and designed a data lakehouse architecture.

Research Software Engineer | Van der Spoel Lab, Uppsala University Aug 2021 - Jul 2022

Molecular force fields · Uppsala, Sweden

- Refactored the Alexandria Chemistry Toolkit (ACT), a high-performance C++ molecular force-field library, into clean modular architecture.
- Implemented genetic algorithms and MCMC methods for force field parameterization. Contributed as 2nd author on the resulting publication in Digital Discovery (RSC).

Junior AI Researcher | APG Groeifabriek Sep 2018 - Jul 2020

Pension fund · Innovation Lab · Heerlen, The Netherlands

- Built a call center simulator and stochastic optimizer reducing staffing costs while maintaining SLAs. It is the foundation for opencct, an open-source Rust library for general-purpose call center modeling and staffing optimization (work in progress).
- Developed game theory models for improving customer satisfaction in pension and retirement services.

OPEN SOURCE & RESEARCH

pyfect | Python · Creator & Maintainer · Active
A Python-native effect system for modern async codebases. Explicit error handling as values, structured concurrency, and composable sync/async execution without turning Python into something unrecognizable. Available on PyPI and conda-forge. In active development.

opencct | Rust · Creator
Open-source Rust library for general-purpose call center modeling and staffing optimization. Born from the APG simulator and generalized into a toolkit anyone can use. Work in progress.

Evolutionary ML of Physics-Based Force Fields
Digital Discovery (RSC), 2025, vol. 4, pp. 1925–1935 · 2nd of 9 authors · doi.org/10.1039/D5DD00178A

AlexandriaChemistry/ACT | C++ · Contributor
High-performance molecular force field library. Architectural refactor + ML/optimization implementations. ★15

NCMMLProject | Python · Co-creator
Centralized cooperative MARL with Deep Q-Networks. MSc group project at Uppsala with public report and an educational video that reached 6,400+ views. ★13, 6 forks.

New Developments in the MIB. Analytics Package.
Bulgarian Numismatic Journal, 2025 · Co-author (with Prof. Ripollès, UV) · DOI: 10.5281/zenodo.18071922

EDUCATION

MSc Computational Science
Uppsala University · 2020-2022
Numerical & mathematical modeling, scientific computing

BSc Data Science & AI
Maastricht University · 2017-2020
Summa Cum Laude · Honours+ Research Grant winner

TECHNICAL STACK

Languages	Python · TypeScript · JavaScript · C/C++ · Rust · SQL · Java
Data & Infra	AWS · IaC · Docker · CI/CD · Apache Airflow · ETL · PostgreSQL · pgvector · RabbitMQ
AI / ML	Evolutionary Algorithms · ML Pipelines · LLM Integration · RAG · Vector Embeddings · Optimization
Hardware & IoT	Raspberry Pi · Bluetooth Audio · Embedded Prototyping · Buf / protovalidate
Web & APIs	Angular · Express · FastAPI · D3.js · REST · gRPC · MCP Servers
Voice & Comms	ElevenLabs · Twilio · SIP Trunk · WhatsApp Business API
Other	Scientific Computing · Parallel Programming · Performance Optimization · System Architecture · Git

BEYOND WORK

DEGRADAO | Band Founder & Manager
Orchestral-scale sound with a small ensemble. Handle all operations: bookings, contracts, live tech. Session guitar services professionally.

Teaching & Community
YouTube educator @jCodingStuff with technical AI and software content, including a 17 min reinforcement learning video with 6,400+ views. Built a custom molecular physics simulation engine (Langevin dynamics, Morse bonds, Coulomb forces) on top of 3Blue1Brown's manim; originally planned for a video on molecular dynamics that never happened. Open-source personal website at marrad.es. Graphic design. Teaching Assistant at Uppsala University.

Languages: English, Spanish & Catalan (native) · French (basic)