MARIANA EMAUZ VALDETARO

R&D Software Engineer | Independent Researcher
Lisboa, Portugal | mvtta@proton.me | marianas.life | mvtta.github.io | +351967409418

Multidisciplinary researcher and technical professional with expertise in telecommunications, machine learning, and complex systems. Combining analytical rigor with creative and critical thinking to develop novel approaches to address complex problems while bridging technical implementation with theoretical frameworks across disciplines.

Skills

Technical: 5G Technologies, Digital Signal Processing, C/C++, Machine Learning, Generative AI, Complex Systems Modeling, Software Architecture, Python, Julia, HG, TensorFlow, Scikit-learn, Openmm, MDAnalysis, Py3Dmol, Amber14-all, QMD, SentenceTransformer, Dash, TfidfVectorizer, LatentDirichletAllocation, FrameSemanticTransformer, Spacy, Umap, Torch, Tqdm, NLTK, BERT, Flask

Development:
Prototyping, System Design, Unit/Integration Testing, Interface Adaptation, Code Optimization
Research:
Quantitative Methods, Experimental Design, Literature Review, Interdisciplinary Synthesis
Communication:
Technical Writing, Public Speaking, Workshop Facilitation, Requirements & Documentation
Leadership:
Strategic Planning, Team Coordination, Community Building, Stakeholder Management
Languages:
English (Fluent), Portuguese (Native), Spanish (Intermediate), French (Basic)

Highlight

Date	Job	Term
April 2025 - May 2025	GEN AI MVP Commission	Self-Employed
Dec 2024 - April 2025	Senior Consultant Technology & AI	Self-Employed
Oct 2024 - Present	Board Member & Vice President @ SEMF	Pro-Bono
April 2023 - Oct 2024	R&D Software Engineer 5G Physical Layer	Without Term
May 2022 - April 2023	Applied R&D Software Engineer Cloud and Networks	Fixed Term

PROFESSIONAL EXPERIENCE

GEN AI MVP Commission: Multi-Agent GenAI Onboarding MVP for Startup X

April 2025 - May 2025

- Roles: Solo developer, Head of Engineering, PM
- Decided and Designed the entire infrastructure, presented and documented the process
- Deployed the setup using minimal memory on the VMs (each part was running separately) to reduce unnecessary costs (Small Batch Setup Scripts)
- Gen AI DevOps: Connected multiple services and wrote scripts to automate the process for maximum flexibility when scaling / adapting to market needs
- Stack: Python, Flask, Firebase, OpenAI, Apollo, Docker, Multi-VM deployment, Agent Orchestration
- Product: Multi-agent onboarding conversational app, API integrations (OpenAI, Apollo, Firebase) on a website with login / register functionality and main product dashboard
- Created a class for agents wrapping the `pydanticai` agent with Memory (short and long) and State (agent state) classes.
- classes and agent flow were fully documented for next developer teams to scale the MVP
- This served as a custom alternative to Langraph and Langsmith.
- Classes and Agent flow were fully documented for next developer teams to scale the MVP

SEMF: Vice President | Society for Multidisciplinary and Fundamental Research

October 2024 - Present: Technology and Infrastructure Office

- Collaborate on strategic initiatives for advancing fundamental research across conventionally disparate fields of inquiry
- Oversee community development and engagement initiatives
- Participate in community live streams reporting on internal progress and promoting multidisciplinary discussions
- Coordinate interdisciplinary events including the yearly interdisciplinary school
- Collaborate on organizational partnerships and funding initiatives
- Maintain and develop SEMF's technical infrastructure alongside the secretary and manager of operations

Independent Senior Consultant | Machine Learning & GenAI

January 2024 - Present

- Advise organizations on implementing and adopting AI systems and machine learning solutions
- Develop custom frameworks for data processing and analysis
- R&D custom generative AI pipelines for workflow automation
- Design novel technical architectures for complex data processing systems
- Bridge technical teams with non-technical stakeholders to ensure alignment on project goals

Nokia: Embedded Software Engineer - Physical Layer - R&D - 5G (Contract)

April 2023 - December 2024

- Conduct digital signal processing and code optimization for 5G systems
- Perform feasibility studies of 3GPP 5G features and draft technical requirements
- Plan and organize work as part of global software development teams
- Implement features using C/C++ for telecommunications infrastructure
- Design system architecture and conduct various testing levels (unit, component, integration)
- Perform interface adaptation, testing, and troubleshooting
- Execute SW co-verification with Matlab models and build time optimization
- Create documentation and advocate for software lifecycle best practices

Nokia: Applied R&D Engineer (Full-time)

February 2022 - April 2023

- Contributed to research and development initiatives for telecommunications technology
- Participated in early-stage development of 5G technologies
- RAN Infrastructure and Product Development

Independent Researcher | Agency & Multi-scale Interaction Dynamics

2023 - Present

- Investigate theoretical frameworks for generalizing interaction patterns across temporal and spatial scales
- Develop computational models for analyzing complex social and cognitive systems
- Writing research literature

Independent Researcher | Computational Linguistics & Machine Learning

2023 - Present

- Investigate theoretical frameworks for generalizing meaning development
- Develop computational models for analyzing polysemic terms across interdisciplinary academic publications
- Participate in interdisciplinary research projects at the intersection of linguistics and machine learning

Colisão Studios: Founder and Manager R&D Studio

February 2018 - November 2021

- Led a Zero-to-One Innovation Studio operating at the intersection of technology, art, and natural resources
- Developed novel technical solutions and creative applications
- Managed a Multidisciplinary Team of 200
- Lead an R&D footwear manufacturing project with biodegradable filament using 3D printing technology
- Re-contextualized Portuguese Marble Stone for the high-end export market resulting in an increase of ~32% and for the first time, surpassing the previous boundary of 400million

Newlife.ai: External Funding Coordinator

May 2020 - November 2020

- Coordinated funding initiatives for a Decentralized AI-driven social network
- Worked on strategic alignment for Portuguese based partnerships

reboot.fashion: Founder

November 2019 - March 2020

- Created a decentralized fashion system addressing supply-chain complexities through smart contracts
- Developed on-chain platform/marketplace connecting independent and MSNE players
- Implemented transparency solutions for fashion industry value chain

---

EDUCATION

SEMF Interdisciplinary School

2024 Intellectual cross-pollination by bringing together researchers, practitioners, students and creators from diverse areas of expertise that share a common vision on fundamental questions.

- Beyond the Nyquist Sampling Theorem
- Notions of Structure in Mathematics
- The Evolution of Biological Complexity
- Computational Foundations of Everything

Johns Hopkins University

Mooc in Neuroscience and Neuroimaging Specialization

- Neuroanatomy & Neuroimaging • Experimental design • Imaging techniques
- Certificates: Certificate 1, Certificate 2, Principles of fMRI 1

Icahn School of Medicine at Mount Sinai

Systems Biology and Biotechnology Specialization

42 School - 42 Lisboa

A private institution of higher education in computer science opened in Paris in 2013. The school does not have any professors and is open 24/7. Students are trained through peer-to-peer pedagogy "Peer learning", and project-based learning.

- Focused on: Software Engineering and Computer Science Imperative programming in C, Object-Oriented Programming in C++, Data Structures & Algorithms, Concurrent programming, Network programming, Systems administration, Graphics programming

- Projects

Bachelor in Management and Corporate Communication

ISCEM, Lisbon Portugal 2015

Bachelor of Arts in Semiotics and Visual Culture

IADE, Lisbon Portugal 2008

VOLUNTEER EXPERIENCE

Katefriends

April 2022 - Present - Volunteer in animal welfare, focusing on fostering and rehabilitation of rescued greyhounds - Support transition of animals until they find permanent homes

A Avó veio Trabalhar (Grandma Came to Work)

February 2015 - April 2019

- Community volunteer for intergenerational creative hub in Lisbon
- Helped build social and emotional bonds within local community
- Supported program enabling elderly people to participate in creative activities