

Mariona Jaramillo Civill

PH.D. STUDENT

Boston, Massachusetts

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About

Ph.D. student in Computer Engineering at Northeastern University, advised by Prof. Pau Closas. My research develops statistical and algorithmic foundations for reliable machine learning in distributed and uncertain environments, with emphasis on Bayesian inference and federated optimization for GNSS security.

I hold dual Bachelor's degrees in Mathematics and Computer Science from CFIS, a selective high-performance program at the Polytechnic University of Catalonia (UPC), where I built a strong foundation in probability theory, statistical modeling, optimization, and deep learning.

Education

Northeastern University

Boston, Massachusetts

PH.D. STUDENT IN COMPUTER ENGINEERING

Sep 2024 – Dec 2028 (expected)

- **Research interests:** Probabilistic Machine Learning, Federated Learning, Deep Learning, Jamming Interference Mitigation, GNSS Signal Processing
- **Advisor:** Prof. Pau Closas

Northeastern University

Boston, Massachusetts

M.S. IN ELECTRICAL AND COMPUTER ENGINEERING

Sep 2024 – May 2026 (expected)

- **Concentration:** Computer Vision, Machine Learning and Algorithms

Northeastern University

Boston, Massachusetts

RESEARCH VISITING SCHOLAR

Oct 2023 – May 2024

- Thesis supervised by Prof. Deniz Erdoğan on Bayesian inference and RNNs for Retinopathy of Prematurity detection
- Recipient of the **Best Thesis Award in Computer Science** at UPC, out of 300+ students

Polytechnic University of Catalonia (UPC), Faculty of Mathematics and Statistics (FME)

Barcelona, Spain

B.S. IN MATHEMATICS

Sep 2019 – May 2024

Polytechnic University of Catalonia (UPC), Faculty of Informatics of Barcelona (FIB)

Barcelona, Spain

B.S. IN COMPUTER SCIENCE ENGINEERING

Sep 2019 – May 2024

Publications and Preprints

- [5] Mariona Jaramillo-Civill, Peng Wu, Pau Closas. "DPMM-CFL: Clustered Federated Learning via Dirichlet Process Mixture Model Nonparametric Clustering". *Under review*, submitted to *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. 2026.
- [4] Mariona Jaramillo-Civill, Luis González-Gudiño, Tales Imbiriba, Pau Closas. "Bayesian Jammer Localization using Log-linear Mixture of Experts with CNN and Pathloss Models". *Under review*, submitted to *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. 2026.
- [3] Luis González-Gudiño, Mariona Jaramillo-Civill, Pau Closas, Tales Imbiriba. "Active Jammer Localization via Acquisition-Aware Path Planning". *Under review*, submitted to *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. 2026.
- [2] Leatile Marata, Mariona Jaramillo-Civill, Tales Imbiriba, Petri Välisuo, Heidi Kuusniemi, Elena Simona Lohan, Pau Closas. "Trends and Challenges in Next-Generation GNSS Interference Management". *Under review*, submitted to *IEEE Aerospace and Electronic Systems Magazine*. 2025.

[1] Mariona Jaramillo-Civill, Peng Wu, Andrea Nardin, Tales Imbiriba, Pau Closas. "Jammer Source Localization with Federated Learning". In: *Proceedings of the IEEE/ION Position, Location and Navigation Symposium (PLANS)*. 2025. **[Oral Presentation, nominated for Best Paper Award]**.

Talks

Apr. 2025. **Jammer Source Localization with Federated Learning**, *IEEE/ION Position, Location and Navigation Symposium (PLANS)*, Salt Lake City, Utah, USA.

Experience

Albora Technologies

Barcelona, Spain

ML AND GNSS ENGINEER INTERN

Jun 2024 – Aug 2024

- Developed a robust outlier detection algorithm for RTK GNSS positioning using Kalman filtering and RTKLIB, improving smartphone navigation accuracy with Google Smartphone Decimeter Challenge datasets
- Delivered a project within the Neuropuls initiative, part of the **European Union's Horizon Europe** program, focused on neuromorphic technology for jammer classification in GNSS bands using machine learning

Indaru

Barcelona, Spain

DATA ANALYST AND SOFTWARE DEVELOPER INTERN

Jul – Sep 2022, Sep 2023

- Built and designed a data-driven marketing optimization app using R and Shiny, enabling advertisers to maximize budget allocation efficiency. Deployed backend services on dedicated servers for live analytics

Wikiloc Outdoor Navigation

Girona, Spain

WEB DEVELOPER INTERN

Jun 2021 – Sep 2021

- Developed static personalized maps on the backend team using NodeJS, VueJS, and JavaScript

Accomplishments

Y Combinator

San Francisco, California

AI STARTUP SCHOOL PARTICIPANT

Jun 2025

- Selected to attend the prestigious **2-day AI Startup School** hosted by Y Combinator
- Engaged with industry leaders from leading AI organizations on frontiers including AGI, LLM scaling limits, and AI agent orchestration, while networking with YC founders and early-stage AI startup teams

Nova Talent

Madrid, Spain

TOP 10 COMPUTER SCIENCE AWARDEE, NOVA 111 STUDENT LIST

Mar 2025

- Recognized among the **top 10** students in **Computer Science** in **Spain**, as part of the Nova 111 Student List selecting the 111 most promising students **under 25** nationwide

Faculty of Informatics of Barcelona (FIB), Polytechnic University of Catalonia (UPC)

Barcelona, Spain

FIB ALUMNI PRIZE FOR BEST BACHELOR'S THESIS

Nov 2024

- Recipient of the **Best Thesis Award in Computer Science**, granted by the Faculty of Informatics of Barcelona (FIB) Alumni Association at the Polytechnic University of Catalonia (UPC), **awarded among more than 300 students**

CFIS, Polytechnic University of Catalonia (UPC)

Barcelona, Spain

FELLOWSHIP RECIPIENT

Sep 2019

- Awarded a fellowship to study at the Interdisciplinary Higher Education Center (CFIS), a selective program offering dual bachelor's degrees at the Polytechnic University of Catalonia (UPC). Selected among the **top 30 out of 300 applicants in Spain**

PAU Catalan University Entrance Exams

Catalonia, Spain

TOP 6 RANKING OUT OF 30,000

Jun 2019

- Scored **9.7/10** in the University Entrance Exams (PAU), ranking **6th out of 30,000** students in Catalonia

Weizmann Institute of Science

Rehovot, Israel

RESEARCH SCHOLAR, INTERNATIONAL SUMMER SCIENCE INSTITUTE

Jul 2018

- Awarded a scholarship to conduct research under Dr. Aviv de Morgan at the **Weizmann Institute of Science**. Completed a thesis titled *"Studying the Effect of GTSF1 on Chromatin Changes in Acute Myeloid Leukemia"*

International Baccalaureate (IB) and CiMs+Cellex Program

Girona, Spain

FELLOWSHIP RECIPIENT

Sep 2017 – Jun 2019

- Awarded a full fellowship by Fundació Cellex as one of **24 students out of 600 applicants** across Catalonia to complete the **International Baccalaureate (IB)** with Higher Level Mathematics and Physics

Institute for Research in Biomedicine (IRB) and Fundació Catalunya La Pedrera

Barcelona, Spain

RESEARCH SCHOLAR, CRAZY ABOUT BIOMEDICINE AND YOUTH AND SCIENCE PROGRAMS

2017 – 2019

- **Top 50 out of 1,000 Catalan students** awarded a competitive research scholarship (Youth and Science Program)
- Completed research in cell and computational biology, and structural chemistry at Institute for Research in Biomedicine (IRB)

Skills

Languages: Catalan (Native), Spanish (Native), English (Proficient)

Programming: Python (PyTorch, NumPy, Scikit-learn), C/C++, R, MATLAB, ROS, Java, SQL, JavaScript

Machine Learning: Deep Learning, Neural Networks (CNNs, RNNs), Probability and Stochastic Processes, Federated Learning, Bayesian Inference, Variational Inference, MCMC sampling

GNSS Signal Processing: Kalman Filtering, State-Space Models, Sensor Fusion, Jammer Localization and Classification, RTK GNSS Positioning

Extracurricular Activities

Road Cyclist

2021–2023

Massi Tactic Academy and Catema.cat — Winner of Catalan Road Cycling Cup U23 2022

Track and Field Athlete

2010–2021

Esportiu Penedès — Qualified for the Spanish Track and Field Championship (2015, 2016, 2017, 2020)