

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 focuses on statistical machine learning together with federated learning to develop privacy-preserving, uncertainty-aware, and personalized models across heterogeneous clients, with current work on personalization through clustered federated learning. I also apply these methods to interference localization in GNSS.

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)