

# ARIEL GUERRA-ADAMES

Doctoral Researcher in AI/ML | LLMs · Fairness · Healthcare AI

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## Research Highlights

- **Best Paper Award** – ML4H 2024 (Impact and Society Track) – Vancouver, Canada
- **Featured on France Culture “Avec Sciences”** – French national public radio science program (Dec 2025)
- Developed counterfactual LLM framework detecting gender bias in **150,000+ clinical records** across 2 countries
- Research impact: Findings informing national clinical guidelines; **200,000+ affected patients/year** in France
- **9+ peer-reviewed publications** in ML4H, JMIR AI, IEEE Access; collaboration with MIT/Harvard researchers

## Education

### Université de Bordeaux / Inria / INSERM

September 2024 – Present

*PhD in Medical Informatics & Public Health*

*Bordeaux, France*

- Thesis: LLMs, optimal transport theory, and causal inference for detecting implicit biases in emergency medicine
- Funded by Digital Public Health Graduate Program doctoral grant
- Teaching Fellow: Courses on LLMs for EHR and object-oriented programming (64 hrs/year)
- Collaborator on TARPON (AI-based national trauma observatory – Health Data Hub France)

### Université de Lyon / Université Jean Monnet

September 2022 – August 2024

*MSc in Computer Science – Machine Learning & Data Mining*

*Saint-Étienne, France*

- **Rank: 2/17**, Distinction “Très Bien” (Highest Honors)
- Focus: ML algorithms, NLP, computer vision, data mining

### Universidad Tecnológica de Panamá

January 2016 – October 2021

*BEng in Telecommunications Engineering*

*Panama City, Panama*

- **Thesis grade: 100/100** – Brain-computer interface using EEG signal processing with ML

## Research Experience

### AHeaD Team, Bordeaux Population Health (INSERM/INRIA)

September 2024 – Present

*Doctoral Researcher – AI Fairness & Healthcare*

*Bordeaux, France*

- Leading development of counterfactual LLM framework for bias detection in clinical decision-making
- Fine-tuned transformer models (12B–27B parameters) on French & English clinical notes
- Validated methodology across 2 healthcare systems (France, USA) with reproducible results
- Working with clinicians to translate findings into actionable debiasing interventions

### Dept. of Preventive Medicine, Kyoto University

July 2025

*Visiting Researcher*

*Kyoto, Japan*

- Designed LLM-based companion app for sudden cardiac death prediction
- Collaborating on implementation using open-source LLM models

### Équipe AHeaD – INSERM/INRIA

February 2024 – August 2024

*M2 Research Intern*

*Bordeaux, France*

- Pioneered use of LLMs for bias detection in emergency triage
- Evaluated pre-trained LLMs in zero-shot and fine-tuned configurations on 72,000+ clinical notes

### Group on Adv. Tech. of Telecom. & Signal Processing (UTP)

January 2021 – August 2022

*Research Engineer*

*Panama City, Panama*

- NLP for sentiment analysis on **20M+ Spanish-language tweets** during COVID-19 pandemic
- Results published in IEEE Access and Int. Journal of Environmental Research

## Selected Publications

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\* = equal contribution

- **A Counterfactual LLM Framework for Detecting Human Biases: A Case Study of Sex/Gender in Emergency Triage**  
A. Guerra-Adames, M. Avalos-Fernandez, O. Dorémus, L.A. Celi, C. Gil-Jardiné, E. Lagarde. *arXiv:2511.17124*, 2025
- **Uncovering Judgment Biases in Emergency Triage: A Public Health Approach Based on LLMs**  
A. Guerra-Adames et al. *ML4H 2024, PMLR 259:420-439 – Best Paper Award (Impact & Society)*
- **Beyond Ethics: How Inclusive Innovation Drives Economic Returns in Medical AI**  
B. Unnikrishnan\*, A. Guerra-Adames\*, A. Adibi\* et al. *arXiv:2510.10338*, 2025
- **Harnessing Moderate-Sized Language Models for Patient Data De-identification in ED Records**  
O. Dorémus et al. (incl. A. Guerra-Adames). *JMIR AI 4(1):e57828*, 2025
- **Analyzing Spanish-Language Public Sentiment in the Context of a Pandemic: The Panama Case**  
F. Arias\*, A. Guerra-Adames\* et al. *Int. J. Environmental Research and Public Health*, 2022

## Media & Science Communication

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- **Radio Interview: France Culture “Avec Sciences”** – “Créer des IA médicales sans biais” (Dec 2025)  
*Featured on France’s premier national public radio science program discussing inclusive medical AI*
- **INSERM Press Release:** “Cognitive biases in healthcare: How generative AI could help improve treatment” (Feb 2025)
- **Invited Speaker:** “Comment l’IA Peut Débusquer les Biais de Genre” – IA & Néphrologie 2025, Paris
- **Workshop Organizer:** “AI and Health: Rethinking Medicine at the Human-Machine Frontier”  
*In collaboration with MIT Critical Data, PLOS Digital Health, and Bordeaux University Hospital*

## Technical Skills

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- **LLM/ML:** PyTorch, TensorFlow, Hugging Face Transformers, LoRA/QLoRA fine-tuning, Unsloth, vLLM
- **Models:** Experience fine-tuning encoder and decoder LLMs
- **Data:** Hadoop/Spark, SQL, clinical data processing (MIMIC-IV, hospital EHR systems)
- **Languages:** Python, R, C, MATLAB, LaTeX
- **Infrastructure:** Multi-GPU training, Ubuntu server administration
- **Natural Languages:** English (native), Spanish (native), French (C2), Japanese (JLPT N5)

## Awards & Scholarships

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- **2024:** Best Paper Award (Impact & Society) – Machine Learning for Health (ML4H) Symposium, Vancouver
- **2024:** Best Pitch Award – Manutech SLEIGHT Science Event #11, Saint-Étienne
- **2024:** 3-year Doctoral Grant – Digital Public Health Graduate Program, University of Bordeaux
- **2022:** Merit Scholarship – SENACYT (Panama) & French Ministry of Foreign Affairs for MSc studies
- **2019:** Research Internship Grant – SENACYT & UTP for international research experience

## References

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- **Jean-Michel Loubès** – Research Director, REGALIA Team, INRIA Bordeaux / Toulouse Mathematics Institute
- **Emmanuel Lagarde** – Research Director, AHeaD Team, INSERM / Bordeaux Population Health
- **Marta Avalos-Fernandez** – Associate Professor, University of Bordeaux / INRIA