

Leopoldo Julián Lechuga López

Second Year Ph.D. Candidate
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Website

Research Interests

My research is focused on improving the reliability of multimodal foundation models using model robustness and uncertainty quantification approaches for AI-driven decision-making and generative clinical applications.

Education

NYU Abu Dhabi (UAE) & NYU Tandon School of Engineering (USA) Doctor of Philosophy in Computer Science and Engineering Advisors: Prof. Farah E. Shamout & Prof. Tim G. J. Rudner	2023 — present
Université Paris Cité, France Double Master of Science in Mathematics and Computer Science MIDS, <i>with distinction</i>	2019 — 2021
Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico Bachelor of Science in Mechatronics Engineering, <i>with distinction</i>	2012 — 2016

Research Experience

New York University Abu Dhabi, UAE Graduate Research Assistant, <i>with Professor Farah E. Shamout</i> Full-time Research Assistant, <i>with Professor Farah E. Shamout</i> <ul style="list-style-type: none">- Critical analysis and replication of state-of-the-art methodology and findings.- Large-scale data processing of medical images, electronic health records, and clinical notes, from public and private datasets.- Development of novel uncertainty quantification methods in multimodal deep learning for healthcare.- Applications in radiology and clinical decision support systems.	09/2023 - present 01/2023 - 09/2023
Université Paris-Saclay, France Research Assistant, <i>with Professor Djemal Khalifa</i> <ul style="list-style-type: none">- Data processing of five open-source breast cancer mammography datasets.- Literature review on state-of-the-art classification methods for BIRADS scoring.- Implementation of deep learning classification methods for BIRADS scoring.	10/2021 – 12/2022
Kanazawa Institute of Technology, Japan Research Assistant, <i>with Professor Tomohito Yamamoto</i> <ul style="list-style-type: none">- Analysis and use of classification algorithms on PhysioNet/CinC Challenge 2016 heartbeat sounds dataset.- Developed an iOS augmented reality application to provide cardiovascular health pre-diagnostic insights.	01/2018 – 10/2018

Professional Experience

TotalEnergies, France Data Science Intern, <i>supervisor Emmanuel Le Borgne</i> <ul style="list-style-type: none">- Developed a data pre-processing package for outlier detection in solar energy grids.- Developed an application using aerial imaging for evaluating the placement of new solar panels.	04/2021 – 10/2021
H.A.L Development, Mexico Full Stack Software Engineer <ul style="list-style-type: none">- Performed a complete re-factoring of sopitas.com with Elixir and Polymer.- Developed backend services for a psychotherapy chatbot using IBM Watson and Golang.	2017 – 2018

Honors & Awards

Global PhD Fellowship New York University Abu Dhabi, UAE	2023-2027
Research Fellowship Consejo Nacional de Humanidades, Ciencias y Tecnologías CONAHCYT, Mexico	2021-2022
Research Fellowship Japanese International Cooperation Agency JICA, Japan	2018
Academic Merit Undergraduate Scholarship Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico	2012-2016

Teaching

Lecturer Analysis and Design of Experiments (undergraduate course taught in English) Instituto Tecnológico y de Estudios Superiores de Monterrey ITESM, Hybrid	2022
Teaching Assistant Introduction to Python Programming (undergraduate course taught in French) Université Paris-Saclay, France	01/2022 – 06/2022

Publications

- **L. Julián Lechuga López**, Shaza Elsharief, Dhiyaa Al Jorf, Firas Darwish, Congbo Ma, and Farah E. Shamout. [Uncertainty Quantification for Machine Learning in Healthcare: A Survey](#). *AHLI Conference on Health, Inference, and Learning CHIL*, 2025
- Shaza Elsharief, Saeed Shurrab, Baraa Al Jorf, **L. Julián Lechuga López**, Krzysztof J. Geras, and Farah E. Shamout. [MedMod: Multimodal Benchmark for Medical Prediction Tasks with Electronic Health Records and Chest X-Ray Scans](#). *AHLI Conference on Health, Inference, and Learning CHIL*, 2025
- Alejandro Guerra-Manzanares*, **L. Julián Lechuga López***, Michail Maniatakos, and Farah E. Shamout. [Privacy-preserving Machine Learning for Healthcare: Open Challenges and Future Perspectives](#). In *Trustworthy Machine Learning for Healthcare, TML4H. Lecture Notes in Computer Science*, vol 13932., pages 25–40. Springer, Cham, 2023

Under review:

- **L. Julián Lechuga López**, Tim G. J. Rudner, and Farah E. Shamout. [Uncertainty-Aware Multimodal AI for In-Hospital Mortality Prediction](#). *npj Artificial Intelligence*, 2025

Preprints:

- Ken G Zeng, Tarun Dutt, Jan Witowski, GV Kranthi Kiran, Frank Yeung, Michelle Kim, Jesi Kim, Mitchell Pleasure, Christopher Moczulski, **L. Julián Lechuga López**, et al. [Improving Information Extraction from Pathology Reports using Named Entity Recognition](#). *Research Square*, 2023

* indicates equal contribution/first co-authorship

Workshop Papers

- **L. Julián Lechuga López**, Tim G. J. Rudner, and Farah E. Shamout. [Informative Priors Improve the Reliability of Multimodal Clinical Data Classification](#). *Machine Learning for Health Symposium Findings ML4H*, 2023

Conference Abstracts & Research Posters

Uncertainty-Aware Multimodal AI for Respiratory Shock Detection Abstract & Poster, IEEE Engineering in Medicine and Biology Society Conference (EMBC) Copenhagen, Denmark	07/2025
Uncertainty-Aware Foundation Models for Trustworthy Chest X-ray Report Generation Poster, Doctoral Symposium AHLI Conference on Health, Inference, and Learning (CHIL) UC Berkeley, USA	06/2025
Uncertainty Quantification for Machine Learning in Healthcare: A Survey Poster, AHLI Conference on Health, Inference, and Learning (CHIL) UC Berkeley, USA	06/2025
Uncertainty-Aware Multimodal AI for Trustworthy Clinical Decision Support Abstract & Poster, Symposium on Artificial Intelligence in Learning Health Systems (SAIL) Puerto Rico, USA	05/2025
MedCertAIIn: Uncertainty-Aware Multimodal AI for Trustworthy In-Hospital Mortality Prediction Poster, AI Revolution in Healthcare Summit Dubai, UAE	02/2025
Informative Priors Improve the Reliability of Multimodal Clinical Data Classification Poster, Machine Learning for Health Symposium ML4H Findings Paper New Orleans, USA	12/2023

Academic Talks

MedCertAIIn: Uncertainty-Aware Multimodal AI for Trustworthy In-Hospital Mortality Prediction UAE Graduate Students Research Conference American University Sharja, UAE	04/2025
Improving the Future of Clinical Diagnostics NYUAD GradSlam 3 Minute Pitch Competition (Runner-up) NYU Abu Dhabi, UAE	10/2024
Open Source in Healthcare: Industry & Academia Bumblekite Machine learning Summer School in Healthcare and Biosciences ETH Zürich, Switzerland	07/2023
Privacy-Preserving Machine Learning for Healthcare: Open Challenges and Future Perspectives International Workshop on Trustworthy Machine Learning for Healthcare at ICLR Kigali, Rwanda	05/2023

Professional Service

Co-Organizer Poster Session, AI Revolution in Healthcare Summit, Dubai, UAE Clinical AI Lab Clinician Bootcamp, Abu Dhabi, UAE Third Bumblekite AI Summer School in Healthcare and Biosciences, Zürich, Switzerland	02/2025 11/2024 01/2023-08/2023
Reviewer AHLI Machine Learning for Health Symposium ML4H	10/2024

Languages

Spanish: Native	English: Proficient C1	French: Proficient C1
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