Leopoldo Julián Lechuga López

Ph.D. Candidate
Saadiyat Marina District, Abu Dhabi, UAE

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Website — Google Scholar

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) 2023 — present
Doctor of Philosophy in Computer Science and Engineering
Advisors: Prof. Farah E. Shamout & Prof. Tim G. J. Rudner

Université Paris Cité, France 2019 — 2021
Double Master of Science in Mathematics and Computer Science MIDS, *with distinction*

Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico 2012 — 2016
Bachelor of Science in Mechatronics Engineering, *with distinction*

Research Experience

New York University Abu Dhabi, UAE
Graduate Research Assistant, *with Professor Farah E. Shamout* 09/2023 - present
Full-time Research Assistant, *with Professor Farah E. Shamout* 01/2023 - 09/2023
- 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.

Université Paris-Saclay, France
Research Assistant, *with Professor Djemal Khalifa* 10/2021 – 12/2022
- 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.

Kanazawa Institute of Technology, Japan
Research Assistant, *with Professor Tomohito Yamamoto* 01/2018 – 10/2018
- 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.

Professional Experience

TotalEnergies, France
Data Science Intern, *supervisor Emmanuel Le Borgne* 04/2021 – 10/2021
- 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.

H.A.L Development, Mexico
Full Stack Software Engineer 2017 – 2018
- Performed a complete re-factoring of sopitas.com with Elixir and Polymer.
- Developed backend services for a psychotherapy chatbot using IBM Watson and Golang.

Honors & Awards

Global PhD Fellowship 2023-2027
New York University Abu Dhabi, UAE

Research Fellowship 2021-2022
Consejo Nacional de Humanidades, Ciencias y Tecnologías CONAHCYT, Mexico

Research Fellowship 2018
Japanese International Cooperation Agency JICA, Japan

Academic Merit Undergraduate Scholarship 2012-2016
Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico

Teaching

Lecturer
Analysis and Design of Experiments (undergraduate course taught in English) 2022
Instituto Tecnológico y de Estudios Superiores de Monterrey ITESM, Hybrid

Teaching Assistant
Introduction to Python Programming (undergraduate course taught in French) 01/2022 – 06/2022
Université Paris-Saclay, France

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 07/2025
Abstract & Poster, IEEE Engineering in Medicine and Biology Society Conference (EMBC)
Copenhagen, Denmark

Uncertainty-Aware Foundation Models for Trustworthy Chest X-ray Report Generation 06/2025
Poster, Doctoral Symposium AHLI Conference on Health, Inference, and Learning (CHIL)
UC Berkeley, USA

Uncertainty Quantification for Machine Learning in Healthcare: A Survey 06/2025
Poster, AHLI Conference on Health, Inference, and Learning (CHIL)
UC Berkeley, USA

Uncertainty-Aware Multimodal AI for Trustworthy Clinical Decision Support 05/2025
Abstract & Poster, Symposium on Artificial Intelligence in Learning Health Systems (SAIL)
Puerto Rico, USA

MedCertAIn: Uncertainty-Aware Multimodal AI for Trustworthy In-Hospital Mortality Prediction 02/2025
Poster, AI Revolution in Healthcare Summit
Dubai, UAE

Informative Priors Improve the Reliability of Multimodal Clinical Data Classification 12/2023
Poster, Machine Learning for Health Symposium ML4H Findings Paper
New Orleans, USA

Academic Talks

MedCertAIn: Uncertainty-Aware Multimodal AI for Trustworthy In-Hospital Mortality Prediction 04/2025
UAE Graduate Students Research Conference
American University Sharja, UAE

Improving the Future of Clinical Diagnostics 10/2024
NYUAD GradSlam 3 Minute Pitch Competition (Runner-up)
NYU Abu Dhabi, UAE

Open Source in Healthcare: Industry & Academia 07/2023
Bumblekite Machine learning Summer School in Healthcare and Biosciences
ETH Zürich, Switzerland

Privacy-Preserving Machine Learning for Healthcare: Open Challenges and Future Perspectives 05/2023
International Workshop on Trustworthy Machine Learning for Healthcare at ICLR
Kigali, Rwanda

Professional Service

Co-Organizer
Poster Session, AI Revolution in Healthcare Summit, Dubai, UAE 02/2025
Clinical AI Lab Clinician Bootcamp, Abu Dhabi, UAE 11/2024
Third Bumblekite AI Summer School in Healthcare and Biosciences, Zürich, Switzerland 01/2023-08/2023

Reviewer
AHLI Machine Learning for Health Symposium ML4H 10/2024

Languages

Spanish: Native **English**: Proficient C1 **French**: Proficient C1