

Leopoldo Julián Lechuga López

Second Year Ph.D. Candidate
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Research Interests

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

Education

New York University, USA Doctor of Philosophy in Computer Science and Engineering Advisors: Prof. Farah E. Shamout & Prof. Tim G. J. Rudner	2023 — Ongoing
Université Paris Cité, France Double Master of Science in Mathematics and Computer Science, <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, United Arab Emirates Graduate Research Assistant, <i>with Professor Farah E. Shamout</i> Research Assistant, <i>with Professor Farah E. Shamout</i> <ul style="list-style-type: none">- Data processing of NYUAD-SEHA mammography & ultrasounds datasets.- Literature review on privacy-preserving machine learning methods in healthcare.- Uncertainty quantification in multimodal deep learning for healthcare applications using MIMIC-CXR and MIMIC-IV datasets.	09/2023 - Ongoing 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 5 open-source breast cancer mammography datasets.- Literature review on state-of-the-art classification methods for BIRADS score.- Implementation of deep learning classification methods for BIRADS score.	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 , Hybrid	2022
Teaching Assistant Introduction to Python Programming (undergraduate course taught in French) University d'Évry Val d'Essonne , France	01/2022 – 06/2022

Publications

* indicates equal contribution/co-first authorship

1. **L. Julián Lechuga López**, T. 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
2. 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
3. Olga López Ríos and **L. Julián Lechuga López**. The impact of information and communication technologies on skills in remote education: a diversified approach to improve the assessment of competencies in higher education. In *Proceedings of the 2023 8th International Conference on Distance Education and Learning*, pages 21–29, 2023
4. 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 *International Workshop on Trustworthy Machine Learning for Healthcare*, pages 25–40. Springer, 2023
5. Olga López Ríos, **L. Julián Lechuga López**, and Gisela Lechuga. Bringing industry to the classroom through virtual reality: enhancing learning and the undergraduate experience. In *2021 7th International Conference on Education and Training Technologies*, pages 7–11, 2021
6. Olga López Ríos, **L. Julián Lechuga López**, and Gisela Lechuga López. A comprehensive statistical assessment framework to measure the impact of immersive environments on skills of higher education students: a case study. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 14:1395–1410, 2020
7. Olga López Ríos and **L. Julián Lechuga López**. Virtual reality and statistical thinking enhancement. In *2019 IEEE Integrated STEM Education Conference (ISEC)*, pages 367–370. IEEE, 2019
8. **L. Julián Lechuga López**, T Yamamoto, O López, and G Lechuga. New methods on image analysis, two applications: an augmented reality application for heartbeat sound analysis and a MRI brain injury image analysis. In *Journal of Physics: Conference Series*, volume 1229, page 012003. IOP Publishing, 2019

Talks & Presentations

MedCertAIIn: Uncertainty-Aware Multimodal AI for Trustworthy In-Hospital Mortality Prediction

AI Revolution in Healthcare Summit Poster Presentation, Dubai

02/2025

Improving the future of clinical diagnostics

NYUAD GradSlam 3 minute pitch, Abu Dhabi

10/2024

Informative Priors Improve the Reliability of Multimodal Clinical Data Classification

Machine Learning for Health Symposium ML4H Findings Paper, New Orleans

12/2023

Open Source in Healthcare: Industry & Academia

Bumblekite Machine learning Summer School in Healthcare and Biosciences, Zürich

07/2023

Privacy-Preserving Machine Learning for Healthcare:

Open Challenges and Future Perspectives

International Workshop on Trustworthy Machine Learning for Healthcare at ICLR, Rwanda

05/2023

Virtual Reality and Statistical Thinking Enhancement

Princeton University, New Jersey

03/2019

Augmented Reality Application for Heartbeat Sound Analysis

Kanazawa Institute of Technology-JICA, Kanazawa

10/2018

Automated control algorithm for inhabitable spaces using emotional domotics

Kanazawa Institute of Technology, Kanazawa

05/2018

Professional Service

Co-Organizer

3rd Bumblekite Machine Learning Summer School in Healthcare and Biosciences, Zürich

01/2023-08/2023

Languages

Spanish: Native **English:** Proficient C1 **French:** Proficient C1 **German:** Basic A2 **Japanese:** Basic N5
Arabic: Beginner