

# Adrián Garza Zapata

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## EDUCATION

### MSc Photonics - Erasmus Mundus Joint Master iPSRS

- Université Jean Monnet & University of Eastern Finland  
*Concentration: Photonics and Machine Learning*

France / Finland

September 2024 - September 2026 (Expected)

### Bachelor in Engineering Physics

- Tecnológico de Monterrey  
*Concentration: Photonics and Quantum Technologies*

Monterrey, México

August 2020 - June 2024

## SKILLS SUMMARY

- Programming:** MATLAB, Python, R, Julia
- Languages:** Spanish: Native, English: C1, French: Basic
- Simulation, Libraries & Tools:** Ansys Lumerical, Zemax, Pandas, Numpy, SKLearn, OpenCV, Jupyter, Git, Plotly, Dash
- Laboratory Skills:** Optical Alignment, Interferometry, Spectral Imaging, Structured Light and Polarization Optics
- Notable coursework:** Optical Engineering & Design, Laser Physics, Physical Optics, Digital Image Processing

## EXPERIENCE

### Research Intern - Functional Materials and Surfaces Group

Saint-Étienne, France

Laboratoire Hubert Curien

June 2025 - September 2025

Printed image inscription by laser processing in collaboration with TOPPAN Security.

- Developed a clustering framework for metasurface color reproduction, using Agglomerative Hierarchical Clustering with a custom color difference and laser parameter proximity metric.
- Improved clustering performance with an average 20% increase in convex hull volume and reduced cluster disconnectivity to 10%, enabling more accurate and reproducible color mapping.
- Created an interactive dashboard using the Dash framework to integrate all the clustering modules alongside interactive data visualizations.

### Tech Startup Intern - Data Engineering

Monterrey, México

Lanax - Monterrey

August 2023 - September 2024

Data infrastructure development for climate analytics.

- Utilized MySQL to create an extensive database of Mexico's historical climate data, using web scrapping and data cleaning techniques.
- Developed a robust API using Flask, enabling seamless extraction of data through user queries.
- Established end-to-end ETL data pipelines to source climate data, catering specifically to the requirements of clients' machine learning and artificial intelligence models.
- Alongside the team at Lanax, participated in 2024's [Ascendion Science Fair](#), where we secured 3rd place with our project [Mapping the future of smart farming](#) after presenting and discussing with several judges with expertise in data science and AI.

### Research Assistant - Photonics and Optics Group

Monterrey, México

Tecnológico de Monterrey - ITESM

August 2023 - December 2023

Design of a photon pair source for Optical Coherence Tomography based on SFWM.

- Received training for MODE and FDTD solvers in Ansys Lumerical as well as theoretical sessions in non-linear optics, waveguides, and photon generation methods from members of CICESE.
- Coded Lumerical scripts to generate different waveguide geometries and obtain the corresponding effective index for different optical modes.
- Maximized the photon pair bandwidth to improve application resolution using an automation script in MATLAB. The script evaluated parameters based on dispersion, group velocity and phase matching conditions.

## CERTIFICATIONS

- Data Analytics - Google:** Data Analytics Course offered by Google. The course taught the theoretical and practical aspects of Data Analytics, as well as tools such as R, Tableau and SQL. (2023)

## HONORS AND AWARDS

- Erasmus Mundus Joint Master (EMJM) Scholarship Recipient. Rank 1/165 (2024)
- Academic Excellence Scholarship Recipient at ITESM (2020)
- Graduated with Honors from Tecnológico de Monterrey (GPA: 95.57/100)