

EDUCATION

- **MSc Photonics - Erasmus Mundus Joint Master iPSRS** France / Finland
Université Jean Monnet & University of Eastern Finland September 2024 - September 2026 (Expected)
Concentration: Photonics and Machine Learning
- **Bachelor in Engineering Physics** Monterrey, México
Tecnológico de Monterrey August 2020 - June 2024
Concentration: Photonics and Quantum Technologies

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 [Ascension 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)