

# JOSELIN MALDONADO DE SANTIAGO

Ph.D. Candidate in Optical Science in Optics Research Center



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León de los Aldama, Guanajuato, México

## Academic Background

### PhD Candidate in Optical Science | Optics Research Center

2024-CURRENTLY ENROLLED

### Master's Degree in Applied Sciences | Science and Engineering Division University of Guanajuato Campus León.

2022-2024

- Thesis: System Design for the Analysis by Electrical Bioimpedance.

### Bachelor's Degree in Biomedical Engineering | Universidad Politécnica del Bicentenario

2018 - 2021

## Teaching and Mentoring Experience

### Tutor at Online Platform | Varsity Tutors

2024

- Microsoft Office Suite tutorials.

### Teaching assistant for the subject "Circuits Analysis" | University of Guanajuato, Leon Campus. Science and Engineering Division.

January - December 2023.

- Laboratory teaching.

### Mentor in the national program "Peraj-adopta un amig@"

2019 -2020

- Lesson planning activities
- Development of evaluation instruments.

## Research Experience

### PhD Candidate in Optical Science - Optics Research Center

2024 - Present

- Currently working in the area of digital interferometry, applying phase-shifting algorithms that allow obtaining the geometric profile of a surface, faster and more efficiently.
- Development of a high-resolution blind-phase retrieval technique using color fringe patterns. The main goal was to separate the color channels and to correct the detuning induced.
- Development of a technique to reduce the errors of geometrical distortion in the retrieved profile due to misalignment of the projectors and high slopes.

### **Master´s Thesis Student - Applied Science Program**

University of Guanajuato, Leon Campus. Science and Engineering Division | 2022-2024

- Development of an electronic system to measure BE containing the following features: Ability to inject different injection current values to obtain different impedance measurement ranges, to configure the injection signal at different frequencies, a bandwidth greater than 100 KHz, and to obtain an adequate voltage signal.
- Wrote and defended a thesis titled "Electrical Bioimpedance Analysis System Design".

## **Accredited Courses**

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**PROTON-Vive México International Certification | PROTON Certification.**  
2024

**Introduction to Globalization, Non-Formal Education and the Benefits of Skills Developed through International Mobility | PROTON Certification.**  
2023.

**Course in Design and Development of Medical Devices | College of Biomedical Engineers.**  
2020 -2021

**What are adverse incidents? How to participate in the technovigilance committee? | Clinical Engineering Training Center**  
2021

**Regulations, Application and Importance of Electrical Safety in times of COVID-19 | Clinical Engineering Education Center**  
2021

**Electrical Safety Parameters and Tests in Medical Equipment | Clinical Engineering Training Center**  
2021

## **Basic concepts of refrigeration | Proyectos Servicios y Climas del Bajío S.A. de C.V.**

2021

### **Participation in Congresses**

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#### **SPIE Photonics West | San Francisco, California.**

January 2025

Role: Author

High-resolution blind-phase retrieval technique for color interferometry

Presentation Type: Poster

#### **XIX Meeting on Women's Participation in Science | León, Guanajuato.**

September 2022

Role: Author

Characterization of the potential detection stage of bioimpedance equipment

Presentation Type: Poster

#### **International Congress on Technology Applied to Health Sciences | León, Guanajuato, Mexico.**

June 2022

Role: Author

Development of an analyzer for neonatal incubators in the intensive care area.

Presentation Type: Poster

#### **II Congress of Engineering and Physics Applied to Biomedicine (CIFAB) | León, Guanajuato.**

May 2022

Role: Author

Design and construction of an electrical bioimpedance equipment for application in the field of pulmonology.

Presentation Type: Oral Presentation.

#### **International Congress of Research and Innovation 2022 | Cortazar, Guanajuato.**

April 2022

Role: Author

Design of a two-wire electrical impedance equipment for clinical application.

Presentation Type: Oral Presentation.

## Publications

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- Maldonado, J., Paez, G., Servín, M., & Padilla, M. (2025, March). High-resolution blind-phase retrieval technique for color interferometry. In Quantitative Phase Imaging XI (Vol. 13329, pp. 146-149). SPIE. <https://doi.org/10.1117/12.3050883>
- López-Cacho, P.; González-Casillas, J., Ramírez-Quijas, M.; Cervantes-Guerrero, A.; Maldonado- De Santiago, J.; Ortiz-Benavides, A.; Zumaya-García, A. (2022). DESARROLLO DE UN ANALIZADOR PARA INCUBADORAS NEONATALES EN EL ÁREA DE CUIDADOS INTENSIVOS. En ACONTACS 2022. Actas del Congreso Nacional de Tecnología Aplicada a Ciencias de la Salud, Puebla, México 2(2022), 49-57. [https://www-optica.inaoep.mx/~tecnologia\\_salud/acontacs/articulos/revista/Vol-4-2022.pdf](https://www-optica.inaoep.mx/~tecnologia_salud/acontacs/articulos/revista/Vol-4-2022.pdf)
- Maldonado- De Santiago, J.; Cervantes-Guerrero, A.; Kashina, S; Balleza-Ordaz, J.M. (2022). Diseño y construcción de un equipo de impedancia eléctrica para la aplicación en el campo de neumología . En Congreso UCEC 2022. Memoria Congreso Internacional de Investigación e Innovación | Multidisciplinario, Cortazar, Guanajuato, México 4(2022), 4053-4067. [https://www-optica.inaoep.mx/~tecnologia\\_salud/acontacs/articulos/revista/Vol-4-2022.pdf](https://www-optica.inaoep.mx/~tecnologia_salud/acontacs/articulos/revista/Vol-4-2022.pdf)
- Cervantes-Guerrero, A.; Maldonado- De Santiago, J.; Kashina, S; Balleza-Ordaz, J.M. (2022). DISEÑO Y CONSTRUCCIÓN DE UN SISTEMA DE IMPEDANCIA ELÉCTRICA PARA SU APLICACIÓN EN EL CAMPO DE URODINAMIA. En Congreso UCEC 2022. Memoria Congreso Internacional de Investigación e Innovación | Multidisciplinario, Cortazar, Guanajuato, México 4(2022), 4068-4082. [https://www-optica.inaoep.mx/~tecnologia\\_salud/acontacs/articulos/revista/Vol-4-2022.pdf](https://www-optica.inaoep.mx/~tecnologia_salud/acontacs/articulos/revista/Vol-4-2022.pdf)

## Extracurricular Activities

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### Active Member of the SPIE Student Chapter

2023

- Student Chapter Officer: Treasurer.

### Active Member of the OPTICA Student Chapter

2023

- Student Chapter Officer: Treasurer.

### Volunteering in Kyselka, Czech Republic.

2023

- International project entitled "Get creative, paint cabins, drink Mattoni!". Renovation of cabins at Camp Ontario.

### Scientific Committee of the II Latin American School on Electrical Bioimpedance

June 2023

- Design and conduction of workshops.
- Academic and logistical support in face-to-face activities.

## Honors and Awards

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### Honorable Mention - Master's Degree in Applied Sciences

Science and Engineering Division University of Guanajuato Campus León - México, 2024.

### Highest GPA of the 6 academic programs - achelor's Degree in Biomedical Engineering

Universidad Politécnica del Bicentenario - 2022

## Languages

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- Spanish (Native language).
- English (567/TOEFL.ITP): Second language.
- German: Begginer.

## Skills

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- Teamwork.
- Adaptation to change.
- Electronic circuits.
- CNC operation for electronic circuits.
- Writing (Spanish and English).
- Self-taught.
- Planning.
- Research.
- Analytical skills.
- Programming languages: C, C# y C++.
- Softwares::
  - Arduino
  - AutoCAD
  - Matlab
  - LabVIEW
  - Microsoft Office Suite
  - Proteus
  - Aspire vectric
  - Solidworks
  - OriginLab