Carlos Simón Amador Izaguirre

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Education

Tecnológico de Monterrey (ITESM) **2020 – 2024**
B.S. in Biomedical Engineering Guadalajara, Jalisco, México
GPA: 92.4/100 | ∼3.9/4.0

Relevant Coursework

Design and Development in Neuroengineering | *Processing of Medical Images for Diagnosis* | *Analysis of Signals and Biomedical Systems* | *Analysis of Imaging Systems* | *Linear Algebra* | *Statistical Analysis* | *Engineering Modeling Using Dynamic Systems* | *AI in Medicine (HMS Audit)* | *Biomedical Engineering Seminar Series (HST Audit)*

Skills

Programming Languages: Python, SQL, Bash, MATLAB, R
ML/DL: PyTorch, TensorFlow, CNNs, segmentation, generative models
Imaging: MRI preprocessing, quality control (QC), harmonization, annotation, 3D medical imaging pipelines
Languages: Spanish (native), English (IELTS 8), German (A2)

Publications, Presentations and Posters

[1] You S, Gondova A, **Amador Izaguirre CS**, Tafoya-Milo G, Jeong S, Lee HJ, Tarui T, Rollins CK, Yun HJ, Grant PE, Im K. *Conditional deep generative normative modeling for fetal brain anomaly detection.* **NeuroImage**, 2025. | Journal

[2] You S, **Amador Izaguirre CS**, Tafoya-Milo G, Jeong S, Yun HJ, Grant PE, Im K. *Conditional Deep Generative Normative Modeling For Structural And Developmental Anomaly Detection In The Fetal Brain.* **ISMRM**, 2025. | Presentation

[3] You S, **Amador Izaguirre CS**, Jeong S, Yun HJ, Grant PE, Im K. *Deep generative anomaly detection for structural anomalies in fetal brain with ventriculomegaly.* **OHBM**, 2024. | Poster

[4] You S, Tafoya-Milo G, **Amador Izaguirre CS**, Jeong S, Yun HJ, Grant PE, Im K. *GA-informed VAE-GAN anomaly detection for fetal MRI.* **FNNDSC Symposium**, 2024. | Symposium

[5] You S, Tafoya-Milo G, **Amador Izaguirre CS**, Jeong S, Yun HJ, Grant PE, Im K. *Covariate-conditioned fetal MRI anomaly detection.* **MIT-MGB AI Cures**, 2024. | Conference Poster

Research Experience

Research Intern **Mar. 2024 – Jun. 2024**
Conceivable Life Sciences | *Dr. Adolfo Flores-Saiffe* | *Research & Computational Biology* *Guadalajara, Mexico*

- Led a 4-person team developing AI-assisted pipelines for gamete detection and segmentation in high-resolution microscopy images for IVF clinical workflows.
- Annotated and quality-controlled >450 microscopy images, establishing a standardized dataset for downstream modeling.
- Trained and benchmarked 9 transfer-learning architectures, quantifying performance across segmentation and detection tasks for embryo-quality assessment.
- Built a Python inference platform used internally for rapid prototyping of embryologist decision-support tools.

Research Intern **Jul. 2023 – Jan. 2024**
Boston Children's Hospital | *Dr. Kiho Im* | *FNNDSC* *Boston, MA, USA*

- Curated and preprocessed ∼50 fetal brain MRI volumes from four multicenter datasets, improving QC throughput and enabling downstream anomaly-detection experiments.
- Developed two deep-learning architectures (PyTorch) for fetal MRI anomaly detection; designed model components later used in multiple conference presentations and integrated into the baseline for the NeuroImage publication.
- Implemented an MRI hyper-resolution and semantic segmentation prototype to explore enhancement of small anatomical structures.

- Optimized preprocessing pipelines (bias-field correction, normalization, orientation harmonization), reducing variability across datasets used in a 4-month neuroimaging study.

Undergraduate Research Assistant **Aug. 2022 – Jun. 2023**
ITESM | *Dr. Rita Q. Fuentes-Aguilar* | *Advanced Cyberphysical Systems Lab* *Guadalajara, Mexico*

- Processed 1,526 biosignal recordings in Python for a brain–computer interface study.
- Designed and compared 6 ML models (TensorFlow/Scikit-learn) for muscle-signal analysis.
- Evaluated 4 preprocessing pipelines, producing recommendations adopted for a PhD dissertation.
- Led a 3-member research team, coordinating experiments and documentation.

Industry Experience

AI / ML Analyst **Jul. 2024 – Present**
Laboratorios Bagó del Perú | *Information and Communication Technology Management (ICT)* *Lima, Peru*

- Designed controlled experimental pipelines to evaluate LLM-based systems, ensuring reproducibility, dataset versioning, and structured benchmarking.
- Built Dockerized offline environments for controlled experiments and ablation testing across retrieval and generation components.
- Led a 3-person technical team focused on data curation, documentation, and experiment tracking across multiple evaluation cycles.

Projects

Optical Coherence Tomography for Pathological Classification | *Technical Volunteer* **Spring 2024**

- Standardized acquisition protocols and contributed to high-throughput QC for a 1,000-subject OCT dataset for pathological classification research.

Design of Grit-Related Biomarkers Experiment | *Research Project* **Spring 2024**

- Designed and executed an EEG study using an auditory stimulation paradigm; extracted neural biomarkers (frontal theta–beta ratio, parietal beta energy, etc.) using Python/MNE.

Evaluation of Channel Selection Methods for EEG MI Classification | *Research Project* **Spring 2023**

- Evaluated PCA-based and sequential channel-selection methods using the PhysioNet Motor Imagery dataset; trained MLP and CNN classifiers for reduced-electrode systems.

Image Processing Algorithm for Visible-Light CT | *Course Project* **Spring 2023**

- Implemented SNR and spatial-resolution estimation and regression-based reconstruction methods for a visible-light CT prototype.

Leadership

Bagó HealthTec 2026 **Oct. 2025 – Mar. 2026**
Lead Organizer | *Laboratorios Bagó del Perú* *Lima, Peru*

- Planning and coordinating a national healthtech initiative to identify high-impact biomedical innovation opportunities in Peru.
- Defining technical tracks, speaker selection pipeline, and strategic partnerships directly under the company's General Manager.

Generative AI Co-Creation Project **May 2025 – Jun. 2025**
Corporate Innovation Incubator | *Project Lead* | *Laboratorios Bagó del Perú* *Lima, Peru*

- Directed a 4-month cross-functional team to design, validate, and evaluate generative-AI decision-support tools.
- Led user research, requirement elicitation, prototyping, and experiment-driven iteration, resulting in greenlighting for 2025 organization-wide deployment.

WAVESENSE **Aug. 2022 – Jun. 2023**
Neuroscience Research Group | *Founding Member* | *ITESM* *Guadalajara, Mexico*

- Supported early operations, recruitment, and participation in neuroscience-focused hackathons and academic events.

Awards

2024 Summer ***HULT Prize*** | Selected 2nd Place
2023 Spring ***Harvard Medical School Intern*** | Selected research intern from 100+ applicants