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## EDUCATION

### UNIVERSITY OF CALIFORNIA, SAN DIEGO

*Ph.D. in Data Science*

**09 2024 — Present**

*San Diego, California, USA*

- GPA: 4.0/4.0.
- Research interests include responsible machine learning, data mining, and the application of artificial intelligence in clinical decision-making and scientific discovery.

### TECNOLÓGICO DE MONTERREY

*B.Sc. in Engineering Physics*

**08 2018 — 12 2022**

*Monterrey, Nuevo Leon, Mexico*

- GPA: 97.42/100 (Summa Cum Laude).
- Relevant coursework included Mathematical Methods I & II, Classical Mechanics, Statistical Mechanics, Quantum Mechanics I, Computational Physics I & II, and Solid State Physics.

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## RESEARCH EXPERIENCE

### GRADUATE STUDENT RESEARCHER / GENERATIVE MODELS FOR CLINICAL TIME SERIES

**01 2025 — Present**

*University of California, San Diego. Advisor: Professor Benjamin Smarr*

*San Diego, CA*

- Studying the use of generative AI for understanding the physiological features and their importance for recovery of COVID and long COVID.

### GRADUATE STUDENT RESEARCHER / SCIENTIFIC DISCOVERY WITH LLMS

**09 2024 — 12 2024**

*University of California, San Diego. Advisor: Professor Bradley Voytek*

*San Diego, CA*

- Utilized Neuromaps and NeuroQuery to integrate brain feature maps with semantic term associations, enabling meta-analytic insights into neuroscience data.
- Processed voxel-level data from Neuromaps and linked it to scientific text corpora, establishing region-specific relationships between brain features and published research.
- Explored predictive modeling strategies to map semantic terms onto brain regions, contributing to the development of a scientific discovery tool for neuroscience.

### DATA SCIENCE RESEARCHER / CLIMATE CHANGE

**01 2023 — 08 2024**

*ClimateAi - R&D. Advisor: Professor Carlos Hoyos, Professor Arik Tashie*

*San Francisco, CA (remote)*

- Post-processed CMIP datasets for climate analysis.
- Developed an infection rate dataset based on Gamma functions and temperature data.
- Implemented Principal Component Analysis (PCA) on sea surface temperature data to study correlations with precipitation in selected regions.

### RESEARCH ASSISTANT / WATER AVAILABILITY

**08 2022 — 12 2022**

*Tecnologico de Monterrey. Advisor: Professor Hector Medel*

*Monterrey, Nuevo Leon, Mexico*

- Investigated climate and social factors affecting water availability.
- Developed data augmentation strategies for enhancing climate data analysis.
- Employed data engineering techniques on climate datasets.

### RESEARCH TRAINEE / FETAL BRAIN AGE PREDICTION USING DEEP LEARNING NETWORKS

**08 2021 — 08 2022**

*FNNDS, Harvard Medical School. Advisor: Professor Kiho Im*

*Boston, MA*

- Processed raw Magnetic Resonance Imaging (MRI) data, including reconstruction and segmentation of fetal brains.
- Designed a deep learning-based fetal brain age prediction network using Convolutional Neural Networks (CNNs).
- Integrated an image quality assessment tool into our in-house data pipeline.
- Conducted statistical analysis for clinical trial evaluations.

### RESEARCH ASSISTANT / LOW COST 3D DIGITAL HOLOGRAPHY

**02 2021 — 08 2021**

*Tecnologico de Monterrey. Advisor: Professor Benjamín García*

*Monterrey, Nuevo Leon, Mexico*

- Deployed Gerchberg-Saxton algorithm in Julia.
- Designed a digital optic array to obtain the phase of digitally build 3D objects.

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## PUBLICATIONS

### Peer Reviewed Journal Articles

- Yun, H., Lee, H., You, S., Lee, J., **Aguirre-Chavez, J.**, Vasung, L., Lee, H., Tarui, T., Feldman, H., Grant, P., Im, K. (Under review). "Deviated Brain Age Prediction in Fetuses with Cerebral Ventriculomegaly". *Radiology: Artificial Intelligence*

### Conference Presentations

- Yun, H., **Aguirre-Chavez, J.**, Nagaraj, U., Feldman, H., Ou, X., Acheson, A., Lin, W., Grewen, K., Jones, H., Grant, P., Merhar, S., Im, K. (2023, July 22-26). "Altered brain development in fetuses with prenatal opioid exposure" [Conference presentation]. Organization for Human Brain Mapping, Montreal, Canada.
- Yun, H., Lee, H., Lee, J., **Aguirre-Chavez, J.**, Vasung, L., Rollins, C., Ortinau, C., Grant, P., Im, K. (2022, September 5-6). "Brain age prediction in fetuses with ventriculomegaly using a deep learning network with fetal brain MRI" [Conference presentation]. Fetal, Infant, and Toddler Neuroimaging Group, Paris, France. [FIT'NG abstracts 2022](#) [p. 41]

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## SKILLS

<b>Tools and Languages</b>	GCP, AWS, Freesurfer, Python, Scala, Julia, SQL, Docker, Git, MATLAB, Mathematica, $\LaTeX$ ,
<b>Relevant Libraries</b>	Xarray, Dask, Tensorflow, Keras, Numpy, Pandas
<b>Research</b>	AI in healthcare, Neuroscience, Climate Science, Mathematical modelling, Deep learning
<b>Communication</b>	Spanish (native), English (C1 - TOEFL IBT 112), French (DELFI B1)

## AWARDS

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### HONORABLE MENTION OF ACADEMIC EXCELLENCE

**12 2022***Tecnologico de Monterrey**Monterrey, Nuevo Leon, Mexico*

- Received an Honorable Mention for Academic Excellence, awarded to the top 5% of graduating students in each cohort. This distinction is the highest honor conferred during the graduation ceremony.

### TOP GPA STUDENTS

**12 2021***Tecnologico de Monterrey**Monterrey, Nuevo Leon, Mexico*

- Awarded to students with the top 2% highest GPA in the School of Engineering and Sciences.

### OUTSTANDING STUDENTS

**12 2021***Tecnologico de Monterrey**Monterrey, Nuevo Leon, Mexico*

- Recognized as one of the most distinguished students in extracurricular activities within the School of Engineering and Sciences.

### ACADEMIC TALENT SCHOLARSHIP

**08 2018 - 12 2022***Tecnologico de Monterrey**Monterrey, Nuevo Leon, Mexico*

- Awarded a merit-based tuition scholarship for B.Sc. in Engineering Physics studies at Tec de Monterrey.

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## TECHNICAL EXPERIENCE

### DATA SCIENTIST II

**01 2023 — Present***ClimateAi**San Francisco, CA (remote)*

- Developed object-oriented algorithms for post-processing climate datasets.
- Managed and reviewed source code modifications using Git.
- Utilized Dask and Xarray for efficient chunking and organization of datasets, optimizing data access.

### SOFTWARE ENGINEER / PLATFORM ENGINEERING

**08 2022 — 12 2022***Deal Engine**Miami, FL (remote)*

- Developed deep learning algorithms for Natural Language Processing (NLP).
- Managed and controlled source code versions using Git.
- Built, accessed, and maintained databases using SQL.

### SIMULATION INTERN

**08 2022 — 12 2022***Schneider Electric**Monterrey, Nuevo Leon, Mexico*

- Conducted static, quasi-static, and dynamic simulations of a cable modeled as a solid copper cylinder.
- Performed static, quasi-static, and dynamic simulations for cables composed of AWG6 gauge wires.

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## LEADERSHIP EXPERIENCE

### GENERATION LEADER / ENGINEERING PHYSICS ALUMNI

**12 2022 — Present***Tecnologico de Monterrey**Monterrey, Nuevo Leon, Mexico*

- Appointed as the Generation Leader by the 2022 Engineering Physics Alumni.
- Managing relationships between alumni and current students.

### PRESIDENT / SOCIETY OF ENGINEERING PHYSICS STUDENTS

**08 2020 — 08 2021***Tecnologico de Monterrey**Monterrey, Nuevo Leon, Mexico*

- Successfully fundraised over 10 scholarships for B.Sc. Engineering Physics students.
- Coordinated the 40th-anniversary celebration of the B.Sc. Engineering Physics program.
- Spearheaded the XXII International Physics Symposium, featuring notable speakers such as Nobel Prize laureate Dr. William Phillips (1997) and Dr. David Reitze.

### MCGILL UNIVERSITY

**07 2018 — 07 2018***Summer program**Montreal, Quebec, Canada*

- Participated in a leadership program focused on cross-cultural communication.

### PRESIDENT / EN ACCION POR LA EDUCACION (EAXLE)

**08 2017 — 08 2018***Civil Society**Morelia, Michoacan, Mexico*

- Established the civil society organization, En Acción por la Educación (EAXLE).
- Developed a study plan to integrate students from marginalized elementary schools.
- Secured sponsorships and contributions to provide scholarships for students to continue their education.