Jerjes Emiliano Aguirre Chavez

jerjesaguirre@gmail.com

+1 (831) 444 1105

EDUCATION

TECNOLÓGICO DE MONTERREY 08 2018 — 12 2022
B. Sc. Engineering Physics *Monterrey, Nuevo Leon, Mexico*

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

HARVARD UNIVERSITY 08 2021 — 12 2021
Auditing student *Boston, MA*

- Relevant Coursework: Quantum Mechanics II

RESEARCH EXPERIENCE

DATA SCIENCE RESEARCHER / CLIMATE CHANGE 01 2023 — **Present**
ClimateAi - R&D. Advisor: Professor Carlos Hoyos *San Francisco, CA (remote)*

- Post processed CMIP datasets for climate analysis.
- Developed an infection rate dataset based on Gamma functions and temperature datasets.
- Implemented PCA on sea surface temperature data to correlate with precipitation in selected regions.

RESEARCH ASSISTANT / NON-LINEAR FORECASTING MODELING 08 2022 — 12 2022
Tecnologico de Monterrey. Advisor: Professor Hector Medel *Monterrey, Nuevo Leon, Mexico*

- Adapted the Ising model to forecast social phenomena.
- Modelated Hamiltonian dynamics using social fields and nearest neighbor interaction.
- Applied data engineering methods on climate datasets.

RESEARCH TRAINEE / FETAL BRAIN AGE PREDICTION USING DEEP LEARNING NETWORKS 08 2021 — 08 2022
FNNDSC, Harvard Medical School. Advisor: Professor Kiho Im *Boston, MA*

- Processed raw Magnetic Resonance Imaging (MRI) stacks. Reconstructed and segmented fetal brain from MRI scans.
- Designed a series of convolutional 2D deep learning networks.
- Predicted fetal brain age using deep learning networks fed by MRI processed stacks.
- Deployed saliency maps to analyze model behaviour.
- Analyzed testing data sets and produced statistics for fetal brain health.

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.

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). "Brain Age Estimation in Fetuses with Cerebral Ventriculomegaly Using Deep Learning". NeuroImage: Clinical.

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]
- Yun, H., Lee, H., Lee, **J., Aguirre-Chavez, J.**, Vasung, L., Rollins, C., Ortinau, C., Grant, P., Im, K. (2022, June 19-23). "Brain age estimation in fetuses with ventriculomegaly using a deep learning network" [Conference presentation]. Organization for Human Brain Mapping, Glasgow, United Kingdom.

SKILLS

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

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AWARDS

HONORABLE MENTION OF ACADEMIC EXCELLENCE   **12 2022**
Tecnologico de Monterrey   *Monterrey, Nuevo Leon, Mexico*

- Distinction awarded to the highest 5% of the graduating students of each generation. This is the highest honor awarded during the graduation ceremony.

TOP GPA STUDENTS   **12 2021**
Tecnologico de Monterrey   *Monterrey, Nuevo Leon, Mexico*

- Award given to the students with the 2% highest GPA from the School of Engineering and Sciences.

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

- Award given to the most distinguished students in extra curricular activities from the School of Engineering and Sciences.

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

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

TECHNICAL EXPERIENCE

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

- Developed object oriented algorithms to post process climate datasets.
- Managed and reviewed source code modifications via git.
- Employed Dask and Xarray to efficiently chunk and organize datasets for optimized 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 version using Git.
- Build, accessed and maintained databases using SQL.

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

- Performed static, quasi-static and dynamic simulations for the geometry of a cable modeled as a solid copper cylinder.
- Performed static, quasi-static and dynamic simulations for the geometry of a cable made up of AWG6 gauge wires.

LEADERSHIP EXPERIENCE

PRESIDENT / SOCIETY OF ENGINEERING PHYSICS STUDENTS   **08 2020 — 08 2021**
Tecnologico de Monterrey   *Monterrey, Nuevo Leon, Mexico*

- Fundraised over 10 scholarships for B.Sc. Engineering Physics students.
- Organized the 40th anniversary of the B.Sc. Engineering Physics.
- Organized the XXII International Physics Simposium - Notable Speakers: PhD William Philips 97'Nobel Prize laureate, PhD David Reitze.

COORDINATOR / CALENTANDO IDEAS   **09 2020 — 11 2020**
Tecnologico de Monterrey   *Monterrey, Nuevo Leon, Mexico*

- Led a team of instructors in giving English, math and public speaking classes.
- Managed public relations between Tec de Monterrey and the Campana Altamira community.

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

- Leadership program: Cross cultural communication

TEC AMBASSADOR / ADMISSIONS DEPARTMENT   **10 2017 — 09 2018**
Tecnologico de Monterrey   *Morelia, Michoacan, Mexico*

- Broadcasted activities performed by students at Tec de Monterrey with candidate students.
- Represented Tec de Monterrey at McGill University cross cultural summer program in 2018.

PRESIDENT / EN ACCION POR LA EDUCACION (EAXLE)   **08 2017 — 08 2018**
Civil Society   *Morelia, Michoacan, Mexico*

- Founded the civil society EAXLE.
- Designed a study plan for students to regularize students from marginalized elementary schools.
- Retrieved sponsorships and contributions for providing scholarships to students into continuing their education.