

Abraham Jhared Flores Azcona

Open Innovation Engineer

► abrahamjhared.flores@gmail.com ► [GitHub](#) ► [ORCID](#) ► [Personal Website](#)

Research Interests

► Representation Analysis ► Activation Steering ► Large Language Models ► Reproducible Machine Learning

Education

B.S. in Computer Systems Engineering

Instituto Tecnológico de Tijuana

GPA: 95/100

Aug 2019 – Jan 2024

Research Experience

Independent Researcher

Apr 2026 – Present

Affective Representation Analysis – Independent Replication

- Tested whether affect-associated representation geometry and activation steering transfer to GPT-2 Medium and Gemma 4 E2B by partially replicating selected analyses from Anthropic's emotion-concepts study.
- Designed and released 4 reproducible Colab configurations covering 2 models and 9- and 20-emotion label sets; extracted vectors from 2,000 generated stories and evaluated them with Logit Lens projections, PCA, cosine similarity, and steering interventions.
- Observed partial PC1 valence-like separation, local similarity families, and model- and prompt-dependent intervention effects; qualified the findings by documenting corpus, evaluation, and control limitations in the [Repository](#).

Undergraduate Thesis Researcher

Aug 2023 – Feb 2024

Instituto Tecnológico de Tijuana

Internal Advisor: José Sergio Magdaleno Palencia

Thesis: Application of Digital Tools in Chemistry Learning for Mechanical Engineering at a Higher Education Institution.

Submitted Jan 2024; defended Oct 7, 2024.

- Co-designed a quasi-experimental pretest-posttest study and analyzed 39 of 46 consented students: 20 in the control group and 19 in the digitally assisted group.
- Implemented a Python pipeline for descriptive comparisons and within-group pre/post tests using Pandas, NumPy, Matplotlib, NLTK, and SciPy.
- Observed higher mean post-test scores in both groups; the digitally assisted group did not outperform the control descriptively in this sample. Documented potential confounders, qualified the interpretation, coauthored the thesis, and published the [repository](#).

Research Assistant

Jun 2023 – Aug 2023

ENLACE 2023 Summer Research Program - University of California San Diego

Mentor: Jonathan Guiang

- Evaluated whether fully connected networks could approach a laboratory Graph Neural Network baseline for binary classification of candidate track line segments in the CMS Line Segment Tracking pipeline.
- Co-developed and trained 2 fully connected PyTorch Neural Networks on a UC San Diego supercomputing cluster; implemented preprocessing, training, inference, and ROC analysis for candidate line-segment data.
- Contrary to our a priori expectation that the GNN would substantially outperform both DNNs, the saved ROC comparison gives the larger DNN 0.9724 ROC AUC, only 0.0027 below the laboratory GNN baseline (0.9751); coauthored the [Code and report](#) and presented the result at Instituto Tecnológico de Tijuana.

Manuscript in Preparation

Partial Replication of Anthropic's Emotion Vectors Using Gemma 4 E2B and GPT-2 Medium Inside a Google Colab T4 Notebook

2026

A. J. Flores-Azcona.

Single-author manuscript. [Code and data](#).

Industry Experience

Open Innovation Engineer

Feb 2024 – Present

Open Innovation - Samsung Research Tijuana

Supervisor: Jorge Alonso Pulido Trujillo

- Developed 10+ AI proof-of-concept prototypes spanning large language models, speech recognition, virtual assistants, AI agents, and on-device machine learning for the Samsung TV platform.
- Integrated partner SDKs and APIs in C/C++, Python, TypeScript, and JavaScript to evaluate AI capabilities in resource-constrained TV environments.
- Collaborated with international engineering teams and technology partners; synthesized prototype results and integration constraints into 4 technical demonstrations for executive leadership during workshops in South Korea.

Teaching and Mentoring

Academic Tutor

Mar 2023 – Oct 2023

Universidad Autónoma de Baja California

Supervisor: Lizeth Carolina Aguilar Dodier

- Tutored 62 undergraduate engineering students in Differential Calculus, Programming Methodology, and Programming and Numerical Methods through individual and group sessions.
- Led individual and group problem-solving sessions, adapting explanations to students' prior knowledge and coordinating study groups around requested topics.
- Analyzed attendance over time, weekday, time slot, and by each student with Pandas and Matplotlib; found that Differential Calculus accounted for most recorded attendance, then proposed combined individual/group tutoring and targeted tutor training in a [Report and analysis](#).

Selected Presentations

Partial Replication of Anthropic's Emotion Vectors Using Gemma 4 E2B and GPT-2

May 12, 2026

Medium Inside a Google Colab T4 Notebook

A. J. Flores-Azcona. [Slides](#). Virtual oral presentation, Internal Research Seminar, Samsung Research Tijuana.

Tizen Native in the Age of AI Tools

Nov 20, 2025

A. J. Flores-Azcona. [Slides](#). Technical talk at INNOVATEC 2025, Instituto Tecnológico de Tijuana.

Using Machine Learning for Particle Tracking at the Large Hadron Collider

2023

A. D. Dennis-Hernandez and A. J. Flores-Azcona.

- **Sep 28, 2023:** [Bilingual slides](#). Oral presentation, ENLACE 2023 Simposio en Baja California, Instituto Tecnológico de Tijuana.
- **Aug 11, 2023:** [Poster](#). ENLACE 2023 Closing Ceremony and Research Symposium, University of California San Diego.

Technical Skills

Research Methods

► Representation Analysis ► Activation Steering ► Logit Lens ► PCA ► Cosine Similarity ► Reproducible Experiments

Programming

► Python ► C / C++ ► TypeScript ► JavaScript

ML and Scientific Computing

► PyTorch ► Hugging Face Transformers ► scikit-learn ► SciPy ► NumPy ► Pandas ► Matplotlib ► Plotly

Research Tools

► Linux ► Git / GitHub ► Google Colab ► Jupyter Notebook ► LaTeX

Languages

► English (TOEFL iBT: 110/120) ► Spanish (Native)