Abraham Jhared Flores Azcona

AI/ML Systems Engineer

► abrahamjhared.flores@gmail.com ► LinkedIn ► GitHub ► Website

Summary

AI/ML systems engineer who has developed and evaluated applied AI prototypes for resource-constrained devices, conducted reproducible machine-learning experiments, and built cross-platform research and hardware-software tools. Experience spans representation analysis, particle-tracking classification, scientific computing, protocol-driven integration, and automated testing.

Education

Ingeniero en Sistemas Computacionales *(Computer Systems Engineering)* **Aug 2019 – Dec 2023**
Instituto Tecnológico de Tijuana, Tecnológico Nacional de México
Degree conferred: Nov 2024
GPA: 95.12/100
Selected coursework: Computer Architecture, Operating Systems, Artificial Intelligence, Numerical Methods, Discrete Mathematics, Differential Calculus, Integral Calculus, Vector Calculus, Differential Equations, Linear Algebra, Data Structures, Formal Languages and Automata I, Probability and Statistics.

Experience

Open Innovation Engineer **Feb 2024 – Present**
Samsung Research Tijuana
Supervisor: Jorge Alonso Pulido Trujillo

- Developed and evaluated 10+ AI prototypes for resource-constrained consumer devices, spanning on-device ML, language and speech interfaces, and assistant functionality.
- Integrated a voice-identification SDK with Tizen TV and SmartRC microphones in C/C++; documented audio_io APIs and ARM32 constraints for internal proof-of-concept use and partner requirements.
- Delivered four technical demonstrations to executive stakeholders during engineering workshops in South Korea, collaborating with international engineering teams and technology partners.

Undergraduate Thesis Researcher **Aug 2023 – Feb 2024**
Instituto Tecnológico de Tijuana
Advisor: José Sergio Magdaleno Palencia
Thesis: Application of Digital Tools in Chemistry Learning for Mechanical Engineering at a Higher Education Institution. Submitted Jan 2024; professional examination passed Oct 7, 2024.

- Co-designed a quasi-experimental pretest-posttest study involving 46 consenting engineering students and analyzed 39 participants across control and digitally assisted groups.
- Built a Python analysis pipeline using Pandas, NumPy, SciPy, Matplotlib, and NLTK for data preparation and descriptive analysis.
- Reported descriptive pretest-posttest gains in both groups without a clear advantage for the digitally assisted group; documented confounders and limitations in the coauthored thesis.

Research Assistant **Jun 2023 – Aug 2023**
University of California San Diego
Mentor: Jonathan Guiang

- Co-developed 2 fully connected PyTorch DNNs for binary classification of candidate track segments in the CMS Line Segment Tracking pipeline.
- Implemented data preprocessing, training, inference, and ROC evaluation on a UC San Diego computing cluster.
- Evaluated the larger DNN at 0.9724 ROC AUC versus 0.9751 for the lab GNN baseline; coauthored the code and report and presented at UC San Diego and Instituto Tecnológico de Tijuana.

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.
- Adapted explanations and worked examples to differing levels of preparation and coordinated topic-focused study groups.
- Analyzed attendance with Pandas and Matplotlib and proposed combined individual/group tutoring and targeted tutor training in a report and analysis.

Selected Public Projects

Partial Replication of Anthropic's Emotion Vectors **Apr 2026 – Jul 2026**
Independent research project
Technical report and code: Technical report ▸ Replication repository

- Conducted a resource-constrained partial replication of selected emotion-concept analyses in GPT-2 Medium and Gemma 4 E2B using 9- and 20-emotion configurations.
- Released 4 documented Colab configurations and 2,000 Gemini-generated stories; applied Logit Lens, PCA, cosine similarity, and activation steering.
- Observed partial PC1 valence-like separation and local similarity groups; token-probability shifts and repetitive continuations did not independently validate emotional tone or coherence.

iRig BlueBoard - BOSS Katana CLI Bridge **Aug 2026 – Sep 2026**
Independent software project
Release evidence: v1.0.2 release

- Built a Python CLI that maps iRig BlueBoard BLE-MIDI input to controls on the original BOSS KATANA-100 MkI amplifier over USB-MIDI.
- Implemented amplifier-state synchronization using MIDI System Exclusive (SysEx) messages, alongside MIDI routing, reconnect handling, and modular action dispatch.
- Released v1.0.2 with Windows/Linux CI; prior acceptance records document 167 tests and original KATANA-100 MkI hardware validation on Windows and Linux Mint 22.2.

Selected Presentations

Partial Replication of Anthropic's Emotion Vectors Using Gemma 4 E2B and GPT-2 Medium Inside a Google Colab T4 Notebook **May 12, 2026**
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 **Sep 28, 2023**
A. D. Dennis-Hernandez and **A. J. Flores-Azcona**. Bilingual slides. Oral presentation, ENLACE 2023 Simposio en Baja California, Instituto Tecnológico de Tijuana.

Using ML for LHC Particle Tracking **Aug 11, 2023**
A. D. Dennis-Hernandez and **A. J. Flores-Azcona**. Poster. Presented at the ENLACE 2023 Closing Ceremony and Research Symposium, University of California San Diego.

Technical Skills

Programming
▸ Python ▸ C / C++ ▸ TypeScript ▸ JavaScript

ML and Scientific Computing
▸ PyTorch ▸ Hugging Face Transformers ▸ scikit-learn ▸ SciPy ▸ NumPy ▸ Pandas ▸ Matplotlib ▸ Plotly

Research Methods
▸ Representation Analysis ▸ Activation Steering ▸ Logit Lens ▸ PCA ▸ Cosine Similarity ▸ ROC Analysis

Engineering and Research Tools
▸ Linux ▸ Windows ▸ Git / GitHub ▸ OpenAI Codex ▸ SDK / API Integration ▸ Automated Testing and Continuous Integration ▸ Google Colab ▸ Jupyter Notebook ▸ LaTeX

Languages
▸ Spanish *(Native)* ▸ English *(TOEFL iBT: 5.5/6.0)*

Additional Training

IBM Data Science Professional Certificate **Jan 2026**
Coursera

McKinsey.org Forward Program **Dec 2025**
McKinsey & Company