
I. EDUCATION

Ph.D. in Computer Science - Specialization in Conversational and Neurosymbolic AI. August 2023 – Present
University of Colorado Boulder Boulder, Colorado. USA
Adviser: Dr. Maria Leonor Pacheco **Co-Adviser:** Dr. Alexis Palmer

MS. in Computer Science - Specialization in Natural Language Processing August 2021 – May 2023
Universidad Nacional Autónoma de México (National Autonomous University of Mexico, UNAM) Mexico City, Mexico
Adviser: Dr. Gemma Bel Enguix **Co-Adviser:** Dr. Karla Ramírez Pulido
Thesis: Detection of digital LGBT+phobia in Mexican Spanish with neural learning algorithms and a formal-semantics-based approach using lambda calculus

B.S. in Physics January 2015 – December 2019
Universidad Iberoamericana (Ibero-American University) Mexico City, Mexico
Adviser: Dr. Salvador Carrillo Moreno
Graduation Project: Data mining: Searching for Chaos in Polynomial Ordinary Differential Equations

II. NON-FORMAL EDUCATION

The 34th European Summer School on Language, Logic and Information . . . July 31st – August 11st, 2023
University of Ljubljana, Faculty of Computer and Information Science Ljubljana, Slovenia

The 13th Lisbon Machine Learning School July 14th – July 20th, 2023
Instituto Superior Técnico (IST) Lisbon, Portugal

Summer school on Neurosymbolic Programming July 11st – July 13rd, 2022
California Institute of Technology (Caltech) Pasadena, California. USA

Data Science Workshop (six two-hour sessions) March 2018 – April 2018
Universidad Iberoamericana (Ibero-American University) Mexico City, Mexico

III. PEER-REVIEWED MANUSCRIPTS

- ▶ Leto, Alexandria, **Juan Vásquez**, Alexis Palmer and Maria Leonor Pacheco. “Dehumanization of LGBTQ+ Groups in Sexual Interactions with ChatGPT”. Proceedings of the Queer in AI Workshop. 2025.
- ▶ Ginn, Michael, Ali Marashian, Bhargav Shandilya, Claire Post, Enora Rice, **Juan Vásquez**, Marie Mcgregor, Matthew Buchholz, Mans Hulden, and Alexis Palmer. “On the Robustness of Neural Models for Full Sentence Transformation”. Proceedings of the 4th Workshop on Natural Language Processing for Indigenous Languages of the Americas (AmericasNLP 2024), pp. 159-173. 2024.
- ▶ Gómez-Adorno, Helena, Gemma Bel-Enguix, Hiram Calvo, Sergio Ojeda-Trueba, Scott Thomas Andersen, **Juan Vásquez**, Tania Alcántara, Miguel Soto, and Cesar Macias. “Overview of HOMO-MEX at IberLEF 2024: Hate Speech Detection Towards the Mexican Spanish speaking LGBT+ Population”. *Procesamiento del Lenguaje Natural* 73 (2024): 393-405. 2024.
- ▶ Andersen, Scott, Segio-Luis Ojeda-Trueba, **Juan Vásquez**, and Gemma Bel-Enguix. “The Mexican Gayze: A Computational Analysis of the Attitudes towards the LGBT+ Population in Mexico on Social Media Across a Decade”. Proceedings of the 8th Workshop on Online Abuse and Harms (WOAH 2024), pp. 178-200. 2024.
- ▶ Bel-Enguix, Gemma, Helena Gómez-Adorno, Gerardo Sierra, **Juan Vásquez**, Scott Thomas Andersen, and Sergio Ojeda-Trueba. “Overview of HOMO-MEX at Iberlef 2023: Hate speech detection in Online Messages directed Towards the MEXican Spanish speaking LGBTQ+ population.” *Procesamiento del Lenguaje Natural* 71 (2023): 361-370.
- ▶ Osorio, Javier, and **Juan Vásquez**. “Classifying Organized Criminal Violence in Mexico using ML and LLMs.” Proceedings of the 6th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text, pp. 1-10. 2023.
- ▶ **Vásquez, Juan**, Scott Andersen, Gemma Bel-Enguix, Helena Gómez-Adorno, and Sergio-Luis Ojeda-Trueba. “HOMO-MEX: A Mexican Spanish Annotated Corpus for LGBT+phobia Detection on Twitter”. The 7th Workshop on Online Abuse and Harms (WOAH), pp. 202-214. 2023.

- ▶ Bel-Enguix, Gemma, Gerardo Sierra, Helena Gómez-Adorno, Juan-Manuel Torres-Moreno, Jesus-German Ortiz-Barajas, and **Juan Vásquez**. “Overview of PAR-MEX at Iberlef 2022: Paraphrase Detection in Spanish Shared Task.” *Procesamiento del Lenguaje Natural* 69 (2022): 255-263.
- ▶ Bel-Enguix, Gemma, Helena Gómez-Adorno, Karla Mendoza, Grigori Sidorov, and **Juan Vásquez**. “La# felicidad en Twitter: ¿qué representa realmente?”. *Linguamatica* 14, no. 1 (2022): 3-15.
- ▶ **Vásquez, Juan.**, Gemma Bel-Enguix, Scott Thomas Andersen, and Sergio-Luis Ojeda Trueba. “HeteroCorpus: A Corpus for Heteronormative Language Detection.” *Proceedings of the 4th Workshop on Gender Bias in Natural Language Processing (GeBNLP)*, pp. 225-234. 2022.
- ▶ **Vásquez, Juan**, Helena Gómez-Adorno, and Gemma Bel-Enguix. “Bert-based Approach for Sentiment Analysis of Spanish Reviews from TripAdvisor.” *IberLEF@ SEPLN*, pp. 165-170. 2021.

IV. TEACHING EXPERIENCE

Teaching Assistant - CSCI 4622: Machine Learning	Spring – 2025
University of Colorado Boulder	Boulder, Colorado. USA
Teaching Assistant - CSCI 3155: Principles of Programming Languages	Fall – 2024
University of Colorado Boulder	Boulder, Colorado. USA
Teaching Assistant - 5832: Natural Language Processing	Fall – 2024
University of Colorado Boulder	Boulder, Colorado. USA
Teaching Assistant - CSCI 1300: Starting Computing	Fall – 2023
University of Colorado Boulder	Boulder, Colorado. USA
Main Lecturer - Introduction to Programming with Python	Spring – 2023
Universidad Nacional Autónoma de México (National Autonomous University of Mexico, UNAM)	Mexico City, Mexico
Main Lecturer - Introduction to NLP with Python	September 2021 – July 2022
Universidad Nacional Autónoma de México (National Autonomous University of Mexico, UNAM)	Mexico City, Mexico

V. OTHER ACADEMIC ACTIVITIES

Workshop organizer	April – 2025
2024 Queer in AI Workshop	Albuquerque, New Mexico. USA
Conference organizer	January 19th – 25th, 2024
52nd ACM SIGPLAN Symposium on Principles of Programming Languages (POPL 2025)	Denver, Colorado. USA
Conference organizer	October 17th – 20nd, 2024
14th out in STEM (oSTEM) conference	Portland, Oregon. USA
Workshop organizer	June – 2024
2024 Queer in AI Workshop	Mexico City, Mexico
Reviewer	May – 2024
23rd Mexican International Conference on Artificial Intelligence (MICAI)	Puebla, Mexico
Reviewer	May – 2024
2024 Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics (NAACL)	Mexico City, Mexico
Reviewer	January – 2024
2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING)	Torino, Italy
Keynote speaker: The State of NLP in Latin America	July – 2023
2023 Annual Meeting of the Association for Computational Linguistics (ACL)	Toronto, Canada
Reviewer	October – 2022
2022 Mexican International Conference on Artificial Intelligence (MICAI)	Monterrey, Mexico
First place at the shared task ‘Sentiment Analysis for Mexican Touristic Places’	July – 2021
2021 Rest-Mex co-located at Iberian Languages Evaluation Forum (IberLef)	Málaga, Spain

VI. EMPLOYMENT

LLM Consultant **January 2025 – Present**
Independent Remote

- ▶ Developed a responsive conversational agent using Llama 3.3, creating a 24/7 support system that offers guidance through crisis situations and recovery processes in workplace scenarios.
- ▶ Engineered prompts that guide the agent to respond with trauma-informed language, avoiding victim-blaming while providing compassionate support to workplace violence survivors.
- ▶ Implemented a Retrieval-Augmented Generation (RAG) system that accesses legal resources and support protocols designed by a team of legal experts, ensuring survivors receive accurate information tailored to their specific situations.

Graduate Researcher **August 2023 – Present**
University of Colorado Boulder Boulder, Colorado, USA

- ▶ Pioneered a neurosymbolic approach combining semantic graphs with neural networks, delivering superior interpretability while maintaining classification accuracy in complex language analysis tasks.
- ▶ Developed a neural architecture combining embeddings from a Graph Neural Network (GNN) and BERT-multilingual that successfully classified approximately 1 million unlabeled Spanish-language tweets into content categories, enabling analysis of LGBTQ+ discourse patterns over a 10-year period.
- ▶ Implemented a semantic parser based on Abstract Meaning Representations (AMR) to transform natural language into graph structures, significantly enhancing data interpretability.

NLP Consultant **March 2023 – August 2023**
University of Arizona Mexico City, Mexico

- ▶ Wrote and deployed a suite of Python scripts for text data preprocessing.
- ▶ Performed and evaluated various text classification experiments by fine-tuning the BERT and BETO models on a corpus of crime-related news from Honduras, El Salvador, and Guatemala. The results were published in a peer-reviewed paper at the 6th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text located (RANLP 2023).
- ▶ Achieved state-of-the-art (SOTA) F1 score in binary sentence classification, establishing new performance benchmarks for crime-related text analysis in Spanish-language media.

Software Developer **January 2021 – August 2021**
Cisneros Fontanals Art Foundation (CIFO) Mexico City, Mexico

- ▶ Led the technical development of Abiogenesis, an AI-powered art installation that transformed a physical painting into dynamic digital experiences, implementing custom computer vision algorithms to detect and manipulate artistic elements in real-time.

Data Consultant **June 2018 – January 2021**
Beet Consulting Mexico City, Mexico

- ▶ Wrote all the necessary code for the data pre-processing, analysis, and visualizations requested by the clients.
- ▶ Presented slides to various executives in order to help them have a better understanding of their HR departments.

GMEC Consulting **October 2014 – July 2016**
Business Analyst Mexico City, Mexico

- ▶ Contributed to the creation of various presentations for clients.
- ▶ Researched relevant data for various consulting projects in the Mexican energy market.

VII. VOLUNTEERING

Web Developer **March 2025 – Present**
out in STEM (oSTEM) Remote

- ▶ Responsible for updating and maintaining the oSTEM website.

Plural Ibero **August 2017 – July 2018**
Universidad Iberoamericana (Ibero-American University) Mexico City, Mexico

- ▶ Helped organize, conduct, and moderate various talks for the *human diversity week* - five days in which the University allotted the Organization a budget that allowed us to create, promote, and execute various events that would create consciousness of the particular struggles faced by the LGBT+ population.
- ▶ Organized and conducted a weekly queer theory reading group with the members of the student association. Each session I would propose a reading, and I would encourage discussions around it.

VIII. SKILLS

Programming languages: Python, C++, Java, Bash, Julia

Tools: Git, VS Code, Jupyter

Libraries and Frameworks: Hugging Face, PyTorch, Geometric, scikit-learn, NLTK, SpaCy, Pandas, Polars, NumPy, Matplotlib, Seaborn, gradio

Spoken languages: Spanish (native), English (advanced), French (intermediate)