

# Juan Vásquez

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**Research interests:** Data engineering, explainable AI, bias detection and mitigation in language models, applied NLP for the understanding of social phenomena.

## EDUCATION

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**MS. in Computer Science with specialization in Artificial Intelligence** August 2021 – Present  
*Applied Mathematics and Systems Research Institute (IIMAS) at UNAM* Mexico City, Mexico

**Thesis:** *A novel method for the visualization of acquired gender biases in LLMs during fine-tuning* (provisional)

**Adviser:** Dr. Gemma Bel Enguix

**BS. in Engineering Physics** January 2015 – December 2019  
*Universidad Iberoamericana* Mexico City, Mexico

**Thesis:** *Data mining: Searching for Chaos in Polynomial Ordinary Differential Equations*

**Adviser:** Prof. Salvador Carrillo Moreno

## NON-FORMAL EDUCATION

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**Summer school on Neurosymbolic Programming** July 11 – 13, 2022  
*California Institute of Technology* Pasadena California, USA

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

## PEER-REVIEWED MANUSCRIPTS

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Gemma Bel-Enguix, Gerardo Sierra, Helena Gómez-Adorno, Juan-Manuel Torres-Moreno, Jesús-German Ortíz-Barajas<sup>1</sup>, and **Juan Vásquez**<sup>1</sup>. *Overview of PARMEX at Iberlef 2022: Paraphrase Detection in Spanish Shared Task, Procesamiento del Lenguaje Natural 69* (2022).

**Juan Vásquez**, Gemma Bel-Enguix, Scott Thomas Andersen, Sergio-Luis Ojeda-Trueba. 2022. *HeteroCorpus: A Corpus for Heteronormative Language Detection*. In *Proceedings of the 4th Workshop on Gender Bias in Natural Language Processing (GeBNLP)*, pages 225–234, Seattle, Washington. Association for Computational Linguistics.

Gemma Bel-Enguix, Helena Gómez-Adorno, Karla Mendoza, Grigori Sidorov, and **Juan Vásquez**. *La #felicidad en Twitter: ¿qué representa realmente?*. *Linguamática* 14, no. 1 (2022): 3-15.

**Juan Vásquez**, Helena Gómez-Adorno, and Gemma Bel-Enguix. *Bert-based Approach for Sentiment Analysis of Spanish Reviews from TripAdvisor*. In *IberLEF at SEPLN*, pp. 165-170. 2021.

## WORK IN PROGRESS

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**Juan Vásquez**, Scott Thomas Andersen, Gemma Bel-Enguix, Braulio Santiago. *How Homo(phobic) is Mexico? Homo-MEX: A Novel Corpus for LGBT+Phobia Detection in Mexican Spanish*. 2022.

## TEACHING EXPERIENCE

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**Introduction to NLP with Python (fifteen two-hour sessions)** Mexico City, Mexico  
*Language Engineering Group (Grupo de Ingeniería Lingüística) at UNAM* September 2021 – July 2022

- Created all the materials for the course.
- Presented each one of the fifteen sessions.
- Assisted the students through the course.

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<sup>1</sup>equal contribution.

## EMPLOYMENT

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### Beet Consulting

*Data Consultant*

June 2018 – January 2021

*Mexico City, Mexico*

- Wrote all the necessary code for the data pre-processing, data analysis, and data 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

*Business Analyst*

October 2014 – July 2016

*Mexico City, Mexico*

- Contributed to the creation of various presentations for clients.
- Researched relevant data for various projects.

## OTHER ACADEMIC ACTIVITIES

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### Reviewer

*August 2022*

- EasyChair paper subreview | Mexican International Conference on Artificial Intelligence 2022.

## OTHER PROFESSIONAL ACTIVITIES

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### ABIOGENESIS Project | Fundación Cisneros

*January 2021 – August 2021*

*Software Developer*

- Planned, designed and worked on the computational aspects of the ABIOGENESIS project. The goal of this project was to digitize a custom painting, detect and modify its components using a machine learning algorithm, and create a new digital image that could be shown in an art installation that explored the intersection between art and artificial intelligence.
- Supervised the manual annotation of an image dataset, in order to train a custom object detection model.
- Wrote code that performed object detection on the digitized image created from the original painting. After the object detection, the objects changed their RGB values in order to simulate change in their physical properties.

## VOLUNTEER EXPERIENCE

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### Plural Ibero | Universidad Iberoamericana

*August 2017 – July 2018*

- 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.

## SKILLS

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**Programming languages:** Python (advanced), Java (intermediate), C++ (coursework), R(coursework).

**Libraries:** pandas, NumPy, Matplotlib, spaCy, openCV, NLTK.

**Frameworks:** TensorFlow, PyTorch.

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