# Jesus German **Ortiz Barajas**

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## Education

**Universidad Nacional Autónoma de México (UNAM)** *Mexico City, Mexico*

MSc. in Computer Science and Engineering *Sept 2020 - Dec 2022*

- GPA: 9.80/10.00
- Thesis: Paraphrase identification using Sentence-CROBI, a novel deep neural network architecture based on cross-encoders and bi-encoders
- Advisor: Dr Gemma Bel-Enguix

**Universidad Nacional Autónoma de México (UNAM)** *Mexico City, Mexico*

Diploma in Mobile App Development for iOS *Feb 2019 - July 2019*

- GPA: 9.00/10.00

**Universidad Nacional Autónoma de México (UNAM)** *Mexico City, Mexico*

BEng. in Computer Engineering *Aug 2014 - Dec 2018*

- GPA: 8.54/10.00

## Professional experience

**Grupo de Ingeniería Lingüística: UNAM research group focusing on computational linguistics and natural language processing.** *Mexico City, Mexico*

Shared Task organiser *Jan 2022 - June 2022*

- Participated in organising the PAR-MEX 2022 shared task: Paraphrase detection in Mexican Spanish at IberLEF 2022.
- Designed baseline experiments using a Spanish BERT-based model and Keras and Transformers libraries.
- Coordinated the codalab competition page and GitHub repository for the shared task.
- Analysed the results using the F1-score as a performance metric and the Maximum Possible Accuracy and the Coincident Failure Diversity as complementariness metrics.

Job Offers classification *Dec 2019 - March 2020*

- Developed system performs multi-class classification of job offers using a recurrent neural network.
- Financed by the Mexican government, its purpose is to reduce information asymmetries between job seekers and employers.
- Model building using Keras library. It consists of a Long-short term memory layer followed by a multilayer perceptron.
- Used SMOTE, Geometric-SMOTE and ADASYN algorithms to solve the high-imbalance-class problem.

Course instructor *Aug 2019 - Dec 2019*

- Semester course to explain the basics of machine learning with a theoretical-practical approach.
- An eight-student group took it with different academic backgrounds from UNAM and the private sector.
- Prepared lessons using the book *Artificial Intelligence with an introduction to machine learning* by Richard E. Neapolitan and Xia Jiang; Kaggle datasets, the sci-kit learn library and python scripts.

Aggressiveness detection on Twitter *Apr 2019 - June 2019*

- App that classifies Mexican Spanish tweets in aggressive or non-aggressive classes using machine learning and python.
- Uses multiple types of n-grams such as character n-grams, word n-grams, and aggressive words n-grams as features.
- Implements a support vector machine as a classifier with SciKit-learn and microTC framework for parameter optimization.
- Achieved an F1-score of 0.4549, 5th place of 26 competitors at MEX-A3T 2019 aggressiveness identification task.

## Publications

### Journals

**Ortiz-Barajas, J-G.**, Bel-Enguix, G., Gómez-Adorno, H. 2022. Sentence-CROBI: A Simple Cross-Bi-Encoder-Based Neural Network Architecture for Paraphrase Identification. Mathematics, 10(19): 3578.

Bel-Enguix, G., Sierra, G., Gómez-Adorno, H., Torres-Moreno, J-M., **Ortiz-Barajas, J-G.**, Vásquez, J. 2022. Overview of PAR-MEX at Iberlef 2022: Paraphrase Detection in Spanish Shared Task. Procesamiento del Lenguaje Natural, 69(1): 255-263.

### Conference papers

**Ortiz, G.**, Bel-Enguix, G., Gómez-Adorno, H., Ameer, I., Sidorov, G. 2023. Job Offers Classifier using Neural Networks and Oversampling Methods. In Recent Developments and the New Directions of Research, Foundations, and Applications: Selected Papers of the 8th World Conference on Soft Computing, February 03–05, 2022, Baku, Azerbaijan, Vol. I (pp. 235-248).

Sierra, G., Bel-Enguix, G., Gómez-Adorno, H., Torres-Moreno, J-M., Hernández-García, T., Guadarrama-Olvera, JV., **Ortiz-Barajas, J-G.**, Rojas, AM., Damerau, T., Aragón Martinez, S. 2020. Enhancing Job Searches in Mexico City with Language Technologies. In Proceedings of the 1st Workshop on Language Technologies for Government and Public Administration (LT4Gov): 15-21.

**Ortiz, G.**, Gómez-Adorno, H., Reyes-Magaña, J., Bel-Enguix, G., Sierra, G. 2019. Detection of Aggressive Tweets in Mexican Spanish Using Multiple Features with Parameter Optimization. In IberLEF@ SEPLN: 520-525.

## Presentations

** presenting author*

### Invited presentations

Bel-Enguix, G., Sierra, G., Gómez-Adorno, H., Torres-Moreno, J-M., **Ortiz-Barajas, J-G.***, Vásquez, J. 2022. Overview of PAR-MEX at Iberlef 2022: Paraphrase Detection in Spanish Shared Task. Oral presentation: 38th Conference of the Spanish Society for Natural Language Processing, A Coruña, Spain.

### Conference presentations

**Ortiz, G.*** , Bel-Enguix, G., Gómez-Adorno, H., Ameer, I., Sidorov, G. 2022. Job Offers Classifier using Neural Networks and Oversampling Methods. Online presentation: 8th World Conference on Soft Computing, WConSC-2022, Baku, Azerbaijan.

**Ortiz, G.***, Gómez-Adorno, H., Reyes-Magaña, J., Bel-Enguix, G., Sierra, G. 2019. Detection of Aggressive Tweets in Mexican Spanish Using Multiple Features with Parameter Optimization. Oral presentation: 4th Mexican Workshop on Plagiarism Detection and Authorship Analysis, Guanajuato, Mexico.

## Teaching and Research Services

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| Jan 2023 - Jun 2023 | **Graduate Teaching Assistant**, Text mining. Posgrado en Ciencia e Ingeniería de la Computación, UNAM. |
| May 2023 | **Teaching**, Natural Language Processing. Colegio Científico de Datos, COCID. |
| Aug 2022 | **Reviewer**, 21st Mexican International Conference on Artificial Intelligence. |
| Aug 2019 - Nov 2019 | **Teaching**, Introduction to Machine learning. Instituto de Ingeniería, UNAM. |

## Awards & Honors

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| 2023 | **José Negrete award. Best master's thesis in an AI-related field**, Mexican Society for Artificial Intelligence (SMIA) |

## Skills

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| Languages | **Python, Swift, Java, C, PHP, Javascript.** |
| Libraries | **Tensorflow, Pytorch, Sci-kit learn, Pandas, Numpy, Scipy, NLTK, Spacy, Transformers.** |
| Tools | **Github, Latex, HTML.** |