Aitana Morote Martínez

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Research Interests

Natural Language Processing, Bias mitigation, Quantum computing

My first research work has focused on the detection and mitigation of biases in language models. More specifically, my work is oriented at reducing the gap in gender bias mitigation in word embeddings between English and morphologically rich languages as Spanish.

In addition, I recently started working on the research line of quantum computing, which is gaining widespread attention as quantum infrastructure is becoming available for scientific research. This technology has a great potential in many fields, such as Natural Language Processing. I particularly focused on the formulation of Instance Selection (IS) and clustering problems as Quadratic unconstrained binary optimization (QUBO) problems. Our research group will further develop this line into Natural Language Generation and Text Summarization applications.

Education

University of Alicante, Alicante, Spain   *Sept 2019 – July 2024*
BS in Computer Engineering
- GPA: 8.45/10

Sungkyunkwan University, Suwon, South Korea   *Feb 2022 – July 2022*
Global Mobility Program

Professional Conservatory 'Vila de Sant Joan', Alicante, Spain   *Sept 2014 – June 2021*
Professional Degree in Music, specialty in Violin

Professional Experience

Digital Intelligence Center (CENID), Language and Information Systems Group (GPLSI)   *Nov 2024 – present*
- Collaborated on the NEL-VIVES project (PERTE22-01)
- Defined and implemented data quality strategies to mitigate gender bias
- Collected Spanish and Valencian (low-resource language) corpora
- Supported language model development
- Conducted quantitative/qualitative evaluation of datasets

NTT Data   *Feb 2023 – July 2023*
- R&D tasks in Cloud Computing technologies

Applied Intelligent Architectures (AIA) Laboratory, Department of Computer Technology and Computing   *Sep 2022 – Dec 2022*
- Lab research lines: Computer Vision, Artificial Intelligence, Robotics, High Performance Computing, Machine Learning, Pattern Recognition, Smart Houses, Smart Cities, Internet of Things, Cloud Computing, Big Data
- Participated in the research line on Computer Vision and AI applications for the early detection of dementia and prevention of Alzheimer's Disease.

San Vicente Academic Symphony Orchestra (OSASV)   *Sep 2022 – Oct 2022*
- Participated as a violinist in the 2022 Spain tour of the State Ballet of Georgia.

Publications

Preserving Grammatical Gender when Debiasing Word Embeddings in Spanish

2025

Aitana Morote Martínez, Juan Pablo Consuegra-Ayala, Elena Lloret

- Accepted for publication in Issue No. 75 of the journal and for presentation at the XLI International SEPLN Conference.

GPLSICORTEX at SemEval-2025 Task 10: Leveraging Intentions for Generating Narrative Extractions

2025

Iván Martínez-Murillo, María Miró Maestre, *Aitana Morote Martínez*, Snorre Ralund, Elena Lloret, Paloma Moreda, Armando Suárez Cueto

- This paper will be presented in the 19th International Workshop on Semantic Evaluation.

Team GPLSI at QClef 2025: Quantum-Inspired Instance Selection and Clustering

2025

Juan Pablo Consuegra-Ayala, *Aitana Morote Martínez*, Francisco Valero-Abellón, Elena Lloret, Paloma Moreda, Manuel Palomar

- Paper submitted to the Conference and Labs of the Evaluation Forum (CLEF 2025).

Projects

NEL-VIVES, Plan de tecnologías de la lengua para el valenciano (Language technology plan for Valencian language) (PERTE22-01)

gplsi.gitbook.io/vives-kit ↗
Nov 2024 – May 2025

Funding entity: Ministry of Economic Affairs and Digital Transformation, European Union NextGenerationEU/PRTR

- Definition and implementation of data quality strategies to mitigate gender bias for languages other than English.
- Collection of corpora in Spanish and Valencian.
- Quantitative and qualitative evaluation of proposed data quality strategies.
- Technical assistance for the development of language models.

CORTEX (PID2021-123956OB-I00)

Nov 2024 – May 2025

Funding entity: MCIN/ AEI/10.13039/501100011033/ and "FEDER Una manera de hacer Europa"

- Knowledge extraction and quality control, through the analysis and detection of gender biases.
- Analysis and comparison of natural language generation architecture types.
- Evaluation of natural language generation.
- Text summaries, integrating the natural language generation approach.

Competitions and challenges

Quantum CLEF (QClef) Lab at CLEF 2025

Apr 2025 – present

- Participation as part of the team GPLSI in the Task 2—Instance Selection— and Task 3—clustering— of the Quantum CLEF (QClef) Lab at CLEF 2025, which explores the integration of quantum computing technologies into real-world information retrieval and machine learning workflows.
- In Task 2, our team achieved the best trade-off between effectiveness and reduction.

SemEval-2025 Task 10: Leveraging Intentions for Generating Narrative Extractions

Oct 2025 – Feb 2025

Ranked 6th position

- Participation as part of the GPLSI team in the SemEval-2025 Task 10 subtask 3 for the English language, which is focused on narrative extraction given news articles with a dominant narrative. We design an

external knowledge injection approach to fine-tune a Flan-T5 model so the generated narrative explanations are for the provided dominant narrative in each text.

Innovation Banking Hack Fest (IBHF)   *27, 28, 29 Oct 2023*

- Participation in the IBHF hackathon with the objective of designing and developing an innovative application in the banking environment for the purpose of offering and improving the customer experience in digital banking.

Talks

Mitigation of gender bias in word embeddings in Spanish   *8 Nov 2025*
Organizing entity: Digital Intelligence Center (CENID)

Languages and Technologies

Languages: Spanish(native), French(fluent), English(fluent), Korean(beginner)
Programming languages: Python, C++, C, Java, C#