JOSEPH MARTÍNEZ

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SUMMARY

Research Assistant with **3 years of experience** in **Natural Language Processing**, and Machine Learning. Proficient in training **LLMs**, and Machine Learning (ML) algorithms. Strong communication skills through academic and professional engagements. Proven ability in large-scale data analytics to derive **valuable insights**. Collaborative team member with a track record of **successful collaboration** on international research projects.

RESEARCH EXPERIENCE

Virginia Modeling, Analysis, & Simulation Center (VMASC)   Suffolk, VA
Graduate Research Assistant   Sep 2022 – Present

• Created a **custom conversational LLM** (akin to ChatGPT) fine-tuning Llama2 with a dataset of 330 news about Venezuelan migration. The final model performs better when asked questions about the topic.
• Trained Machine Learning models (KNN, RFC) and fine-tuned NLP models (BERT) to classify frustration types.
• Designed and maintained detailed documentation of models, algorithms, and reports on GitHub repositories.
• Presented poster at a research conference in Pittsburgh, and attended others in Arlington, VA, and Oxford, OH.

Old Dominion University   Norfolk, VA (Remote)
Research Assistant Intern   Jul 2021 – Jan 2022

• Geolocated, filtered, and estimated the tone of **7.3 million Tweets** through fine-tuning fifteen NLP models (spaCy, BERT, RoBERTa) and Statistical Analysis on the topic of Venezuelan migration in Colombia.
• Extracted, cleaned, and pre-processed **15.5 million Tweets** in multiple languages with Twitter's API and Python.
• Created dashboards with Tableau and Google Data Studio to represent migration data from Colombian entities.
• Collaborated with teams from Norway, Colombia, Greece, and the US on a $1.4M Minerva research initiative.

Universidad del Norte   Barranquilla, Colombia
Undergraduate Research Assistant   Nov 2020 – Jun 2021

• Trained a Natural Language Understanding **(NLU) model** with **IBM Watson** to semi-automate the identification of actors, factors, and relationships from news articles in Colombia and Greece, achieving final accuracy of 70%.
• Gathered, filtered, and cleaned geo-tagged 4,680 Tweets on migration using Twitter's API and Python.
• Conducted a lexicon-based Sentiment Analysis of Tweets to spot xenophobic trends towards Venezuelans.
• Determined key actors of a Twitter conversation about migration through Social Network Analysis with Gephi.

EDUCATION

Old Dominion University   Norfolk, VA
M.Sc. Modeling and Simulation Engineering - GPA: 3.7   Aug 2022 – Dec 2024

Correlation One   New York, NY (Remote)
Data Science for All (Bootcamp)   Mar 2022 – Jul 2022

Universidad del Norte   Barranquilla, Colombia
B.Sc. Industrial Engineering - GPA: 3.6   Jan 2017 – Mar 2022

PUBLICATIONS

• Erika Frydenlund, **Joseph Martínez**, Jose J. Padilla, Katherine Palacio, and David Shuttleworth. "Modeler in a Box: How Can Large Language Models Aid in the Simulation Modeling Process?" SIMULATION, (2024) [Under revision].
• Lynch, Christopher J., Erik J. Jensen, Madison H. Munro, Virginia Zamponi, **Joseph Martínez**, Kevin O'Brien, Brandon Feldhaus, Katherine Smith, Ann Marie Reinhold, and Ross Gore. "GPT-4 Generated Narratives of Life Events using a Structured Narrative Prompt: A Validation Study." (2024)
• **Joseph Martínez**, Melissa Miller-Felton, Jose J. Padilla, Erika Frydenlund. "Behind Derogatory Terming for Venezuelan Migrants in Colombia: Xenophobia and Sexism Identification with Twitter Data and NLP" (2023)
• Lauren Guerra, **Joseph Martínez**, and Francisco Pautt. "Design of a User Interface based on Information Engineering and Web Programming for the FUVADIS customer service process." Universidad del Norte (2021).

SKILLS

Data Visualization: Tableau, Power BI, Shiny, HTML, ggplot2, plotly   **Data Analysis**: Python, R, SQL
Machine Learning: Classification, Regression, Clustering, PCA   **Deep Learning:** Pytorch, Keras, ANN
NLP: scikit-learn, spaCy, Transformers, Hugging Face, OpenAI GPT-4   **Version control:** Git/GitHub
Languages: Spanish, English, German (Intermediate)

AWARDS AND ACHIEVEMENTS

SBP-BRIMS 2023 conference scholarship
SBP-BRiMS Conference chair   Sep 2022

Outstanding results in the Saber Pro 2021 test
Universidad del Norte   Nov 2022
· Best overall institutional score
· Best overall score in Industrial Engineering
· Perfect score in Generic Competencies

Graduate Research Assistantship
Virginia Modeling, Analysis and Simulation Center (VMASC)   Jun 2022

Undergraduate Honorable Mention
Universidad del Norte   Mar 2022

Andrés Bello Distinction
Colombian Ministry of Education   Nov 2016
· Distinction to outstanding students in the ICFES Saber 11 State Exam for high school

CERTIFICATIONS

Responsible Conduct of Research for Engineers
CITI Program   Jun 2023

Social and Behavioral Research
CITI Program   Aug 2022

DS4A / Colombia 6.0
Correlation One   Jul 2022

Excel (Advanced level)
Coursera   Jul 2020