JOSEPH MARTINEZ

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PROFESSIONAL SUMMARY

Detail-oriented Data Scientist with 4 years of experience specializing in Machine Learning, LLM training and deployment, and simulation modeling. Proven ability to deliver actionable insights and improve processes through data-driven strategies and storytelling.

PROFESSIONAL EXPERIENCE

Aaru, Inc   **New York, NY, USA**
AI Software Enginer   *July 2024 - Present*
- Fine-tuned the state-of-the-art LLM Qwen 2.5 to deliver agentic, human-like responses, enhancing user satisfaction by 40% by leveraging a curated dataset of consumer preferences.
- Reduced GPU training and deployment costs by 60%, achieving $3/hour, by setting up containerized LLM workflows with Runpod on custom hardware.
- Improved the accuracy of a generative agent-based model (gABM) by 30% through the implementation of live news and trends to the agents' memory and context window.

Virginia Modeling Analysis and Simulation Center   **Suffolk, VA, USA**
Graduate Research Assistant   *September 2022 - December 2024*
- Trained Machine Learning classification models (RFC, ANN, and BERT) to identify types of frustration in more than 5000 news articles, achieving an average accuracy of 70%.
- Boosted GPT-3.5's ability to generate NetLogo procedural code by 50% by implementing Retrieval-Augmented Generation (RAG) techniques to support agent-based modeling.
- Improved domain-specific chatbot fidelity by in 25% fine-tuning Llama2 7B on 330 news articles, ensuring high-fidelity responses.
- Led a team to streamline documentation and repository management on GitHub across multiple research projects.
- Published and presented papers at research conferences in Miami, FL and Pittsburgh, PA.

University of Adger   **Kristiansand, Norway**
Exchange Researcher   *October 2024 - November 2024*
- Directed a joint research project with historians and AI teams, applying ML models to analyze 4,000 Norwegian news articles, uncovering patterns in cultural representation.
- Built a generative AI-based entity extraction framework using Llama 3.1, identifying historical references and omissions, enabling deeper analysis of Norwegian identity.

Old Dominion University   **Norfolk, VA, USA**
Data Scientist   *July 2021 - January 2022*
- Pre-processed 15.5M multilingual Tweets via Twitter's API and Python, reducing data noise by 40%, facilitating better trend analysis.
- Geolocated, filtered, and estimated the tone of 7.3 million Tweets by fine-tuning 15 NLP models (spaCy, BERT, RoBERTa) and statistical analysis.
- Developed dashboards with Tableau and Google Data Studio, providing actionable migration insights for a $1.4M Minerva research project involving teams from 4+ countries.

Universidad del Norte   **Barranquilla, Colombia**
Data Scientist   *November 2020 - June 2021*
- Automated entity and relationship identification in news articles, achieving an f1-score of 70% by training an NLU model with IBM Watson.
- Processed and filtered 4,680 geo-tagged Tweets using Python and Twitter's API, identifying migration patterns and trends.
- Conducted sentiment analysis to track xenophobic trends in social media, providing actionable insights for policymakers.

SKILLS

Skills: Python, R, SQL, Pandas, Pytorch, ANN, PCA, NumPy, scikit-learn, Transformers, Hugging Face, OpenAI, FastAPI, Tableau, Power BI, Shiny, Git, GitHub, Docker
Languages: German, Spanish, English

EDUCATION

Old Dominion University   **August 2022 - December 2024**
Master's, Modeling and Simulation Engineering   *GPA: 3.7*

Universidad del Norte   **January 2017 - March 2022**
Bachelor's, Industrial Engineering   *GPA: 3.6*

PUBLICATIONS

- **Joseph Martínez**, Brian Llinas, Jhon G. Botello, Jose J. Padilla, and Erika Frydenlund. "Enhancing GPT-3.5's Proficiency in NetLogo through Few-Shot Prompting and Retrieval-Augmented Generation" 2024 Winter Simulation Conference (WSC) IEEE (2024) [Finalist for Best Applied Paper].
- 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).
- 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).

AWARDS

- **International Student Exchange Program**
  U.S. Department of Defense (DoD) · October 2024
  · Selected to conduct interdisciplinary AI research at the University of Agder, Norway
- **SBP-BRIMS 2023 conference scholarship**
  SBP-BRiMS Conference chair · September 2022
- **Outstanding results in the Saber Pro 2021 test**
  Universidad del Norte · November 2022
  · Best institutional score in Colombia's national standardized exam for higher education.
- **Graduate Research Assistantship**
  Virginia Modeling, Analysis and Simulation Center (VMASC) · June 2022
- **Undergraduate Honorable Mention**
  Universidad del Norte · March 2022
  · Recognized as one of the top three students in Industrial Engineering based on academic excellence and GPA.
- **Andrés Bello Distinction**
  Colombian Ministry of Education · November 2016
  · Ranked in the top 1% of the country on the ICFES High School State Exam, earning national distinction.