Vitor Negromonte Cabral de Oliveira

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Education

Federal University of Pernambuco — Recife. Brazil
B.Sc. in Statistics — 2022 – 2026 (Expected)
Activities: AI League, Teaching Assistant

Work Experience

Confidential Client — Multinational Company — Jan 2025 – Present
Machine Learning Engineer — Remote
Designed and deployed a full-stack computer vision pipeline optimized for edge devices, covering the entire lifecycle from dataset generation and image preprocessing to model training and real-time inference. Led cluster setup and optimization for scalable, resource-efficient training on large datasets. The project, conducted under NDA, focused on delivering high-performance AI solutions within constrained edge environments.
Tech stack: Python (PyTorch, OpenCV, FastAPI), Docker, Linux, Shell scripting, Git, and more

Redduo.ai — Nov 2023 – Jul 2024
Co-founder and Data Scientist — Recife, Brazil
Worked as a Data Scientist supporting business intelligence initiatives through data analysis and the development of software automation tools. Simultaneously contributed as an AI Researcher, focusing on the development and optimization of a natural language processing pipeline, with an emphasis on enhancing model performance and ensuring scalable deployment.
Tech Stack: Python (PyTorch, scikit-learn), AWS (Lambda, Cognito), Power BI.

Research Experience

GERAIA (Generative AI Research Group) — Nov 2023 – Present
Machine Learning Researcher — Recife, Brazil
Supervisors: Prof. Filipe Calegario (Federal University of Pernambuco)
Currently conducting research in Generative AI with a focus on evaluating language models in Portuguese, assessing their performance, scalability, and adaptability to emergent linguistic variations. The work also explores energy-efficient AI methods to promote sustainable training and inference, with an emphasis on optimizing generative models for deployment on low-resource devices and improving the efficiency and effectiveness of Retrieval-Augmented Generation (RAG) pipelines.

National Institute of Science and Technology in Software Engineering (INES) — Aug 2023 – May 2024
Undergraduate Researcher — Remote
Supervisors: Prof. Kiev Gama (Federal University of Pernambuco), Dr. Danilo Ribeiro (Cesar School) and Prof. Ana Paula Chaves (Northern Arizona University)
Assisted in the development of quantitative analysis tools and contributed to improving accessibility features in applications aimed at supporting adults on the autism spectrum. Work conducted under the Brazilian Ministry of Science and Technology at the National Institute of Software Engineering.

Extracurricular

Ligia – Federal University of Pernambuco's Artificial Intelligence Academic League — Mar 2024 – Present
Co-founder and Outreach Director — Recife, Brazil
Ligia is a non-profit initiative at the Federal University of Pernambuco, affiliated with the CIn.AI research group. As Outreach Director, I lead efforts to build strategic partnerships, organize AI-focused events, and develop educational content aimed at promoting the understanding and application of artificial intelligence across diverse disciplines.

Publications

[2] D. M. Ribeiro, F. V. Melo, V. Negromonte, C. Pereira, A. P. C. Steinmacher, K. Gama, "A Mapping Review to Understand Web and Mobile Apps Accessibility for Adults with Autism", SBSI – 2025

[1] D. M. Ribeiro, F. V. Melo, V. Negromonte, G. W. Matias, A. Farias, C. Azul, A. P. Chaves, K. Gama, "A Comparative Study on Accessibility for Autistic Individuals with Urban Mobility Apps", IHC - 2024

Teaching

Federal University of Pernambuco

IF866 – Introduction to Deep Learning 2024 – Present

IF866 – Computational Creativity 2024 – 2025

Projects

F1Predict: Formula 1 Race Prediction System – (link)

Designed and developed an end-to-end system for predicting Formula 1 race outcomes, covering data collection, feature engineering, model training, deployment, and user interface. Created a REST API using FastAPI and PostgreSQL for efficient data management and model serving, while developing a React/TypeScript front-end for seamless user interaction. The predictive model achieved an error of just 1 second when compared to the actual race time, showcasing high accuracy in real-time predictions.

Tools: Python, PyTorch, scikit-learn, FastAPI, PostgreSQL, React, TypeScript.

Tupy: Lightweight Energy Optimizer for AI training – (link)

Tupy is a lightweight package designed to optimize energy consumption for PyTorch-based AI models during the training phase, significantly reducing energy bloat and improving the efficiency of model training.

Tools: Python, PyTorch, CUDA, NumPy, Nvidia NVML

MARS: Multi Agent Recommendation System – (link)

Developed an API based on FastAPI to automate the collection of research papers from ArXiv, utilizing LLM-based agents to review and filter relevant papers. The selected results are then sent directly to users via email, streamlining the research discovery process.

Tools: Python, FastAPI

Parkinson Diagnosis using Computer Vision: Campus Party'24 Keynote – (link)

Developed a CNN-based approach for detecting Parkinson's disease at various stages using images of spirals drawn on paper. Our model outperformed state-of-the-art methods on the same dataset (Distinguishing Different Stages of Parkinson's Disease Using Composite Index of Speed and Pen-Pressure of Sketching a Spiral) by approximately 10%, achieving an impressive 95% accuracy.

Tools: Python, PyTorch, Optuna, Zeus

Computer Vision in Breast Cancer Diagnosis: A Comparative Study with CBIS-DDSM Data – (link)

Conducted a comparative analysis of CNN models to enhance early detection capabilities for breast cancer using mammography images. Focused on optimizing model performance to improve diagnostic accuracy and support early intervention.

Tools: Python, TensorFlow, OpenCV

Tools and Interests

Programming Languages – Python, R, SQL, LaTeX.

Technologies – PyTorch, TensorFlow, Lightning, Keras, OpenCV, FastAPI, Scikit-learn, PostgreSQL, PowerBI, AWS (Lambda, Cognito).

Interests – Healthcare AI, Sustainable and Efficient AI, Bio-inspired Computing, Computer Vision, Meta-Learning, and Reinforcement Learning.