

Brian Rodriguez

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EDUCATION

Master's in Data Science & Artificial Intelligence

Fall 2024

Florida International University, Miami, FL

Dean's list | GPA: 4.00

Bachelor of Science in Computer Science

Fall 2023

Florida International University, Miami, FL

Dean's list | GPA: 3.99

Minor in Physics

Fall 2023

Florida International University, Miami, FL

Honors College

Fall 2023

Florida International University, Miami, FL

WORK EXPERIENCE

Graduate Machine Learning Researcher

June 2024 – Present

Florida International University & Sponsored by: Air Force Research Laboratory

Miami, FL

- Create novel machine learning solutions and new methods for explaining AI algorithms.
- Develop generative AI solutions using LLMs for the interests of the US Air Force.
- Preparing findings for publication in peer-reviewed journals.
- Mentored junior researchers through providing technical guidance and collaborative problem solving.

Undergraduate Research Assistant

April 2023 – Aug 2023

Florida International University

Miami, FL

- Research on the practical uses of the Neural Tangent Kernel, mentored by faculty members.
- Created scripts to approximate an infinite with neural network, by writing a neural network as a Gaussian Process or as a Kernel.
- Examined performance of these networks on various benchmark datasets.

Undergraduate Teaching Assistant

May 2022 – July 2022

Florida International University, Programming 1 COP 2210

Miami, FL

- Graded 140+ Java projects.
- Actively supported students by explaining programming concepts during and after class time on organized review sessions and office hours.

ACADEMIC INVOLVEMENT / PROJECTS

Explainable AI Methods to a Chess Playing Transformer Model

June 2024 – Dec 2024

Florida International University, IDC-6940 - Capstone for Data Science & AI

Miami, FL

- Trained GPT like model supervised on 10M chess games (1.2 Terabytes) to near grandmaster level utilizing Google Cloud Compute Engine.
- Implemented self-attention attribution algorithm to attempt to explain internal “reasoning” of the model.
- Compare if internal “reasoning” contains similar information to conventional evaluations of chess positions.

Texting and Conversation Summarization Program Using ML

Jan 2024 – April 2024

Florida International University, CAP 5540 - Grad NLP

Miami, FL

- Created an unsupervised machine learning tool that clusters the text messages in long complex chat histories to extract topics discussed, partition the chat into conversations, and summarize and label these conversations.
- Utilizes BERTopic topic modeling, agglomerate clustering, and KNN, along with GPT-3.5 Turbo from OpenAI.

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Standalone Algae Classification System Using ML

Aug 2023 – April 2024

Florida International University, CIS 4951- Capstone 2/Senior Project

Miami, FL

- Lead a group of peers to train and deploy a convolutional neural network (CNN) onto a low-level development board (ESP32) to make simple classifications of images of algae under the microscope in real time.
- Also finetuned a pretrained YOLOv8 model to perform object recognition on images of algae.
- Utilized Python and the TensorFlow framework to train and quantize our ML model. Wrote the model deployment and handling code in C++ to be run on a ESP32 chip, using the chip manufacture's deep learning framework.

MING – Texting Conversation Mediator

Aug 2023 – Dec 2024

Florida International University, CAP 5602 - Intro to AI

Miami, FL

- Worked in a team of 3 to create a web application that utilizes transformer-based models to provide metrics and feedback to mediate a conversation.
- Used hugging face transformers library to access models for NLP tasks such sentiment analysis for each utterance in the conversation, and text generation to provide suggestions for response and feedback.
- Evaluated performance utilizing “conversations-gone-awry-corpus” dataset to judge recall metric of toxic messages and messages that are precursors of toxic messages.

Heart Disease Prediction Dataset Analysis

Aug 2024 – Dec 2024

Florida International University, STA-6244 – Data Analysis

Miami, FL

- Preprocessed a heart disease dataset (918 records) using KNN imputation, one-hot encoding and principal component analysis (PCA).
- Built logistic regression models to predict heart disease, validated using ROC curves and metrics, and improved performance by addressing multicollinearity and outliers.
- Visualized insights with statistical tests and plots (e.g., ANOVA, VIF analysis, histograms) to highlight key feature relationships and model assumptions.

SKILLS

Technical Skills

- Programming Languages: Python, Java, C, C++, C#, SQL.
- Machine Learning Frameworks: PyTorch, TensorFlow, and ONNX.
- Cloud Computing: Google Cloud, AWS, and Azure.
- Knowledge in designing and utilizing databases.
- Generative AI and LLM.
- Microsoft Fabric, Databricks, Microsoft Power BI.
- Web Application Development: HTML, CSS, JavaScript, TypeScript, React, Next.js, Node.js, RESTful APIs

Soft Skills

- Languages: English (fluent), Spanish (intermediate).
- Strong Writing and Verbal Communication.
- Excellent adaptability & self-learning capacity.