Gabriel Rodriguez

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EDUCATION

California State University Fullerton | Fullerton, CA   **Expected June 2026**
Bachelor of Science in Computer Science, Minor in Data Science

Citrus College | Glendora, CA   **June 2024**
Associate of Science in Computer Science

RELEVANT COURSEWORK: Machine Learning, Artificial Intelligence, Data Science & Big Data, Computational Bioinformatics

TECHNICAL SKILLS

Programming Languages: Python, SQL
Libraries/Frameworks: PyTorch, Torchvision, OpenCV, MONAI, NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn, TensorFlow
Concepts: Machine learning, Deep Learning, Computer Vision, Reinforcement Learning, Data Preprocessing, Agile, Prompt Engineering, Feature Engineering, Model Optimization, Cross-validation, Object-Oriented Programming
Tools: AWS, S3, Sagemaker, CUDA, Git/GitHub, PyCharm, Visual Studio, Jupyter Notebook, Google Colab

PROFESSIONAL PROJECTS

MRI Brain Tumor Classifier (CNN)   **In Progress**
- Designed and trained a **deep learning model(CNN)** using **PyTorch** for **medical image classification**, classifying brain tumors (glioma, meningioma, pituitary), achieving **89% accuracy** and **90% recall** on tumor-positive cases.
- Enhanced classification **precision** by **11%** leveraging a **Convolutional Block Attention Module** (**CBAM**) for **spatial/channel** focus and validated model interpretability with **Grad-CAM** visualizations aligned to tumor regions.
- Minimized overfitting using **regularization** techniques incorporating **dropout**, **weight decay**, and a **learning rate scheduler** reducing validation loss by **20%**.

Diabetes Prediction Model (ANN)   **January 2025**
- Engineered an **Artificial Neural Network** in **PyTorch** to predict diabetes via patient **electronic medical records** (**EMR**), achieving **80% overall accuracy** and **92% recall** on diabetic cases.
- Preprocessed data utilizing **Pandas** for cleaning and **feature engineering**; applied **Scikit-learn's StandardScaler** to normalize features and improve convergence.
- Addressed class imbalance using **stratified train-test splitting** and **loss function class weighting** to preserve minority class representation and improve diagnostic sensitivity.

Chess AI Engine   **November 2024**
- Constructed a Python chess engine employing **bitboard** representation to optimize move generation speed by **30%**.
- Implemented **game tree search algorithms** including **alpha-beta pruning**, **iterative deepening**, and **heuristic evaluation** for optimized **AI decision-making**.
- Explored **reinforcement learning** and **Monte Carlo Tree Search** (**MCTS**) techniques to enhance **strategic planning** and **AI model optimization**.

EXTRACURRICULAR EXPERIENCE

Data Science and Machine Learning Club | California State University Fullerton   **Present**
- **Leading a team** in developing a **breast cancer tumor stage classifier** based on the **TNM grading system**, applying **machine learning** and **deep learning** techniques to classify tumor severity from clinical **DICOM** image slices.
- Implementing a **multimodal classification pipeline** leveraging **fusion transformers** and **MONAI** for **medical image preprocessing**, **augmentation**, and **3D deep learning** model development.
- **Collaborating** in an **Agile MLOps** environment using **version control** via **Git/GitHub** to streamline research and experimentation workflows.