Edison Essien

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EDUCATION

Drexel University | Philadelphia, PA — Graduation: June 2027
Bachelor of Science in Biomedical Engineering & Bioinformatics — GPA: 3.8/4.0

PROJECTS

OncoDetect – AI Lung Nodule Detection | ***Source Code*** — **Python, TensorFlow, React, Docker**
Global Large Molecule Science & Technology Co-op | West Point, PA

- Generated Grad-CAM attention heatmaps showing model focus areas on lung CT scans for interpretable predictions
- Developed lung nodule detection system using ResNet50, achieving 85.71% accuracy and 97% benign recall on 667 scans
- Engineered ML pipeline from data extraction to deployment, processing 667 nodules with 80/10/10 train/validation split

Protogen – AI Protein Generator | ***Source Code*** — **Python, PyTorch, FastAPI, React**

- Created a Transformer-based AI generating 425+ protein sequences with 85% property-conditioning accuracy.
- Integrated ESMFold structure predictions into a React frontend, eliminating external structure prediction steps.
- Implemented batch generation and FASTA export for 100+ sequences, increasing researcher throughput by 70%

BioSignal Analyzer – ECG Arrhythmia Detection | ***Source Code*** — **Python, Streamlit, NumPy, Plotly**

- Trained 6-layer 1D CNN on 48 MIT-BIH ECG recordings, achieving 95% accuracy classifying arrhythmias
- Implemented bandpass filtering (0.5-40 Hz) and Pan-Tompkins R-peak detection, enabling real-time heart rate analysis
- Designed convolutional architecture with 64-128-256 filter progression and dropout regularization, reducing overfitting

WORK EXPERIENCE

Johnson & Johnson — Apr 2025 - Sep 2025
Bioprocess Engineer - Process Analytical Technology | New Brunswick, NJ

- Conducted spectroscopic evaluation of biomanufacturing processes, identifying 8 critical quality attributes
- Implemented machine learning algorithms in Python to automate PAT data analysis, reducing processing time by 30%
- Applied chemometric modeling in MATLAB to extract molecular fingerprints from 1,000+ data points for optimization

Temple University School of Medicine — Sept 2024 - March 2025
Brain Computer Interface Software Development Research Assistant | Philadelphia, PA

- Optimized P300 and MindAffect classifiers to 92% accuracy and **15% above** baseline.
- Built Python and MATLAB pipelines using **NumPy, MNE, and SciPy**, improving speed by 27% and clarity by 21%
- Automated EEG preprocessing with band-pass filtering, ICA, and adaptive thresholding, cutting cleaning time by 35%

X - NAV Technologies, LLC — Apr 2024 - Sept 2024
Verification & Validation Engineer | Lansdale, PA

- Executed 120 test protocols for the X-Guide® System, improving accuracy by 30% in dental implants.
- Validated X-Guide's compliance with ISO 13485 and FDA regulations, enabling expansion into 10 new markets.
- Worked with cross-functional teams to resolve 40+ critical defects, increasing system stability and reliability by 25%.

TECHNICAL SKILLS

Languages: Python, MATLab, Java, SQL, Go, C, HTML5, CSS, JavaScript, VHDL
Developer Tools / Cloud: AWS, Azure, Docker, Postman, PowerBI, Git, Jira, Claude Code, Cursor, Vercel
Frameworks / Libraries: TensorFlow, PyTorch, FastAPI, Spring Boot, ReactJS, NextJS, Pandas, Scikit-Learn
Databases: PostgreSQL, SQLite, Supabase

AWARDS

- AJ Drexel Scholarship: Drexel University, Fall 2022 - Present
- Dean's List, Drexel University: Fall 2022, Winter 2023, Fall 2023, Winter 2024
- Student Organization Award for Promoting Public Service and Social Responsibility, Lindy Center, 2023 - Present