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JACOB LEONE

MACHINE LEARNING ENGINEER

Portfolio: **https://www.jacobleone.tech**

Summary

Machine Learning Engineer specializing in signal and image processing, with hands-on experience developing AI-driven solutions. My expertise spans implementing computer vision algorithms, processing complex signal data, and designing ML pipelines that bridge theoretical concepts with practical applications. Building on my graduate research in AI-medical device integration, I combine strong technical capabilities in deep learning and signal processing with a commitment to creating reliable, ethical AI systems. I excel in collaborative environments where I can apply my analytical mindset to solve challenging technical problems while maintaining a user-centric approach.

Education

Master of Science in Artificial Intelligence **Cumulative GPA: 3.9**

Florida Atlantic University, Boca Raton, FL. Graduation date: December 2023

Technical Skills

Machine Learning & Data Science
- ***Frameworks:*** PyTorch, Tensorfow, Keras, Scikit-Learn
- ***Visualization:*** Matplotlib, seaborn, Weights & Biases (WandB)
- ***Data Processing:*** Pandas, NumPy, SQL
- ***Version Control & MLOps:*** Git, Docker

Signal & Image Processing
- Digital Signal Processing (DSP)
- Computer Vision
- Embedded Systems

Programming Languages:
- ***Primary:*** Python, C/C++
- ***Secondary:*** TypeScript, R, Go, MATLAB

Development Environment:
- ***Operating Systems:*** Linux (Ubuntu), Windows, MacOS
- ***API Testing:*** Postman

Professional Experience

Machine Learning Engineer, Aventusoft | Boca Raton, FL *2024–Present*

Developing AI models for FDA-approved medical devices, specializing in ECG signal processing and predictive analytics.
- Engineered and deployed machine learning models for real-time ECG signal analysis, achieving 98% accuracy in fiducial point detection.
- Developed data preprocessing pipelines for ECG signals, standardizing diverse datasets from multiple sources into a unified format.
- Implemented end-to-end DSP-based AI system integration, collaborating with firmware, hardware, cloud, and biomedical engineering teams.
- Optimized model performance for embedded medical devices, achieving inference time of 2 seconds while maintaining accuracy.
- Established data validation protocols and documentation for ensuring compliance with FDA requirements for medical systems.

Team Lead & Software Engineer, AuthentiKid | Remote (California • Idaho • Florida) *2023–2024*

Led development of AI-driven security solutions, managing cross-functional teams and architecting scalable systems.
- Architected and deployed AI-based security system, processing daily transactions with 99.9% uptime.
- Led a team of 4 developers across multiple time zones, implementing agile methodologies that reduce delivery time.
- Designed and implemented CI/CD pipelines, reducing deployment time to 5 minutes.
- Ensured the integration of security measures at every stage of software development, prioritizing data integrity and user privacy.

Embedded Systems Developer, Vector Climate (Contract) | Pompano, FL *2020–2023*

Developed embedded systems and testing solutions for industrial cooling systems, focusing on hardware-software integration.
- Created automated testing framework for hardware components, reducing QA time.
- Designed and implemented PCB testing protocols for multiple sensor types including water level sensors and LED arrays.
- Managed prototype development lifecycle.
- Developed flash configurator application enabling real-time parameter adjustments, improving system flexibility.

Relevant Projects

Urban Soundscape GAN | Generative AI **December 2023**

Advanced generative system for synthesizing classifying urban audio environments.
- Architected and implemented a custom GAN architecture optimized for audio classification on a web application.
- Developed novel feature extraction pipeline for urban sound signatures using torchaudio.
- Achieved 97% accuracy in urban sound classifications.

Online Deep Learning Based Age Authentication | Production ML Web Application **November 2023**

Full-stack age verification system with privacy-preserving ML inference.
- Designed and deployed end-to-end ML pipeline for age classification using Tensorflow.js.
- Implemented secure JWT authentication flow and privacy-preserving local inference.
- Built scalable AWS infrastructure handling daily requests..

PyTorch Audio Processing Course | Educational Content Development **February 2024**

Comprehensive educational series on audio processing with PyTorch, reaching worldwide learners.
- Created practical tutorials covering:
  - Audio data preprocessing and feature extraction (spectrograms, MFCCs).
  - CNN architecture design for audio classification.
  - Advanced techniques: data augmentation, transfer learning.
  - Production deployment strategies.
  - Demonstrated techniques for loading, processing, and visualizing audio data within the PyTorch framework.
  - Introduced transfer learning concepts for audio, showing how to apply pre-trained models to audio tasks with limited data.
- Published detailed python modules for DSP-based ML techniques.

Relevant Coursework

Data Structures	**Deep Learning**	**Natural Language Processing**	**Advanced Internet Systems**	**Data Science**
Cognition	**Artificial Intelligence**	**Software Engineering**	**Analysis of Algorithms**	**Comp Foundations of AI**