Arden Matikyan

ardenmatikyan@gmail.com
Linkedin.com/in/amatikyan | ardenmatikyan.com | github.com/arden-matikyan

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Work Experience

Software Engineering Intern - LMI (June 2025 - Aug 2025)

- Built an end-to-end voice transcription solution by evaluating ML models and deploying OpenAI's Whisper locally within a containerized Docker environment.
- Developed a RESTful API using FastAPI framework to expose transcription services and ensure seamless integration with existing system components.
- Extended legacy codebase with TypeScript, HTML, and SASS to implement audio recording interface, MP3 file upload functionality, and automated voice-to-text workflows with PDF export capabilities.

Software Development Intern - FINRA (June 2023 - Aug 2023)

- Boosted unit test coverage by 4.5% for the back-end notifications service, enhancing system stability and reliability.
- Designed and implemented an automated onboarding system in Python, reducing manual effort and errors for the notifications team.
- Optimized data management by analyzing and structuring key fields and values using SQL in pgAdmin.

Software Engineering Intern - Thales Defense & Security (June 2022 - Aug 2022)

- Automated firmware updates/downgrades in C++ for military-grade SATCOM systems, improving testing efficiency and accuracy.
- Developed a dynamic, real-time graph in JavaScript to visualize signal strength changes, enhancing user experience and operational insights.

Projects

Adaptive Game Agent for Ashta-Chamma - https://github.com/arden-matikyan/ReinforcementLearning

- Collaborated with a team to design and develop a reinforcement learning (RL) agent capable of adapting to varying opponent strategies in a board game, Ashta-Chamma, utilizing deep learning frameworks.
- Implemented and fine-tuned Proximal Policy Optimization (PPO) and Deep Q-Networks (DQN) algorithms to enable dynamic decision-making in high-dimensional state spaces, optimizing policy gradients and value functions for strategic gameplay.
- Designed a custom RL environment using the OpenAI Gym framework and Python, programming game mechanics with multiple opponent behaviors, including aggressive, defensive, and stochastic strategies for robust agent training.

Embedded Face Detection System (Capstone Project) - https://github.com/arden-matikyan/AdaBoost-Face-Detection-ML

- Led a team of three to design and develop an embedded face detection system using the Viola-Jones algorithm and AdaBoost in C++, achieving 95% accuracy across 4,000 sample images.
- Streamlined development with Bash scripting, creating automated test suites for efficient testing.
- Deployed the system on a virtual Raspberry Pi, demonstrating real-time performance in a lightweight dataflow environment.

CIFAR-10 Image Classification System

- Implemented multiple neural network architectures from scratch in PyTorch, achieving 70%+ accuracy on CIFAR-10 dataset through systematic experimentation with CNN designs and hyperparameter optimization.
- Built core deep learning components including vectorized backpropagation, batch/layer normalization, and dropout regularization, demonstrating deep understanding of neural network fundamentals.
- Compared performance across various optimizers (SGD, Adam, RMSprop) and regularization techniques, analyzing training dynamics and convergence patterns to optimize model performance.

Education

Master of Engineering in Software Engineering, University of Maryland, College Park, MD (Expected: Dec 2025)
Bachelor of Science in Computer Engineering, University of Maryland, College Park, MD (2020-2024)

Skills

Technical: Python, Java, C++, C, TensorFlow, JavaScript, NoSQL. MatLab, HTML, CSS
Tools/Practices: Git, Docker, Linux CL, AWS (EC2, S3), Agile/Scrum