Arden Matikyan

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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)

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 the 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.

Skills

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