

Aidan Nguyen

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EDUCATION

Virginia Tech

Blacksburg, VA

Bachelor of Science in Computer Science

May 2027

- Related Coursework: Object-Oriented Programming, Programming in Python, Data Structures and Algorithms, Computer Organization, Computer Systems, Discrete Mathematics, Linear Algebra, Multivariable Calculus

PROJECTS

Tsukora - Local LLM-Based AI Agent | *Python · Flask · Ollama · Torch · BeautifulSoup · DDG Search*

- Built a modular **Flask** microservice architecture for fully local **LLM inference** with **Ollama**, integrating **REST APIs** for **speech recognition**, **search-augmented generation**, and **TTS output**.
- Designed a custom query-confidence detection mechanism to trigger targeted web searches, increasing factual response accuracy by **~40%** in internal testing.
- Developed a pluggable pipeline for **speech I/O** with XTTS v2, enabling near real-time, offline multimodal interactions without reliance on cloud APIs.

Spring Boot JWT Authentication System | *Java · Spring Boot · Supabase*

- Engineered a stateless authentication workflow using JWTs, custom request filters, and role-based access control.
- Integrated Supabase for secure, cross-platform user data persistence and authentication state management.
- Added time-based verification codes with JPA persistence for password resets and session validation.

Neural Network for MNIST Classification | *C# · ML · Matrix Algebra*

- Implemented a feedforward neural network from scratch in C#, achieving **>90% accuracy** on MNIST with hand-coded matrix ops, activation layers, and backpropagation.
- Developed a custom matrix math library supporting dot products, transposition, and broadcasting for efficient numeric computation.
- Added training utilities for one-hot encoding, normalization, and visual performance tracking, simulating professional ML experimentation workflows without external ML frameworks.

Full-Stack Portfolio Website | *React · Spring Boot · Java · JavaScript · HTML/CSS*

- Built a personal portfolio with a React frontend and Spring Boot backend, using reusable components and a responsive UI to showcase projects.
- Implemented DTO validation and service-layer abstractions for secure, maintainable backend logic.
- Integrated automated email notifications for form submissions via RESTful API endpoints.

EXPERIENCE

Dental Assistant

June 2023 – August 2023

Lansdowne Dental Care

Leesburg, VA

- Adapted quickly to complex workflows in a fast-paced clinical environment, maintaining accuracy and efficiency under tight deadlines.
- Operated advanced scanning and diagnostic systems with precision, ensuring high-quality data capture and reliable results.
- Took initiative to streamline procedures and improve patient interactions, enhancing both operational flow and client satisfaction.

EXTRACURRICULAR ACTIVITIES

Attended Amazon University Event-Campus Prep Series 2025

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, C#, HTML/CSS, SQL

Frameworks: Spring Boot, Flask, React

Libraries: pandas, NumPy, PyTorch

Technologies: Docker, Git, SQLite, PostgreSQL