Rakan Abu Awwad

(540)-998-0003 | rakanawwad48@gmail.com | linkedin.com/in/rakanawwad | github.com/arakan1 | VA

Education

Virginia Polytechnic Institute and State University (Virginia Tech) *Expected: May 2027*

M.S. in Software Development & Applications — GPA: 4.00/4.00

Relevant Coursework: Information Security, Database Management, AI Tools for SWE, Operating Systems

Leadership & Involvements: VP of Finance (Delta Upsilon Fraternity), Hackathon Participant (HackViolet & MLH)

Virginia Polytechnic Institute and State University *Aug 2021 – May 2025*

B.S. in Computer Science

Technical Skills

Languages: Python, Java, JavaScript, SQL, TypeScript, C

Databases: MySQL, PostgreSQL, MongoDB, DynamoDB

Tools & Technologies: React, Next.js, Node.js, Flask, FastAPI, HTML, CSS, Microservices, AWS (S3, EC2), Docker, Git, GitHub Actions (CI/CD), Linux, Data Structures & Algorithms, Object-Oriented Programming, Agile, pytest, Jest

Work Experience

Graduate Research Assistant Aug 2025 – Apr 2026

Virginia Tech, Dept. of Computer Science

- Led development of a privacy-first Chrome Extension using JavaScript, Manifest V3 front-end and local Flask backend, implementing a zero-external-transmission pipeline that ensures sensitive data never leaves the user's device
- Engineered a hybrid ML inference pipeline combining PyTorch, Hugging Face Transformers, and TinyBERT with a regex-based rules engine for real-time sensitive data detection, achieving 93.7% accuracy
- Built a 10,000+ synthetic email dataset using Faker and GPT-4 prompt engineering to address the scarcity of labeled sensitive email data, enabling supervised fine-tuning of TinyBERT for high-accuracy on-device inference
- Fine-tuned and validated TinyBERT on a custom-built dataset, deploying on-device inference via a local REST API achieving <100ms latency

Software Engineering Intern Aug 2024 – Dec 2024

Virginia Tech Marketplace

- Contributed to an open-source project for students to post and review local places, serving a closed beta of 10+ users
- Built a responsive multi-page frontend using Next.js and React with optimized routing, reducing redundant data fetching and improving perceived load performance
- Developed a full-stack review system and JWT-based auth restricted to verified .edu emails via FastAPI and PostgreSQL, securing backend access and enabling verified user feedback

Software Engineering Intern Jun 2023 – Aug 2023

Rubu Al-Quds Technology, Amman, Jordan

- Designed and deployed 15+ RESTful API endpoints using FastAPI (Python), PostgreSQL, and Docker for inventory and order management microservices, handling 10,000+ daily requests across a 5,000+ product catalog with real-time data synchronization and highly scalable distributed backend architecture
- Optimized PostgreSQL database performance through strategic indexing, query refactoring, and SQL tuning, reducing latency by 40% and improving system throughput, fault tolerance, and reliability at scale
- Implemented JWT-based authentication and role-based access control (RBAC) across 10+ secured API endpoints using FastAPI Security utilities and PyJWT, enforcing data integrity and preventing unauthorized access across all production systems, reducing inventory discrepancies by 60%

Projects

Car Dealership Management System | americanautosalesvirginia.com Dec 2025

- Architected and deployed a full-stack auto dealership management system using Next.js, Node.js, Express, and MySQL, implementing dynamic inventory browsing, server-side rendering (SSR), and real-time search and filtering across 100+ vehicle listings, serving 2,500+ real users in production
- Engineered a secure admin dashboard with JWT-based authentication and role-based access control (RBAC) to manage listings end-to-end, integrating Cloudinary and AWS S3 for scalable media storage and deploying to production via Vercel with CI/CD integration
- Designed a normalized MySQL schema with optimized queries and indexed fields to support real-time inventory filtering and search across 100+ listings, ensuring fast response times and data integrity at scale