# Ali Nawaf

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## Education

**Case Western Reserve University |** Cleveland, OH
BS/MS in Computer Science (Integrated Program), Secondary Major: Mathematics. May 2027
**Course work**: High Performance Computing, Linear algebra, **Security**, **Networks**, **Data structures**, **Algorithms**

## Experience

**Software Engineer** (part time) | Eaton | Cleveland, OH Jan 2025 – May 2025

- Built and deployed **Azure** DevOps pipelines integrated with **Microsoft Logic Apps**, automating the processing of **100K+** Salesforce records.
- Delivered BI insights through **Power BI dashboards**, enabling data-driven decision-making at the leadership level.
- Redesigned batch analytics workflows, cutting latency by **35%** and lowering operational costs.
- Implemented **role-based access control** (RBAC), reducing unauthorized access incidents and strengthening data security.

**Machine Learning Intern** | Heads-up Hockey | Waterford, VA Dec 2024 – Aug 2025

- Automated dataset annotation pipeline using Kubernetes, SAM2, YOLO cutting training time by **67%** and reducing cloud compute costs by thousands annually.
- Optimized **PyTorch** models, achieving **3×** faster inference on GPUs and enabling real-time video analysis with **CUDA.**
- Developed an IOS app detecting high-velocity hockey shots achieving **96%** accuracy through **ML models and algorithms**.
- Built an interactive **Swift** game integrating responsive UI with optimized backend, improving user retention by **63%** in prototype testing.

**IT Intern** | EarthLink ISP | Remote May 2024 – Aug 2024

- Built a Java-based monitoring system for real-time network health tracking, improving fault detection by **50%.**
- Automated ticket classification with Python NLP, reducing manual triage time by **60%** and cutting average customer response time by **25%.**

## Projects

**Computer Vision SmartLabeler |** PyTorch, Python, API, git, GitHub, Docker, Networking

- Reduced manual image annotation time by **60%** by developing a Python-based tool that integrated with the Label-Studio API to pre-label images using a fine-tuned **YOLOv10** model.
- Improved ML team scalability and experiment reproducibility by designing a modular architecture and containerizing the entire application with Docker.

**ElectroVector App** | Swift, Python, git, GitHub, API

- Empowered medical staff with faster diagnostic insights by developing an iOS app that transforms raw ECG signals into clinical Vectorcardiograms, automatically extracting **5+ key cardiac risk metrics**.

**Research Blog** | Next.js, API, GitHub, JFX, Pytorch, Scikit-learn | visit

- Built and deployed a **Next.js** research blog with integrated APIs, posting tutorials, project write-ups, and research.

## Technical Research Experience

- Implemented and optimized VAEs in **PyTorch**, boosting generative model stability by **25%** for research publications.
- Applied advanced mathematical concepts to design and test **VAEs** and **diffusion models**, enhancing data generation.
- Researching privacy-preserving frameworks leveraging **PCA**, **differential privacy**, and **Federated learning** for **scalable use** in agriculture and bioinformatics. Used **Kubernetes** and **MongoDB**.
- **Achieved >90%** accuracy in cardiovascular risk prediction by collaborating with Houston Methodist Hospital to build and validate a ResNet model for automated CT scan analysis.

## Skills

**Languages: C++, C, CUDA, Python, Java, Swift, SQL**, Node.js, Next.js, Go, PostgreSQL.

**AI/ML: PyTorch**, **TensorFlow**, **Scikit-learn**, NumPy, Pandas, VAEs, CNN, RESNET, YOLO.

**Cloud & Platforms: Azure**, **Power BI**, SLURM, **GitHub Copilot**, HPC, Kubernetes, AWS, Redis.