

MUHIDEEN MUSTAPHA

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EDUCATION

University of Maryland

Master of Engineering in Software Engineering

Lincoln University of Pennsylvania

Bachelor of Science in Computer Science

Organizations: National Society of Black Engineers, Google Developer Student Club, Colorstack

College Park, MD

Expected May 2027

Oxford, PA

May 2024

EXPERIENCE

Software Engineer Intern

Jun. 2026 – Aug. 2026

Strategy Inc. (formerly MicroStrategy)

Tysons Corner, VA

- Architected a **multi-cloud CIDR lifecycle platform** using Java, Spring Boot, React, TypeScript, PostgreSQL, and REST APIs, centralizing network validation, reservation, and provisioning workflows across **AWS, Azure, and GCP**.
- Engineered **fail-closed overlap detection** and concurrency-safe allocation across **6 authoritative sources**, preventing duplicate/conflicting network ranges while supporting customer-provided CIDRs, generated subnets, and migration workflows.
- Integrated the platform into customer onboarding operations with role-based access, audit history, Teams notifications, GKE deployment, database migrations, and **144 validation tests** delivered through **12 focused PRs**.

Software Engineer

Feb 2025 – July 2025

PNC Financial Services

Pittsburgh, PA

- Built a Python fraud analytics pipeline applying **ML risk scores** to transaction data, indexing outputs in Elasticsearch and surfacing high-risk activity in Tableau & Kibana, improving detection accuracy by **35%** and cutting reporting time by **50%**.
- Improved **fraud-model decisioning** through threshold recalibration and rule-based filtering for non-fraud cases, while pre-aggregating reporting metrics in Python and Elasticsearch for faster analyst investigation.
- Designed scalable REST APIs for VFaaS to validate **200+ systems** after security patches, integrating QFaaS automated testing and Python/ServiceNow workflows to reduce deployment risk and manual incident-resolution effort.

Machine Learning & Artificial Intelligence Researcher

Jun. 2023 – Aug. 2023

Stanford University

Palo Alto, CA

- Applied **LLMs** (GPT-based models via LangChain) and TensorFlow to synthesize cancer patient narratives, advancing equitable healthcare through NLP.
- Built an **ML-driven querying tool** in Python & C++ to simulate patient journey, enhancing healthcare provider decision making.
- Processed **2M+ patient records** to enhance predictive models, improving treatment outcome prediction accuracy by **12%**.

Software Engineer Intern

Jun. 2022 – Aug. 2022

Capital One

McLean, VA

- Created a Linux monitoring tool using New Relic APIs and Bash/Python scripts, reducing incident response time by **23%** across **50+ production servers**.
- Configured **Python-based health-check alerts**, improving system stability and reducing downtime.
- Added **full-stack features** (Node.js backend, React dashboards) and collaborated with DevOps/QA to optimize CI/CD pipelines through testing and deployment scripting.

PROJECTS

GPU-Accelerated Vector Search + Columnar Operators | CUDA, C++, Nsight Systems, Thrust/CUB, OpenMP, Apache Arrow

- Implemented GPU-accelerated ANN search and index construction using HNSW/IVF-style techniques, benchmarking recall@k, throughput, and p50/p95 latency against CPU baselines.
- Built and optimized parallel filter, group-by, and top-k columnar operators, profiling CUDA kernels for occupancy, memory coalescing, shared-memory utilization, and divergence.

QuestLab | Python, Flask, SQLite, Flask-SQLAlchemy, Flask-Login, PyTest, Pillow

- Built a Flask-based experiential learning platform that transforms theoretical lessons into real-world “Quests” with tasks, submissions, reflections, and progress tracking.
- Designed creator/learner workflows for quest publishing, validation, search, and in-progress tracking, plus image and reflection analysis for topic-based feedback.

Commerce | Java, Spring Boot, Spring Security, JPA, PostgreSQL, MySQL, REST APIs, JWT, AWS

- Engineered a full-stack e-commerce platform using Spring Boot, JPA, relational databases, and REST APIs, deployed on AWS.
- Implemented JWT authentication and role-based authorization with Spring Security to secure user and application data.

TECHNICAL SKILLS

Languages : Python, C/C++, CUDA, Java, JavaScript, HTML/CSS, Swift

Databases: MongoDB, MySQL, PostgreSQL, Vector search (FAISS/HNSW/IVF-PQ)

Frameworks : React.js, Node.js, Express.js, Next.js, Flask, Java Spring Boot, Thrust/CUB, Apache Arrow/Parquet, TensorFlow, PyTorch

Developer Tools: Git, VS Code, Visual Studio, PyCharm, IntelliJ, Postman, Tableau, Bash, MS Office, Nsight Systems, Linux perf tooling

Certifications: AWS Generative AI, AWS ML Foundations, AWS Computer Networking, Coursera ML Specialization