Muhammad Mustufa

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EDUCATION

Georgia State University Aug 2026 - May 2028
MS, *Computer Science* GPA: 3.8

Lahore University of Management Sciences Sep 2022 - Jun 2026
BS, *Computer Science*

SKILLS

Languages: Python, Go, Java, C++, JavaScript, SQL, Flutter, Dart, Kotlin
Frameworks and Data: FastAPI, Spring Boot, .NET, Laravel, Node.js, React, Next.js, PostgreSQL, MySQL, MongoDB, Redis
Cloud and Tools: Docker, Kubernetes, AWS (EC2, S3, Lambda), Azure, Databricks, Git, CI/CD, JUnit, Selenium, Figma, Unreal Engine
ML/AI: PyTorch, TensorFlow, LangChain, RAG, OpenCV, Scikit-learn, Pandas

WORK EXPERIENCE

Georgia State University | Graduate Teaching Assistant, Software Engineering Aug 2026 - Present
- Lead technical labs in Kotlin and Figma for a 100-student software engineering course, supporting team projects during office hours
- Grade sprint deliverables, design diagrams, and project demonstrations, providing feedback aligned with course rubrics.

Google Summer of Code - Google DeepMind | Open Source Contributor May 2025 - Aug 2025
- Developed Gemma 2 embedding pipelines through KerasHub with dynamic batch-size optimization, processing datasets up to 10GB without out-of-memory failures.
- Contributed embedding infrastructure through an open upstream KerasHub pull request for downstream machine learning applications.

The Synergates Business Solutions | Backend Engineer Jun 2024 - Oct 2024
- Built Laravel MVC backend services and REST APIs for the World Bank-funded CLICK city platform in Karachi; reduced page load times by 15%.
- Integrated OpenCV with .NET for the Sindh Smart Surveillance System, processing 10,000+ vehicle records daily.

10Pearls Pakistan | Software Engineering Intern Jun 2024 - Jul 2024
- Developed Java Spring Boot REST APIs backed by MySQL; reduced software bugs by 30% through JUnit backend tests and Selenium frontend automation.

PROJECTS

ContinuumAI - Multi-Agent Analytics | Python, FastAPI, Next.js, PostgreSQL, Redis, Kubernetes, Snowflake, BigQuery
- Built dataset profiling, dashboards, and AI-assisted SQL querying with data pipelines supporting Snowflake, PostgreSQL, and BigQuery; used medallion architecture and Redis caching.
- Achieved 90% query success with sub-10-second latency on 1GB datasets; deployed the FastAPI backend on Kubernetes.

Distributed Key-Value Store | Go, Raft, gRPC, Distributed Systems
- Implemented leader election, log replication, and snapshots for crash recovery; diagnosed and fixed six bugs through 120 randomized tests across five-node clusters with crashes, network partitions, and leader failures.

GuideWing - Cox Track Winner, Hacklanta 2026 | Python, FastAPI, OpenCV, MediaPipe, Unreal Engine
- Built backend and vision workflows for an accessibility prototype; connected an Unreal Engine simulation through HTTP polling and routed gesture-triggered assistance requests to iMessage and a web dashboard.

TriageX -1st Place Healthcare Track & Entire Sponsor Track , Emory Hacks 2026 | Python, FastAPI, React, Gemini, Chert, Tiger Data
- Built an AI-powered hospital surge coordination platform with FaceTime staff verification and real-time staffing interventions, reducing simulated ambulance handoff delays by **36%**.

IntelliLearn | Next.js, PostgreSQL, AWS, LLMs, RAG, Vector Search
- Built and deployed a personalized learning portal on AWS with adaptive quizzes, semantic course retrieval, and RAG-backed chat guidance.

Additional AI and Healthcare Projects
- **Agentic RAG | Databricks, Spark, Delta Live Tables, MLflow, LangChain:** : Built streaming ETL and multi-agent workflows.
- **Clinical RAG | RAG, LLMs:** Developed a diagnostic-question assistant deployed at Aga Khan University Hospital and Shalimar Hospital in Pakistan.
- **Multimodal TB Detection | Vision Transformers, SHAP, Grad-CAM:** Combined chest X-rays and symptoms using Efficient Vision Transformers; achieved 94% F1 with SHAP and Grad-CAM explainability.