Syed Mohammed Hussain

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Professional Summary

Software Engineer with hands-on experience across backend development, automation frameworks, ETL systems, and applied AI. I've engineered scalable solutions at First National Bank and Amazon ranging from building automation frameworks used across multiple financial platforms, to designing C#/.NET ETL pipelines, to developing Python/Java utilities that support backend workflows and data integrity. My work spans distributed system debugging, data processing, and AI-driven tooling, supported by strong fundamentals in Python, Java, C#, SQL, and cloud/CI pipelines. I bring a build-fast, think-system-first engineering mindset, and I'm actively growing my AI/ML capabilities to align with modern software engineering.

Education

Master of Science in Information Technology   Aug 2024
University of the Cumberlands, USA

Work Experience

Software Engineer   Nov 2024 – Present
First National Bank, USA

- Engineered a scalable automation framework using **Java, Playwright, Cucumber** to automate **3,000+ cross-application workflows** across Teller, AML/Oasis, and Connects platforms—reducing regression cycles from days to hours.

- Developed backend utilities and services in **C#/.NET** to validate transactions, reconcile financial data, and support fraud/AML pipelines, improving data reliability across high-volume systems.

- Designed and built a production-grade **ETL pipeline** (C# .NET → SQL Server) to ingest, transform, and load operational Excel datasets with validation layers, logging, and exception handling.

- Modernized reporting workflows by implementing SQL-based transformations and integrating multiple stored procedures for enterprise reports (Teller Volume, MI Monitoring, Official Checks, Transit Deposits).

- Improved CI/CD processes by integrating test execution, pipeline triggers, and reporting automation within **Azure DevOps**, strengthening release confidence for critical financial features.

- Collaborated with backend developers, analysts, and DBAs to diagnose distributed system issues, optimize SQL queries, and ensure system correctness across multi-service workflows.

- Created Python and C# tooling to analyze patterns, verify data integrity, and surface anomalies in transaction data—accelerating investigations for fraud detection and operational risk teams.

Software Engineer (Graduate Assistant)   June 2023 – July 2024
University Name, USA

- Built **Python + Pandas + SQL** ETL pipelines to clean, normalize, and merge institutional datasets for academic analytics and ML experimentation.

- Prepared **ML-ready datasets** and engineered reproducible data workflows for faculty-led projects involving student performance and engagement analysis.

- Created dashboards in **Tableau/Excel** to visualize trends in performance, resource utilization, and engagement, enabling data-driven decisions across departments.

- Collaborated with IT and research teams to integrate scripted checks, automated data validation, and documented workflows for long-term use.

Software Engineer   Aug 2019 – Aug 2022
Amazon

- Contributed to backend and platform engineering for high-scale Amazon systems, supporting reliable workflows used by millions of customers.

- Built **Python and Java** internal tools and utilities to automate data checks, validate API behaviors, and assist engineers in debugging complex event flows.

- Applied **AI/ML-driven techniques** (pattern recognition on logs, anomaly-style checks, classification-style logic) to accelerate root-cause analysis and reduce manual investigation time.

- Used **SQL, logging, and observability tools** to trace issues across multiple services, validate data integrity, and inform technical decisions in cross-functional teams.

Skills

Languages: Python, Java, C#, JavaScript/TypeScript, SQL
Frameworks & Tools: Playwright, Cucumber BDD, Maven, TestNG, .NET, FastAPI, React, Next.js, Tailwind CSS, Git, Azure DevOps, SSIS
AI/ML: Neural Networks (MLP, CNN), PyTorch, Kaggle workflows, NLP basics, RAG concepts, Vector Databases (FAISS), Model evaluation (confusion matrix, error analysis)
Data & ETL: Pandas, ETL pipelines, data cleaning/normalization, SQL Server, Excel/CSV processing, reporting workflows
Other: Agile/Scrum, system debugging, test strategy, technical documentation

Projects

Mirror AI — AI-Powered Reflection & Emotional Analysis Web App
GitHub: https://github.com/MhussainD4772/Mirror-AI

- Built a full-stack journaling web app using **Next.js, TypeScript, FastAPI, Supabase** where users log reflections and receive AI-generated emotional analysis, summaries, and trends.

- Integrated **Hugging Face NLP models** for sentiment and emotion analysis; deployed frontend (Vercel) + backend (Render) for production-ready AI features.

MNIST Digit Classifier — Deep Learning Model (MLP $\rightarrow$ CNN)
GitHub: https://github.com/MhussainD4772/Machine-Learning-Portfolio

- Implemented an end-to-end **PyTorch** workflow on Kaggle, starting with an MLP baseline (96.7%) and upgrading to a CNN achieving **99.3% accuracy**.

- Built a complete ML pipeline including preprocessing, model training, confusion matrix, error analysis, and Kaggle submission (**0.99225**, top 20–25%).

Devfolio — Freelancer Portfolio Generator
GitHub: https://github.com/MhussainD4772

- Created a **React + Supabase** web platform enabling developers to generate hosted portfolio sites with no code.

- Built authentication, portfolio builder UI, live preview, and deployment workflows.

Mini ETL Pipeline — Excel to SQL (C# .NET)
GitHub: https://github.com/MhussainD4772

- Built a production-grade ETL system in **C# .NET 8** to ingest Excel data, apply transformations, and load it into SQL Server with validation and logging.

- Designed workflows inspired by enterprise ETL jobs used at FNB, improving accuracy and maintainability.

QASentinel — Multi-Agent RAG Testing Orchestrator
GitHub: https://github.com/MhussainD4772/Capstone-Project-Agentic-AI-

- Designed a **multi-agent AI workflow** using RAG, FAISS vector search, and orchestrator/planner agents to convert user stories into structured QA scenarios.

- Demonstrated strong understanding of agentic AI, embeddings, context retrieval, and workflow design for developer tools.