

# Md. Abu Ammar

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## About Me

Passionate Software Engineer with expertise in backend architecture, automation pipelines, applied machine learning, and DevOps. Currently at **Masjid Solutions (remote, US-based)**, where I design and deploy scalable systems, break down monoliths into microservices, and build intelligent integrations that include AI-powered kiosk monitoring with **.NET Aspire (orchestration, observability, service discovery)** and Stripe and AuthNet ACH payment automation for recurring and one-time payments.

Although my main focus is backend + AI/ML, I also contribute to **frontend development** using HTML, CSS, JavaScript, and Alpine.js in Razor pages, ensuring smooth integration of backend services with user-facing features.

With experience spanning AI/ML research (Quantum Machine Learning, NLP, Ensemble Models) and real-world engineering (CI/CD pipelines, Azure DevOps, distributed systems), I thrive at the intersection of intelligent applications and software engineering.

My mission: to continuously improve systems, automate repetitive tasks and innovate on scale, with a focus on impactful solutions in AI-driven software engineering.

## Education

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| <b>North South University</b><br><i>Master's of Science in Computer Science and Engineering</i> <ul style="list-style-type: none"><li>• <b>Relevant Coursework:</b> Distributed Database, Robotics, Computer Vision, Advanced Computer Architecture, Computer Network and Security, Wireless Communication, Bio-Informatics</li></ul>                       | Jan 2023- Expected November 2026<br>Dhaka, Bangladesh |
| <b>North South University</b><br><i>Bachelor's of Science major in Computer Science and Engineering, minor in Mathematics (CGPA: 3.58 / 4.00)</i> <ul style="list-style-type: none"><li>• <b>Relevant Coursework:</b> Data Structures and Algorithms (C++), Prob &amp; Stat in CS, Machine Learning, Linear Algebra, Deep Learning, NLP, Database</li></ul> | May 2018- Sep 2022<br>Dhaka, Bangladesh               |
| <b>Milestone College</b><br><i>Higher Secondary School Certificate (GPA: 5.00 / 5.00)</i> <ul style="list-style-type: none"><li>• <b>School of Science</b></li></ul>                                                                                                                                                                                        | 2015-2017<br>Dhaka, Bangladesh                        |
| <b>Tamirul Millat Kamil Madrasah</b><br><i>Dakhil or Secondary School Certificate (GPA: 4.72 / 5.00)</i> <ul style="list-style-type: none"><li>• <b>School of Science</b></li></ul>                                                                                                                                                                         | 2013-2015<br>Dhaka, Bangladesh                        |

## Experience

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| <b>Masjid Solutions</b><br><i>Software Engineer</i> <ul style="list-style-type: none"><li>• Engineered backend solutions using <b>.NET (MVC &amp; Core), SQL Server, Dapper, LINQ, Repository Pattern, and Entity Framework</b> to deliver scalable applications for Islamic schools, memberships, events, and donation management.</li><li>• Designed and automated <b>data import pipelines</b>, transforming raw Excel data into validated SQL Server schemas — reducing onboarding time for new schools and memberships by 60%.</li><li>• Architected and maintained <b>CI/CD pipelines</b> with Bitbucket, Jenkins, IIS, and rollback-ready backup strategies — enabling safe, zero-downtime deployments across <b>dev, beta, staging, and production</b>.</li><li>• Built a <b>Remote Kiosk Device Management System</b> with REST APIs for live monitoring (battery, Wi-Fi, uptime) and remote control (reboot, screenshot) of donation kiosks, improving support response time.</li><li>• Developed <b>KioskVisionAI</b>, a distributed <b>.NET 9 Aspire</b> app on Azure, integrating <b>Azure Blob Storage, Queues, and Vision AI</b> with GitHub Actions for automated deployments and intelligent kiosk monitoring.</li><li>• Leveraged <b>.NET Aspire</b> for orchestration, observability, and service discovery in distributed kiosk management microservices.</li><li>• Integrated <b>Stripe</b> and <b>Authorize.Net</b> ACH payments, extending the donation platform with secure recurring transactions for schools, events, and memberships.</li><li>• Integrated <b>Apple Pay and Google Pay</b> via Stripe Payment Intents, implementing tokenized wallet payment flows that accelerated mobile checkout and improved donation conversion across one-time and recurring payments.</li><li>• Implemented <b>Twilio Lookup API</b>-based data enrichment to merge duplicate donor records, significantly improving data quality and reporting accuracy.</li><li>• Contributed to <b>monolith-to-microservices migration</b> with .NET Core, applying <b>Clean + Onion Architecture</b>, repository patterns, and domain-driven principles for maintainability and scalability.</li><li>• Enhanced <b>frontend features</b> with .cshtml, HTML5, CSS3, JavaScript (ES6+), and Alpine.js to ensure seamless user experience integration with backend services.</li></ul> | December 2023 – Present<br>Indianapolis, Indiana, USA—Remote |
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## Masjid Solutions

SQA Engineer

October 2023 – November 2023

Indianapolis, Indiana, USA—Remote

- Developed and maintained a Data-driven UI Automation Project using C#, NUnit.NET, Selenium, Serilog, Extent Report, and Jenkins to automate test cases in CI/CD pipelines, ensuring product quality and reliability.
- Utilized CSV files to drive test cases, enhancing test coverage and efficiency.
- Implemented automated testing for a critical module using Selenium, reducing regression bugs by 30% and ensuring a more stable release cycle.

## A1QA Pure-play software testing company

QA Automation Engineer

November 2022 – July 2023

Colorado, USA—Remote

- Developed numerous automated test scenarios using TestNG framework with Maven integration using Selenium WebDriver.
- Contributed in implementing data-driven testing with CSV files for regression and priority-based automated tests after every build/release.

## Technical Skills

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**Programming:** C, C++, C#, Java, Python, SQL, JavaScript, Bash, Assembly,  $\LaTeX$ .

**Backend/Frameworks:** .NET Core, ASP.NET MVC, .NET Aspire, Django, Entity Framework, Repository Pattern, Clean/Onion Architecture, Dapper.

**Frontend Development:** Razor page, HTML5, CSS3, JavaScript (ES6+), Vanilla JS, Alpine.js

**AI/ML Frameworks:** PyTorch, TensorFlow, Scikit-learn, Hugging Face, Pandas, Numpy, Seaborn, Matplotlib.

**Quantum Computing & QML:** IBMQ, PennyLane, Qiskit (basics), Variational Quantum Circuits, Quantum Machine Learning (Encoding Methods, Hybrid Classical-Quantum Models).

**DevOps & Cloud:** Jenkins, Bitbucket Pipelines, GitHub Actions, IIS, **Azure Developer CLI (azd)**, Azure (Functions, App Services, Blob Storage, Queues, Vision AI), PowerShell.

**Payments & APIs:** Stripe and AuthorizeNet, Twilio Lookup API, REST APIs, KLR Kiosk APIs.

**Testing:** Selenium, NUnit, TestNG, Aquality Framework, Postman, REST Assured.

**Databases:** Microsoft SQL Server, MySQL, PostgreSQL.

**Tools:** Git, GitHub, Bitbucket, Jupyter, Trello, Excel Automation, Jira.

## Projects

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### KioskVisionAI (Cloud-Native .NET Aspire + Azure Vision AI)

- Developed a distributed application using **.NET Aspire**, leveraging its orchestration, observability, and service discovery features to manage multiple kiosk services at scale.
- Integrated Azure Vision AI, Blob Storage, and Queues for automated image analysis, metadata enrichment, and event-driven notifications.
- Implemented cloud-native deployment with **Azure Developer CLI (azd)** — first provisioning and deploying the application, then auto-generating GitHub Actions workflows for continuous delivery to Azure.
- Result: Achieved a streamlined DevOps pipeline with reduced manual configuration, faster deployments, and improved observability across microservices.

### ACH Payment Integration Onetime and Recurring

- Implemented secure ACH payment workflows for donation kiosks and recurring billing using the Stripe and AuthNet API.
- Enhanced reliability, automation, and compliance in payment processing for U.S.-based mosque clients.

### Remote Kiosk Device Management System

- Developed a web-based management portal to monitor and control kiosk devices in real time.
- Integrated REST APIs from KLR to provide device insights (battery, Wi-Fi, uptime) and remote commands (reboot, screenshot).

### Data Import and Automation for School/Membership Onboarding

- Built automated SQL Server data pipelines to process and validate client Excel templates for school and membership data onboarding.
- Reduced onboarding time significantly while ensuring schema validation and consistency.

### Machine learning in the realm of quantum: state of the art, challenges, future vision, and applications of it (Undergraduate Thesis)

- Overview: Outlined some recent works and different models of the quantum machine learning, and interprets classification tasks in the realm of Quantum with several encoding methods
- Used Programming Language: Python, Machine Learning Framework: PyTorch, Quantum Machine Learning Framework: PennyLane, IBMQ

### **Bangla Parts of Speech Tagging Using Supervised Learning and Knowledge Distillation**

- Overview: Developed a machine learning model for Bangla parts of speech tagging, addressing data imbalance issues by employing a knowledge distillation approach. Utilized a decision tree model as a teacher and distilled its knowledge to a neural network student model, improving tagging accuracy and efficiency.
- Used Programming Language: Python, Machine Learning Framework: PyTorch, ScikitLearn, Hugging Face, BERT

### **Startups Success Prediction using Ensemble Classification**

- Developed a machine learning model to predict the success of startups by analyzing various factors affecting their performance.
- Implemented multiple classification algorithms, including Adaboost, RandomForest, LGBM, Decision Tree, SVM, Extra Tree, and an Ensemble Voting Classifier.
- Evaluated and compared models to determine the most effective approach for accurate predictions.
- The project aimed to provide insights for entrepreneurs and investors to make data-driven decisions based on key startup attributes.
- Used Programming Language: Python, Machine Learning Framework and Libraries: ScikitLearn, Pandas, Matplotlib, Seaborn

### **Software Digitization Service**

- Overview: Designed and developed a software solution to digitize and manage offline documents for the finance department, enabling centralized storage, easy access, and efficient retrieval of records. The project included a web application.
- Some Features:
  - \* Supported digital conversion of paper documents and integration with existing and new users.
  - \* Allowed users and administrators to upload, manage, and retrieve documents securely and efficiently.
  - \* Integrated robust indexing and search functionality for quick access to digitized files.
- Role: Involved in software requirements specification (SRS), system design specification (SDS), and implementation.
- Used Programming Languages: Python; Frontend: HTML, CSS, JavaScript; Backend: Django; Database: MySQL

### **Age, Gender, and Race Estimation with Multi-Output CNN Architecture**

- Overview: Developed a deep learning model using a multi-output Convolutional Neural Network (CNN) to estimate age, gender, and race from facial images. The project aimed to extract key demographic information, a crucial soft biometric trait for identification and demographic analysis.
- Challenges: Addressed the subtle variations in facial features caused by age, gender, and race differences, making the task more complex compared to other pattern recognition problems like object classification.
- Technologies: Deep Learning, Convolutional Neural Networks (CNN), Python, TensorFlow/Keras

### **REST API, Database, and Gmail API Testing with Rest Assured, SQL, and Aquality**

- Overview: Developed comprehensive test suites to validate REST APIs, database operations, and Gmail API interactions. The project ensured robust testing of backend services, focusing on verifying API responses, data integrity, and seamless integration with third-party services.
- Technologies: Java, REST Assured, SQL, Aquality Framework, TestNG, Maven, Postman.

### **Steam Web App Testing with Selenium and TestNG**

- Overview: Conducted extensive automated testing for the Steam web application to ensure a smooth user experience across different functionalities, including browsing, purchasing, and user account management.
- Technologies: Java, Selenium, TestNG, Maven.

### **UI Testing with Aquality Framework**

- Overview: Automated UI testing for a complex web application using the Aquality framework, focusing on validating user interactions, responsive design, and overall system reliability.
- Technologies: Java, Aquality Framework, TestNG, Maven.