

Shahir Abdullah

Software Engineer

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EDUCATION

Exam	Institution	Major	Duration	Result
M.Sc.	United International University	Computer Science & Engineering	2026 – Present	Ongoing
B.Sc.	Military Institute of Science and Technology	Computer Science & Engineering	2017 – 2021	CGPA 3.21 / 4.00
				Final Year: 3.73 / 4.00
HSC	Mirzapur Cadet College	Science	2016	GPA 5.00 / 5.00
SSC	Mirzapur Cadet College	Science	2014	GPA 5.00 / 5.00

CERTIFICATIONS

Course	Link
Coursera Basic Generative Adversarial Networks	View
Coursera Advanced Generative Adversarial Networks	View
Coursera Fundamentals of Reinforcement Learning	View

PUBLICATIONS

0.1 A Point-of-Prescription Safety-Check System for Adverse Drug Reactions in Rural Bangladeshi Hospitals: A Feasibility Study

Shahir Abdullah

(In preparation)

Proposes a lightweight, smartphone-based decision-support system that surfaces a patient's severe adverse-drug-reaction history at the point of prescription in rural Bangladeshi hospitals, where no outpatient record system exists and physicians have under a minute per patient. The system captures a soft patient identifier at registration, reads the prescription, resolves brand names to active ingredients via national drug references, and checks them against the patient's recorded severe-reaction history using retrieval rather than prediction, staying silent unless a high-risk match is found. Evaluated as a feasibility study assessing workflow fit, usability, and retrospective detection of known reaction cases.

Links: [arXiv](#) — [Google Scholar](#)

0.2 Diagonal Scaling : A Multi-Dimensional Resource Model and Optimization Framework for Distributed Databases

Shahir Abdullah, [Syed Rohit Zaman]

(In preparation)

Proposes a formal model for *diagonal scaling* — a hybrid approach that dynamically balances vertical and horizontal scaling to optimize cost, performance, and reliability in distributed systems. The work introduces a scaling plane abstraction, cost-performance trade-off functions, and a control algorithm for adaptive resource allocation under variable load.

Links: [arXiv](#) — [Google Scholar](#)

0.3 A Lightweight Convolutional Neural Network for Real-Time Recognition of Hand-Drawn Geometric Shapes

Shahir Abdullah

A desktop application that recognizes four basic hand-drawn geometric shapes, circle, square, rectangle, and triangle using a compact Convolutional Neural Network (CNN). A dataset of 2,000 labeled 28x28-pixel shape images was collected independently and released publicly.

Links: [arXiv](#) — [ResearchGate](#)

RESEARCH INTEREST

LLM, Autonomous Intelligent systems, HCI, Health Informatics, AI, Cloud Computing, Distributed Systems, Reinforcement learning

RESEARCH EXPERIENCE

A Point-of-Prescription Safety-Check System for Adverse Drug Reactions in Rural Bangladeshi Hospitals: A Feasibility Study (Ongoing)

Developing a lightweight, smartphone-based clinical decision-support system that surfaces a patient's severe adverse-drug-reaction history at the point of prescription in rural Bangladeshi hospitals, where no outpatient record system exists and a physician may have under a minute per patient.

Diagonal Scaling: A Multi-Dimensional Resource Model and Optimization Framework for Distributed Databases (Ongoing)

The work defines a scaling plane, cost–performance trade-off functions, and adaptive control strategies to optimize latency, throughput, and cost in distributed database systems under dynamic workloads.

A Lightweight Convolutional Neural Network for Real-Time Recognition of Hand-Drawn Geometric Shapes

Built a desktop application with CNN backend where it recognizes handdrawn geometric shape. This work was designed intentionally lightweight, cheap so that it would be accessible by Bangladeshi students with minimal computation power. Developed the application myself and built the dataset and open sourced it on Kaggle.

UNDERGRADUATE RESEARCH AND PROJECTS

App-Based Bangla Book Reader System for the Blind

Capstone Project

Developed an end-to-end assistive system that converts printed Bangla text into speech for visually impaired users.

- Built an Android application that captures images of book pages and sends them to a backend server for processing.
- Implemented an OCR and text recognition pipeline using **OpenCV EAST Text Detector** for word segmentation and a **CNN (EfficientNet-B0)** model for character recognition, achieving **85% accuracy**.
- Integrated Google's **Bangla Text-to-Speech API** to convert recognized text into natural-sounding audio output.
- Designed the hardware setup using a custom book stand, smartphone, Arduino, physical buttons, and a Bluetooth module to improve usability for blind users.

Links: [YouTube Demo](#) — [Backend Code](#) — [Android Code](#)

Handwritten Geometric Shape Detector

Machine Learning Project

Developed a desktop application that recognizes hand-drawn geometric shapes using a convolutional neural network.

- Built a Python desktop application that allows users to draw geometric shapes and classifies them in real time.
- Trained a **CNN** on a dataset of over **2,000** handwritten images of circles, squares, rectangles, and triangles.
- Implemented prediction confidence scoring to display model certainty alongside classification results.

Links: [YouTube Demo](#) — [Code](#)

Digital Image Processing Library

Image Processing Project

Created a modular Python library implementing fundamental image processing algorithms for educational and experimental use.

- Implemented common filters and transformations including convolution, edge detection, smoothing, and thresholding.
- Provided interactive examples and documentation using **Jupyter Notebook** for easy experimentation and learning.

Links: [Code](#)

E-Waste Management System

Database Management Systems Course Project

Designed and implemented a database-driven web system to manage the collection, tracking, and processing of electronic waste.

- Designed a normalized relational database schema to model users, collection requests, waste categories, logistics, and processing centers.
- Implemented CRUD operations and transactional workflows using **MySQL** and a web-based application interface.
- Focused on data integrity, query optimization, and consistency for reliable record management.

PROFESSIONAL EXPERIENCE

Software Engineer 2 — Ajentica

Jun 2026 – Present

- Architected a multi-layer Windows UI Automation capture engine in **C#/.NET 8** for Lumistry, a PMS company, instrumenting **25+ distinct event** types across **3 independent OS-level subsystems** (UIA automation/property events, Win32 WinEvent/MSAA hooks, and a global low-level mouse hook) to extract structured interaction data from a legacy WinForms application with zero native automation support.

- Built an async, lock-free event pipeline (**BlockingCollection producer/consumer + dedicated drain thread**) to serialize events to JSONL, decoupling latency-sensitive UI-thread callbacks from disk I/O and keeping hook response times non-blocking.
- Integrated **LLM agents** on top of the automation layer to handle self healing, failure at workflow step execution
- Automated the full release process with a 2-stage GitLab **CI/CD pipeline** that cross-compiles a self-contained single-file win-x64 executable on Linux runners and packages it into a versioned NSIS installer — reducing release packaging to a single tagged commit.
- Took ownership and communicated with Client to successfully deliver the POC while applying AI-DLC to streamline delivery, reducing average feature time-to-market by **80%** through synchronized release planning.
- Participated in POC, LLM agentic deliverable architecture reviews to optimize designs, reducing development time by **25%**, lowering the time to deliver by **10%**.
- Troubleshoot production issues and customer-reported defects, reducing average resolution time while maintaining high service reliability.
- Leverage AI-assisted development tools including **GitHub Copilot** and **Anthropic Claude** to accelerate implementation, documentation, debugging, and code review workflows by applying AI-DLC.

Software Engineer 2 — Nifty Coders

Sep 2022 – June 2026

- Designed and developed enterprise-scale software solutions using **C#, ASP.NET Core, Angular, SQL Server and Postgres** for **IQVIA**, a Fortune 500 healthcare technology company serving **10,000+ healthcare and life sciences organizations across 100+ countries**.
- Built and maintained reusable APIs, modular frontend components, and shared application services that reduced feature development effort by **10%** and improved maintainability across multiple product teams.
- Optimized data-intensive workflows handling datasets containing **10K+ records**, reducing page load times by **50%** and backend processing times by **10%**.
- Collaborated across **5+** cross-functional teams (PMs, Architects, Designers, QA, and DevOps) to streamline the SDLC, reducing average feature time-to-market by **20%** through synchronized release planning.
- Participated in backend architecture reviews to optimize designs, reducing development time by **15%**, lowering AWS cloud infrastructure costs by **5%**.
- Troubleshoot production issues and customer-reported defects, reducing average resolution time by **15%** while maintaining high service reliability.
- Develop automated unit and integration tests, increasing code coverage from **80%** to **96%** and improving release confidence.
- Leverage AI-assisted development tools including GitHub Copilot and Cursor to accelerate implementation, documentation, debugging, and code review workflows.

Junior Full-Stack Engineer — BiTechX

Dec 2019 – Mar 2020

- Developed web applications using **Laravel** following MVC architecture principles.
- Designed responsive UI components with **JavaScript, HTML, and CSS**.
- Designed relational database schemas and managed application data using **MySQL**.
- Built and tested RESTful APIs and performed integration testing with **Postman**.

AI Engineer Trainee — Intelligent Machines Ltd

Jan 2020 – Apr 2020

- Worked on computer vision and image processing pipelines using **Python**.
- Assisted in model design, optimization, and fine-tuning for machine learning applications.
- Conducted experiments to evaluate model performance and improve inference efficiency.

SKILLS

- **Languages:** C#, TypeScript, Python, JavaScript, SQL, Bash
- **Frameworks:** .NET Core, Angular, FastAPI, Laravel, TensorFlow, OpenCV
- **Databases:** MySQL, PostgreSQL, SQL Server
- **Cloud & DevOps:** DigitalOcean, Apache, Nginx, Docker (basic), systemd, CI/CD
- **Frontend:** Angular, RxJS, SCSS, Responsive UI, State Management
- **ML & AI:** CNNs, EfficientNet, OCR, Image Processing
- **Engineering:** Distributed Systems, Async Systems, SOLID, BDD
- **Tools:** Git, GitHub, GitLab, Postman, Linux, Jupyter

REFERENCES

- **Dr. Muhammad Nazrul Islam** — Associate Professor, CSE, MIST
Email: nazrul@cse.mist.ac.bd — [Google scholar link](#)
- **Dr. T. M. Shahriar Sazzad** — Associate Professor, CSE, MIST
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- **Seeam Shahid Noor** — Product Manager, Scale AI — Co founder, Nour Technologies
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