

Md Muzadded Chowdhury

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SUMMARY

AI & Automation Engineer with 1+ years of experience in developing scalable AI systems using LLMs, RAG, and agentic workflows. Skilled in building multilingual chatbots, AI-driven tools, and document intelligence platforms. Proficient in FastAPI, vector databases, and cloud services (GCP). Experienced in Docker-based deployment and automation to streamline workflows, improving efficiency by up to 70%. Strong problem-solving skills with a passion for optimizing processes through AI technologies. Authored 2 journal publications and 3 research papers on blockchain-based medical image sharing, federated learning for lung cancer detection, and ensemble learning in cybersecurity.

TECHNICAL SKILLS

- **Programming:** Python, SQL, C/C++, JavaScript, PHP
- **AI/ML:** NumPy, Pandas, PyTorch, TensorFlow, Model Training, Evaluation, Feature Engineering
- **Generative AI & LLMs:** Prompt Engineering, RAG, LLM Fine-Tuning, LangChain, Hugging Face Transformers, API Integration, Semantic Search, Embedding Models, Agentic Workflows, Function Calling, Context Management
- **AI System Design:** LLM Application Development, Multi-Agent Systems, AI Automation Pipelines, Workflow Orchestration, Conversational AI Systems, Document Intelligence Pipelines
- **Vector Databases:** FAISS, ChromaDB, Pinecone, Firestore, Similarity Search, Index Optimization
- **AI Application Development:** FastAPI, Flask, React.js, Node.js, Express.js, REST API Development, Async Processing, Microservices Architecture
- **MLOps & Deployment:** MLflow, Docker, Git, CI/CD Pipelines, Model Versioning, Inference Optimization
- **Data Engineering:** Data Preprocessing, Structured & Unstructured Data Handling
- **Databases:** MySQL, PostgreSQL, NoSQL Databases
- **Data Visualization:** Matplotlib, Seaborn

EXPERIENCE

• Care Guide

AI and Automation Engineer (Full-time)

Dhaka, Bangladesh

Sep 2025 – Present

- Designed and deployed **HIPAA-compliant Healthcare AI systems** for processing sensitive patient and medical datasets and enabling secure AI automation workflows.
- Developed **RAG-based conversational AI systems** and role-based enterprise chatbots for employee onboarding, internal knowledge retrieval, and analytics, improving information access efficiency by **60%+**.
- Built **AI automation pipelines and agentic workflows** to automate manual operational processes, reducing repetitive workload by approximately **50%**.
- Implemented an **AI-driven payroll analysis automation system** reducing payroll processing time by **70%**.
- Developed an internal **Employee CRM system** using **React.js, Node.js, Express.js, and PostgreSQL**.
- Built **multi-channel conversational AI chatbots** integrated with Facebook, WhatsApp, Instagram, and Web platforms for automated patient and caregiver lead generation.
- Created an **AI-powered CV processing system** for automated resume parsing, candidate data extraction, and candidate scoring.
- Deployed AI services on **Google Cloud Platform (GCP)** ensuring scalable and reliable production systems.
- **Tech Stack:** Python, FastAPI, LangChain, LLM APIs, RAG, Vector DBs, React.js, Node.js, Express.js, PostgreSQL, GCP

• Code24 PTY LTD

AI and Automation Engineer (Full-time)

Remote

Jan 2025 – Sep 2025

- Developed **AI automation systems for NDIS platforms** to streamline HR onboarding and workforce rostering workflows.
- Built **multilingual conversational AI chatbots** using **IBM Watsonx Assistant**.
- Designed a **Voice AI assistant platform** integrating **n8n, Retell AI, and GoHighLevel CRM**.
- Collaborated with a **4-member engineering team** to develop enterprise AI applications using **Python and IBM Watsonx** in IBM TechZone environments.
- **Tech Stack:** Python, IBM Watsonx, Watsonx Assistant, n8n, Retell AI, GoHighLevel

• United International University

Undergraduate Teaching Assistant (Part-time)

Dhaka, Bangladesh

Oct 2022 – Oct 2024

- Assisted faculty members in laboratory sessions for **Artificial Intelligence, Data Structures & Algorithms I & II, and Structured Programming.**
- Mentored **150+ undergraduate students** in algorithm implementation, machine learning fundamentals, and programming concepts.
- Guided students in debugging code, algorithm analysis, and completing programming assignments.
- **Tech Stack:** Python, C/C++, Data Structures, Machine Learning Fundamentals

PROJECTS

- **SME Business Guardian – AI Business Consultation Platform** | *Group Project:* **Tech:** FastAPI, ReactJS, PostgreSQL, IBM Granite-3.3-8b, LangGraph
 - Developed AI-powered consultation platform for contract analysis, legal document review, and business strategy support
 - Designed full-stack architecture with FastAPI backend and React frontend integrated with LangGraph workflow orchestration
 - Implemented secure LLM-based conversational interface with JWT authentication and 4000-token context window
- **Bangla RAG System with ChromaDB** | *Self Project:* **Tech:** Python, ChromaDB, Sentence Transformers, PyTorch, Groq, LangChain
 - Built multilingual RAG pipeline supporting Bengali and English e-commerce queries
 - Implemented hybrid semantic retrieval using intent classification and real-time translation
 - Designed persistent vector storage for scalable product query handling across 12+ categories
- **AI-Powered SQL Assistant (MCP Architecture)** | *Self Project:* **Tech:** Python, Streamlit, Node.js, MySQL, Groq API, LLaMA-3.1-8b
 - Developed natural language to SQL assistant for querying relational databases
 - Integrated LLaMA-3.1-8b for query generation with interactive syntax-highlighted execution
 - Implemented MCP-based backend service with real-time query execution via Streamlit
- **CSV Data Analyzer with NL Interface** | *Self Project:* **Tech:** Python, Streamlit, Gemini 1.5 Flash, LangChain, Pandas
 - Built AI-driven tool converting natural language instructions into CSV data workflows
 - Integrated Gemini 1.5 Flash for automated analysis and visualization generation
 - Developed chat-based analytics interface for real-time insights and report-ready charts

PUBLICATIONS

- **Decentralized Medical Image Sharing using Blockchain:** Proposed a privacy-preserving blockchain-based medical image sharing framework integrating subject sensitive hashing (SSH) and IPFS storage, achieving 98% data integrity accuracy across multiple healthcare imaging datasets.
IET Blockchain **Read Paper**
- **FVCM-Net: Privacy-Preserved Lung Cancer Detection from CT Images:** Developed a federated learning-based ensemble deep learning model with explainable HiRes-CAM and SHAP attribution for decentralized lung cancer detection, achieving 98.26% accuracy and improved model interpretability.
Biomedical Signal Processing and Control **Read Paper**
- **Deep Learning for Identification of Arsenic-Induced Skin Diseases:** Designed an attention-based CNN architecture (ARS-CNNSA) for classification of arsenic-induced skin conditions, outperforming VGG16 and InceptionV3 with 91% accuracy and 90% F1-score.
IEEE **Read Paper**
- **Clustering as a Catalyst for Big Data Classification (CC-BC):** Introduced a clustering-driven classification framework leveraging unsupervised instance similarity to reduce labeling dependency and enhance performance of decision tree and ensemble-based classifiers.
IEEE **Read Paper**
- **Phishing Link Detection using Ensemble Learning:** Developed an ensemble-based phishing detection system combining Random Forest, Logistic Regression, and Gradient Boosting to improve generalization and detection accuracy in cybersecurity applications.
IEEE **Read Paper**

EDUCATION

• United International University

Bachelor of Computer Science and Engineering; GPA: 3.67

Dhaka, Bangladesh

January 2020 - October 2024

ACHIEVEMENTS & CERTIFICATIONS

- **Academic Excellence Scholarship** - United International University
- **AI & Automation Unpacked Hackathon** - IBM
- **Problem Solving (Intermediate)** - HackerRank