

# Hazrat Ali

Machine Learning Engineer

Applied AI Engineer — LLM, RAG, AI Agents & Automation

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## Professional Summary

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Applied AI and Machine Learning Engineer with hands-on experience in Machine Learning, Deep Learning, and Large Language Model (LLM)-based systems. Designing end-to-end ML and AI pipelines including data preprocessing, feature engineering, model training, evaluation, inference, deployment, and MLOps-driven workflow automation. Experienced in building production-ready solutions such as Retrieval-Augmented Generation (RAG) systems, LLM-powered customer support automation, AI-driven document question answering, vector database backed semantic search, and AI workflow automation using n8n for decision-support platforms based on transformer architectures. Strong foundation in applied machine learning research with real-world business implementation.

## Technical Skills

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**Programming:** Python, SQL, C, C++

**Machine Learning:** Supervised & Unsupervised Learning, Feature Engineering, Data Preprocessing, Model Training, Hyperparameter Optimization, Cross-Validation, Model Selection, Evaluation Metrics (Accuracy, Precision, Recall, F1-score), Classification, Regression

**Deep Learning:** PyTorch, TensorFlow, ANN, CNN, RNN, LSTM, GRU, Transformers, Attention Mechanism

**Generative AI & NLP:** Large Language Models (LLMs), LangChain (Chains, RAG Pipelines, Tools), HuggingFace Transformers, BERT, RoBERTa, DistilBERT, Prompt Engineering, Embeddings, Retrieval-Augmented Generation (RAG), Text Classification, Named Entity Recognition (NER), Summarization

**AI Agents & Automation:** LLM-powered task-oriented AI systems, Tool Calling, Task Planning, Multi-Step Reasoning, AI Workflow Automation, Business Process Automation, Customer Support & Order Processing Automation using n8n and Make AI

**Deployment & MLOps:** FastAPI, REST API Development, Model Inference, Docker (Basic), MLOps Practices, Linux Environment, Vercel, HuggingFace Spaces

**Data & Tools:** Pandas, NumPy, Matplotlib, Scikit-learn, Git, GitHub, Linux, VS Code, Google Colab, Jupyter Notebook

## Professional Experience

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**AI Developer**  
Softvance Agency

2026 – Present

- Designed and developed LLM-based AI systems for intelligent task orchestration and AI workflow automation.
- Built AI-powered web platforms with end-to-end automation pipelines using Large Language Models (LLMs).
- Integrated LLM APIs using prompt engineering, structured outputs, and retrieval grounding techniques.
- Developed scalable backend services and REST APIs using FastAPI for AI model inference and system integration.
- Implemented vector-based semantic search and document retrieval using FAISS.

**Research Assistant (Machine Learning, NLP)** 2024 – Present  
 Center for Research Innovation Transformation and Sustainability (CRITS)  
 Green University of Bangladesh

- Conducted exploratory data analysis and data preprocessing on large-scale datasets.
- Designed end-to-end machine learning and deep learning experimental pipelines for NLP research.
- Developed and evaluated transformer-based models using standard ML metrics.
- Co-authored multiple peer-reviewed journal and international conference research papers.

**AI/ML Specialist & Data Analyst (Intern)** 2025  
 9AM Solutions — On-site

- Analyzed business datasets to identify AI automation and optimization opportunities.
- Built LLM-powered customer support and order-handling AI agents.
- Designed AI-driven workflow automation systems using n8n, reducing manual workload by approximately 60%.

## Selected Projects

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### MediMate — AI Healthcare Assistant

- Developed AI-powered healthcare assistant integrating NLP and computer vision techniques.
- Implemented symptom-based disease prediction using supervised machine learning models.
- Deployed scalable inference APIs using FastAPI and Vercel.

### Micro Tutor — AI Learning Assistant

- Designed multilingual AI tutoring system for Bangla and English users.
- Implemented multimodal question solving using vision-language transformer models.
- Generated adaptive step-by-step explanations using Large Language Models.

### Bondhu — Mental Health Support AI

- Built emotion-aware NLP assistant for bilingual users.
- Applied transformer-based sentiment and emotion classification models.
- Deployed real-time inference system using FastAPI.

## AI Customer Support Automation System

- Developed LLM-based RAG automation pipeline for intent detection, knowledge retrieval, document question answering, order processing, and automated response generation.
- Reduced human customer service workload through AI workflow automation.

## Fake News Detection System

- Implemented machine learning and transformer-based misinformation classification models.

## Crop Disease Detection System

- Developed CNN-based agricultural image classification system.

**Additional Projects:** [github.com/hazratali1](https://github.com/hazratali1)

## Research & Publications

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- Deep Learning-Based Early Prediction of Depression & Suicidal Risk in Bangla Social Media Posts — IEEE STI 2025
- Transformer-Based Hybrid Framework for Early Detection of Depression and Suicidal Risk — Journal (Under Review)
- Retrieval-Grounded and Novelty-Aware Framework for Research Idea Generation with Large Language Models — Journal (Under Review)
- Enhancing Reinforcement Learning Alignment via LLM-Based Interpretation of Human Feedback — QPAIN 2026
- Leveraging Large Language Models and Deep Learning for AI-Driven Mental Health Support Systems — QPAIN 2026

## Education

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### B.Sc. in Computer Science and Engineering

Green University of Bangladesh

2021 – 2025

CGPA: **3.40 / 4.00**

## Certifications

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- IEEE STI 2025 — Certificate of Appreciation (Author)
- Deep Learning with Python — CampusX
- Machine Learning with Python — CampusX
- NLP with Python — CampusX
- AI Agent & Automation — Ostad

## Languages

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Bangla (Native)    English (Professional)    Hindi (Conversational)