

# MD IMRAN HOSSAIN

Machine Learning Engineer

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LinkedIn | GitHub | Portfolio

## PROFESSIONAL SUMMARY

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Machine Learning Engineer with 5+ years of combined experience across ML research and full-stack software development. Specialized in Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), computer vision, and production MLOps. Proven record of building and deploying end-to-end ML systems using PyTorch, TensorFlow, Docker, Kubernetes, and CI/CD pipelines. Currently delivering LLM-powered research platforms at Honda R&D Europe.

## TECHNICAL SKILLS

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- **Programming:** Python, R, JavaScript, TypeScript, SQL
- **Machine Learning:** Scikit-learn, XGBoost, Random Forest, TensorFlow, PyTorch, Deep Learning, Model Evaluation, Hyperparameter Optimization
- **Generative AI:** LLM, RAG, V-RAG, LangChain, Ollama, LanceDB, Vector Databases
- **Data Engineering:** Pandas, NumPy, Data Cleaning, Exploratory Data Analysis (EDA), Feature Engineering, Feature Scaling, Data Visualization, Data Pipelines
- **MLOps & Deployment:** Docker, Kubernetes, CI/CD (GitHub Actions, GitLab CI, Jenkins), Model Deployment, Nginx, Shell Scripting, YAML, Linux, CUDA
- **Cloud & Infrastructure:** AWS, Azure, Terraform, Ansible, Infrastructure as Code (IaC).
- **Backend & APIs:** Django, Flask, FastAPI, NestJS, Node.js, RESTful API Design
- **Frontend:** React.js, Next.js, AngularJS, HTML, CSS
- **Databases:** PostgreSQL, MongoDB, Cosmos DB, SQL

## PROFESSIONAL EXPERIENCE

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### Machine Learning Engineer

*Honda R&D Europe*

Offenbach, Germany

*February 2026 – Present*

- Led an LLM-based research platform for natural language query generation and vector search; productionized with GitLab CI/CD and Nginx.
- Built a multimodal emotion detection system from physiological data, achieving 85% accuracy with optimized ML models.

### Software Engineer (Working Student)

*Ankaadia GmbH*

Oberursel, Germany

*October 2024 – January 2026*

- Developed and enhanced features for a collaborative migration platform using AngularJS and NestJS, supporting digital labour migration workflows.
- Built Playwright end-to-end tests and CI/CD QA pipelines, improving reliability and reducing manual effort.

### Web Developer (Working Student)

*Partimus GmbH*

Limburg, Germany

*January 2024 – August 2024*

- Developed an AI-powered interface using Gradio and deployed it on Hugging Face, improving accessibility to ML functionality.
- Built a full-stack customer portal with Next.js and NestJS, delivering scalable APIs and responsive UI; supported CI/CD pipelines in Azure DevOps.

### Fullstack Developer

*Avneer IT*

Dhaka, Bangladesh

*March 2021 – June 2023*

- Led full-stack development for 10+ MERN-stack projects; improved integration efficiency by 35% and reduced development time by 25% through best practices and team mentorship.

## EDUCATION

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### Master of Science in High Integrity Systems

Frankfurt University of Applied Sciences

Frankfurt, Germany

2023 – 2026

### Bachelor of Science in Computer Science & Engineering

American International University-Bangladesh

Dhaka, Bangladesh

2014 – 2018

## CERTIFICATIONS

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- Certified Kubernetes Administrator (CKA) — Linux Foundation
- AWS Certified Cloud Practitioner — Amazon Web Services
- Cisco Certified Network Associate (CCNA) — Cisco
- AWS Solutions Architect (Training) — Stéphane Maarek
- Complete AI/ML Course (Training) — Phitron

## PROJECTS

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### Vehicle Dynamic Perception

*EEG/ECG, MNE, ICA, Random Forest, Deep Learning*

- Built a multimodal emotion-recognition pipeline integrating EEG, ECG, respiration, and heart-rate signals from 100 participants to classify human emotional states.
- Performed signal cleaning, artifact removal, and decomposition using MNE and ICA; engineered time- and frequency-domain features for model input.
- Benchmarked multiple ML and deep-learning classifiers; achieved best performance of 85% accuracy with a tuned Random Forest model.

### ResearchMate Chatbot

*LLM, Vector DB, GitLab CI/CD, Nginx*

- Built an LLM-powered research assistant that converts natural-language questions into structured queries for vector-database retrieval, integrated with the Honda Dimension platform.
- Designed an embedding-based semantic search pipeline to surface the most relevant research context for each user query.
- Deployed the system end-to-end with GitLab CI/CD and an Nginx reverse-proxy architecture for scalable, reliable access.

### Digital Twin Nibelungenplatz

*Python, OpenCV, YOLOv7, Dassault Platform*

- Developed a multi-view traffic perception pipeline using YOLOv7 to detect and track vehicles and pedestrians from real-world intersection footage.
- Built a 3D digital-twin simulation on the Dassault platform, feeding computer-vision outputs into the model for data-driven traffic analysis.
- Enabled smart-city planning use cases such as congestion analysis and intersection-safety modeling.

### Diabetes Risk Prediction

*Ensemble Learning, Scikit-learn, Gradio, Hugging Face*

- Developed an end-to-end diabetes risk classification pipeline covering data cleaning, EDA, feature engineering, and model evaluation.
- Benchmarked and ensembled Logistic Regression, Random Forest, and XGBoost, reaching 75% accuracy on held-out test data.
- Deployed the final model as an interactive Gradio web app on Hugging Face Spaces for public access.

### Plant Disease Recognition

*PyTorch, CNN, Computer Vision*

- Built a deep convolutional neural network in PyTorch to classify plant-leaf diseases across 36 classes using the Kaggle PlantVillage dataset.
- Applied data augmentation and transfer learning to improve generalization, achieving 91% classification accuracy.

## LANGUAGES

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Bangla (Native) | English (IELTS 7) | German (B1 Certified)