Hassan Ali

AI / ML Engineer

hassanali93r@gmail.com | +92 309 543 6018 | linkedin.com/in/hasanali09 | github.com/Rival5555/

PROFILE

Passionate AI Engineer with hands-on experience in developing innovative AI solutions across healthcare, gaming, and automation. Skilled in natural language processing, machine learning, computer vision and generative AI, with a focus on real-world problem-solving.

TECHNICAL SKILLS

- **Programming Languages:** Python, C, C++, JavaScript, SQL
- **Web Development:** React.js, FlaskAPI, FastAPI, Node.js, HTML5, CSS3
- **AI & Machine Learning:** Natural Language Processing (NLP), Computer Vision, Generative AI, Large Language Models (LLMs), Deep Learning
- **Frameworks & Libraries:** TensorFlow, OpenCV, Scikit-learn, Pandas, NumPy, Keras, Hugging Face, Torch, Lang chain, OpenNN, PyBrain, NLTK, SpaCy, YOLO
- **App Development:** React native, Capacitor
- **Databases:** MongoDB, MySQL
- **Cloud & DevOps:** AWS, Docker, Git, GitHub
- **Tools & Platforms:** Jupyter Notebook, Unity, Google Colab, VS Code
- **Languages:** English (Fluent), Urdu (Native)

PROJECTS

Diabetic Retinopathy Detection & Grading — *Medical Imaging | Computer Vision | ViT*

PyTorch · TensorFlow · Keras · OpenCV · Grad-CAM Jan 2024 – Apr 2024

- Built a 5-class retinopathy grading system using Vision Transformer (ViT-B/16) and EfficientNet-B4, achieving 92% classification accuracy on 3,662 fundus images from the APTOS dataset.
- Applied CLAHE preprocessing and 6 augmentation strategies (random flip, rotation, colour jitter, cutout) to address class imbalance (3:1 healthy-to-diseased ratio), improving F1-score from 0.74 to 0.88.
- Benchmarked 4 architectures (ResNet-50, EfficientNet-B4, InceptionV3, ViT-B/16); ViT achieved highest weighted F1 of 0.88, outperforming ResNet-50 by 8 percentage points.
- Integrated Grad-CAM visualisations for clinical explainability, enabling lesion localisation and model interpretability for medical review.
- Evaluated with accuracy, precision, recall, weighted F1-score, and confusion matrix across all 5 disease stages.

Handwritten Digit Recognition — *CNN | Deep Learning | MNIST*

Python · TensorFlow · Keras · NumPy Oct 2023 – Nov 2023

- Designed and trained a 5-layer CNN (Conv → BN → Pool → Dropout → Dense) using TensorFlow/Keras to classify handwritten digits from the MNIST dataset, achieving 99.1% test accuracy in under 10 epochs.
- Implemented full pipeline: data normalisation, one-hot encoding, real-time data augmentation, Adam optimiser with learning rate decay, and early stopping — reducing overfitting by 12% vs. baseline.
- Applied Dropout (0.3) and Batch Normalisation for regularisation; visualised training curves and per-class confusion matrix for performance analysis.

End-to-End ML Training Pipeline with Experiment Tracking — *MLOps | Model Versioning*

Python · MLflow · Scikit-learn · Docker · Pandas May 2024 – Jun 2024

- Designed a reusable training pipeline with MLflow experiment tracking, logging hyperparameters, metrics, and artefacts for 5 classification models across 3 tabular datasets.
- Containerised the pipeline with Docker, enabling reproducible runs across different environments and reducing setup time from 30+ minutes to under 2 minutes.
- Compared Random Forest, XGBoost, SVM, Logistic Regression, and KNN; automated hyperparameter tuning via GridSearchCV, achieving best AUC of 0.94 on held-out test set.
- Implemented automated train/test split, cross-validation (5-fold), and model persistence via MLflow Model Registry — demonstrating production-readiness beyond notebook experiments.

EDUCATION

B.Sc. Artificial Intelligence — National Textile university Expected Jun 2025

6th Semester (in progress) · GPA: 3.4 / 4.0

Relevant coursework: Artificial Neural Networks & Deep Learning · Digital Image Processing · Agentic AI · Data Structures & Algorithms · Probability & Statistics

CERTIFICATIONS & TRAINING

Deep Learning Specialization — DeepLearning.AI / Coursera (Andrew Ng)	In progress — 2026
Machine Learning Specialization — Stanford Online / Coursera	2025
fast.ai: Practical Deep Learning for Coders	2024
Hugging Face NLP Course — Hugging Face	2024

ADDITIONAL

Soft skills: Technical Documentation & Reporting · Stakeholder Presentations · Cross-functional Collaboration · Agile / Scrum

Languages: English (professional) · Urdu (native)