

Hammad Ali Khan

Backend Developer | Python Developer

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SUMMARY

Backend-focused Software Engineer with expertise in Python, Django, FastAPI, and RESTful APIs. Skilled in building scalable systems and integrating AI/ML models using PyTorch and TensorFlow. Experienced in real-time interfaces with Gradio, SQL databases (MySQL, PostgreSQL, SQLite), and Git-based collaboration. Comfortable supporting frontend with HTML, CSS, JavaScript, and React.

SKILLS

- **Languages & Backend:** C/C++, Python, Django, Django REST Framework, FastAPI
- **AI/ML & Tools:** PyTorch, TensorFlow, PyTorch Lightning, OpenCV, Scikit-learn, Gradio, LLM Integration
- **Frontend:** React.js, HTML, CSS, Bootstrap, JavaScript
- **Databases:** MySQL, PostgreSQL, SQLite, Django ORM
- **DevOps & Deployment:** Heroku, Git, GitHub, Vercel
- **API & Security:** RESTful APIs, Middleware, Role-Based Access Control, reCAPTCHA, CSRF Protection
- **Soft Skills:** Team Collaboration, Problem Solving, Deadline Management

EXPERIENCE

Full Stack Developer

Iconicthink

April 2023 - Nov 2024, Mirpur, AJK

Project: MultiMode POS System

- Built modular, RESTful backend using Django and DRF, covering product management (1D, 2D, rental), inventory, sales, and user roles
- Designed scalable data models with custom managers, validators, and optimized MySQL queries
- Developed role-based authentication using Django permissions and middleware
- Integrated PDF generation with WeasyPrint, TinyCSS2, and HTML5lib for reporting and invoices
- Processed image uploads via Pillow, and handled styled document output using FontTools
- Built responsive frontend components using HTML, CSS, JavaScript, and Bootstrap for admin dashboards and forms
- Wrote unit tests using Django's test framework and maintained 85%+ code coverage
- Followed modular code practices (views, services, serializers) and used Git for version control and collaboration

PROJECTS

Final Year Project

EyeNOVA: MULTI-LESION RETINAL SEGMENTATION AND DIABETIC RETINOPATHY DETECTION USING DEEP LEARNING

- **AI-Powered Diagnostic Platform:** Developed an end-to-end system for diabetic retinopathy screening using Python, Gradio, and FastAPI.
- **Lesion Segmentation:** Trained 6 custom U-Net models (PyTorch) to segment key retinal structures such as vessels, exudates, hemorrhages, and optic disc.
- **Hybrid Classification System:** Integrated DenseNet-169 and Vision Transformer (ViT) models using PyTorch Lightning, achieving QWK = 0.925.
- **Clinical Recommendation Engine:** Connected Gemini Pro API to provide automated, stage-specific treatment advice using LLMs.
- **Modular Architecture:** Designed scalable backend with FastAPI and deployed an interactive Gradio UI for real-time prediction and visualization.
- **Model Evaluation:** Used metrics like Jaccard Index, F1-Score, AUC, and QWK with weighted losses to address class imbalance.
- **Deployment & Tools:** Employed Git/GitHub, TensorBoard, and built the system to support PDF/ZIP export and scalable inference.

Rahamia Management System

- Secured financial workflows using Django Auth, OTP verification, session expiry, and custom RBAC.
- Enforced permission-based access to transactions, reports, and sensitive endpoints.
- Modeled validated financial operations with audit logs; optimized DRF views for high-volume data.

College Management System

- Engineered a multi-role web app with custom authentication, middleware-based session routing, and Django's CustomUser model.
- Modeled 15+ relational entities using OneToOne, ForeignKey, Django signals, and integrated FCM for real-time notifications.
- Implemented secure reporting and access control with WeasyPrint PDFs, role-based permissions, CSRF protection, and reCAPTCHA.

Hospital Management System

- Developed a role-based hospital management system (Admin/Doctor/Patient) with Django auth, custom decorators, and session control.
- Implemented core modules: appointment scheduling, prescriptions, discharge summaries, and EHR using Django ORM with MySQL.
- Built responsive UI with Django templates, Bootstrap; deployed on Heroku with venv and requirements.txt for environment management.

Personal Portfolio

- Built and deployed a full-stack personal portfolio using React (frontend) and Node.js/Express (backend) with modular routing, Axios API integration, and dynamic contact form using Nodemailer.
- Configured production-ready deployment on Heroku, handling static React builds via Express, environment variables via dotenv, and concurrent scripts for smooth CI/CD.

EDUCATION

2021 – 2025

BS Computer System Engineering

Mirpur University of Science and Technology (MUST), Mirpur AJK

CGPA: 3.5 / 4.0

Specialization: Machine Learning & Artificial Intelligence

CERTIFICATES

- Crash Course on Python (Google)
- Programming in Python (Coursera)
- Django Web Framework (Coursera)
- Front-End Development (Meta)
- Back-End Development (Meta)
- Intro to Databases (Coursera)
- Databases for Back-End (Coursera)
- Generative AI for Everyone (Coursera)
- Google AI Essentials (Coursera)
- Project Management Foundations (Coursera)
- Version Control (Coursera)

ACHIEVEMENTS & AWARDS

- Ranked 196 / 536 – MIT Informatics Tournament, Winter 2025
- Ranked 109 – CALICO Informatics Competition, Spring 2025
- Runner-Up – Web Development Battle, MUSTCon '24, MUST University

LANGUAGES

- English
- Urdu

INTERESTS

- Reading Books
- Watching Movies
- Debating