

Mubashir Rehman

AI Backend Engineer · Python / FastAPI / Django · LLM, RAG & Semantic Search · PostgreSQL / pgvector

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PROFESSIONAL SUMMARY

Backend Software Engineer with **3+ years** building production backend systems and **AI-assisted services** in Python, FastAPI, and Django. Hands-on with **LLM integration, embeddings, pgvector semantic search, and local inference (vLLM/LiteLLM)**, plus the data pipelines and authenticated APIs behind AI/ML features — owned end-to-end from schema design and background workers through Dockerized deployment.

TECHNICAL SKILLS

Languages: Python, SQL, C++, JavaScript, C, C#, Bash, QML

AI / LLM: OpenAI API, Google Gemini, LangChain · embeddings & semantic search, pgvector · vLLM, LiteLLM (local inference)

Backend: Django, Django REST Framework, FastAPI, Flask · REST APIs, OAuth2, JWT, RBAC · WebSockets, Django Channels, background workers

Databases: PostgreSQL, MySQL, Redis, SQLite, pgvector · SQLAlchemy / SQLModel, Alembic, stored procedures, schema design

Async / Concurrency: asyncio, ARQ, multiprocessing, Celery, background workers

Automation / Workflow: n8n, MQTT, scheduled jobs, webhook & retry/fallback workflows, external API integrations

Cloud & DevOps: Docker, Docker Compose, GitHub Actions, CI/CD · Nginx, Linux, Systemd, DigitalOcean · AWS (EC2, ECS, S3, VPC, IAM), Boto3

ML / Data: Keras, scikit-learn, OpenCV, NeuroKit2, SciPy

Enterprise / Domain: ERPNext / Frappe v16, Horilla HRMS, ZKTeco biometric API · HL7 / Mirth Connect integration workflows

PUBLICATION & RESEARCH

- **ECG-Based Cardiovascular / Vascular Age Prediction** — Published in *Circuits, Systems, and Signal Processing*. Built a low-cost ECG ML/IoT pipeline using ESP32/AD8232 hardware with Python signal-processing and deep-learning models (Keras, scikit-learn, NeuroKit2, ResNet-18).

PROFESSIONAL EXPERIENCE

TransData — Software Engineer

Mar 2025 – Present

Backend systems, AI automation, and enterprise / healthcare integration.

- **Crypto / social intelligence backend:** Designed a FastAPI service that ingests Telegram, Discord, and Twitter/X data and processes it through Gemini-powered summarization, embeddings, pgvector semantic search, and Redis-backed caching and alerting.
- **AI entity-validation pipeline:** Refactored duplicated validation flows into a unified Python/MySQL pipeline with stored-procedure-backed data operations, supporting both strict and deep-validation modes and reducing maintenance overhead.
- **Local LLM infrastructure:** Deployed local LLM inference with vLLM + LiteLLM on constrained GPU hardware behind an OpenAI-compatible API for internal developer tooling.
- **LinkedIn automation platform:** Built backend APIs and Celery/n8n background workflows for a content scheduling and publishing platform on LinkedIn's official API, with OAuth2 token handling and versioned prompt management for AI-assisted content generation.
- **Industrial estimation APIs:** Built REST APIs and normalized PostgreSQL schemas for a parts cost-estimation platform, exposing user-specific data to AI/ML services through authenticated endpoints and data-ingestion pipelines.

- **Django HRMS automation:** Extended a Horilla-based HRMS with ZKTeco biometric attendance sync, multi-device schema support, manager dashboards, and worksheet reporting endpoints for attendance auditing and exports.
- **Healthcare HL7 tooling:** Replicated key Mirth Connect Java-client actions as a web-based HL7 integration operations tool — message export, channel start/stop, and deploy/undeploy workflows — and debugged its authentication flows.

Veritus Software — Team Lead & Software Engineer

Jul 2023 – Mar 2025

C++/Qt drone-control systems, Python ground control, AWS automation, and AI web tooling.

- **Led a 4-person team** building QGroundControl-based drone-control and swarm features in C++, Qt, and QML for mission planning and telemetry; managed Jira workflows and Agile sprint demos.
- Implemented high-throughput telemetry using MQTT, multithreading, and multiprocessing for real-time ground-control interaction, and modified Gazebo simulation environments for multi-drone testing.
- Built Python ground-control and video-processing workflows with Olympe/Sphinx and OpenCV, including simulator-to-Android video streaming and live telemetry overlays.
- Automated AWS infrastructure provisioning with Python/Boto3 (VPCs, subnets, EC2, IAM, ECS) and deployed Dockerized Flask services with public DNS/DDNS access.
- Built an AI prompt-management web app (FastAPI/Django, OpenAI API, LangChain) with streaming responses, Django RBAC, and AWS S3-backed storage.

Information Technology University — Teaching Assistant

Jan 2023 – May 2023

- Designed operating-systems labs covering indexed file systems, multithreading, process scheduling, system calls, and Linux programming.
- Mentored graduate students on OS research topics including virtualization, distributed file systems, and scheduler design.

GameBolt Studios — Game Development Intern

Mar 2022 – Jul 2022

- Developed Android and web endless-runner games using Unity/C#, PlayCanvas, and JavaScript, with performance optimizations such as object pooling and asset preloading.

SELECTED PROJECTS

- **Distributed Job Scheduler** (*C, TCP/IP, Pthreads, Fork/Exec*) — Server-client scheduler for remote command execution, demonstrating low-level concurrency, networking, and process isolation.
- **Real-Time Publisher-Subscriber Messaging System** (*Python, Redis, PostgreSQL*) — Pub-sub system with subscriptions, routing, in-memory caching, and SQL persistence.
- **Personal Portfolio & Small-Business Sites** (*React, TypeScript, Next.js, Vercel*) — Built and maintained a personal portfolio with static-site generation for SEO, plus a production site for a Lahore café.

EDUCATION

BS Computer Science

Lahore, Pakistan

Information Technology University

Focus: operating systems, distributed systems, databases, machine learning, systems programming.

SCHOLARSHIPS & ACHIEVEMENTS

- **PEEF Scholarship** (bachelor's academic excellence) and **Dalda Scholarship** (academic merit).
- Published ML/IoT research in Circuits, Systems, and Signal Processing.
- Led a 4-person engineering team on drone-control and simulation systems.
- Teaching Assistant for graduate Advanced Operating Systems and undergraduate Operating Systems.