

# BILAL IRFAN

## Full-Stack Developer & AI Engineer

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### PROFESSIONAL SUMMARY

Full-stack developer with a focus on AI engineering, building end-to-end applications powered by LLMs, RAG pipelines, and agentic AI. Experienced with Python backends (FastAPI, Django), modern frontends (Next.js, TypeScript), and AI integrations using LangChain and the OpenAI API. Currently working professionally as a software developer while actively building AI-powered portfolio projects and pursuing opportunities in AI engineering.

### PROJECTS

#### AskMyDoc

FastAPI | LangChain | ChromaDB | OpenAI API | Next.js | TypeScript | Tailwind CSS

- Built a RAG-based document chat assistant that allows users to upload a PDF and ask questions grounded in its content
- Implemented a full RAG pipeline: text extraction with pdfplumber, overlapping chunk splitting, embedding with text-embedding-3-small, and vector storage in ChromaDB
- Designed a FastAPI backend with endpoints for PDF upload, embedding, and conversational Q&A
- Integrated gpt-4o-mini to generate answers strictly from retrieved document chunks, preventing hallucination
- Built a clean Next.js frontend with a chat interface for real-time document Q&A

#### AskMyData

FastAPI | OpenAI API | pandas | matplotlib | Next.js | TypeScript | Tailwind CSS

- Built an autonomous data analyst that accepts CSV uploads and answers plain English questions by generating and executing Python code at runtime
- Implemented a code generation pipeline using gpt-4o-mini that writes pandas and matplotlib code based on the dataset schema and user question
- Sandboxed code execution using restricted globals, stripping all builtins, os, and subprocess access to prevent unsafe operations
- Built a self-correcting retry mechanism that sends execution errors back to GPT for automatic code correction
- Returned results as text answers and base64-encoded chart images rendered in a Next.js chat interface

### SKILLS

#### AI & Machine Learning

LangChain, OpenAI API, RAG Pipelines, Agentic AI, ChromaDB

#### Backend

FastAPI, Django, Python, REST APIs, PostgreSQL, MongoDB

#### Frontend

Next.js, React, TypeScript, Tailwind CSS

#### Tools & Platforms

Git, GitHub, Linux, Postman, Docker

### EXPERIENCE

#### KNYSYS

11/2024 – Present | Karachi, Pakistan

Software Developer

- Designed and maintained RESTful APIs supporting secure authentication and reliable data exchange between backend services and frontend interfaces.
- Built full-stack web applications using Python (Quart) for backend services and Jinja2 for dynamic frontend rendering, integrating data from MongoDB.
- Managed PostgreSQL and MongoDB databases, handling CRUD operations and maintaining data consistency.
- Engaged directly with clients across logistics, waste management, finance, and customs industries gathering requirements, understanding pain points, and proposing technical solutions.
- Demonstrated developed features to clients, translating technical implementation into clear non-technical walkthroughs.
- Coordinated with and occasionally led small team sub-groups during development phases, managing task distribution and delivery.

### EDUCATION

#### Bachelor of Science, Software Engineering

2021 – 2025 | Karachi, Pakistan

Mohammad Ali Jinnah University (MAJU)

### CERTIFICATES

#### Machine Learning A-Z: AI, Python & R

Udemy

#### Introduction to Career Skills in Data Analytics

LinkedIn Learning

#### Claude Code in Action

Anthropic