



# Muhammad Hamza

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**Address:** Lahore, Pakistan (Home)

## ABOUT ME

AI Engineer specializing in building and deploying intelligent systems powered by large language models. Experienced in RAG pipelines, MCP-based automation, and real-world AI integration. Previously contributed to applied AI projects bridging research and production, and now focused on advancing expertise in Natural Language Processing and scalable, human-centered AI solutions.

## WORK EXPERIENCE

**PURELOGICS – LAHORE, PAKISTAN**

**ASSOCIATE SOFTWARE ENGINEER - AI – 01/09/2025 – CURRENT**

Developing AI-powered solutions using machine learning, deep learning, and integrating into real-world applications with Flask, FAST, and Django.

**PURELOGICS – LAHORE, PAKISTAN**

**AI INTERN – 05/05/2025 – 05/08/2025**

Completed hands-on training in ML, DL, and NLP, building and deploying AI-powered applications

**ARCANA INFO – LAHORE, PAKISTAN**

**ROBOTIC PROCESS AUTOMATION INTERN – 04/09/2024 – 05/12/2024**

Assisted in building RPA bots using UiPath to automate repetitive business tasks.

## EDUCATION AND TRAINING

15/09/2020 – 15/09/2024 Pakistan

**BACHELORS OF SCIENCE IN COMPUTER SCIENCE** COMSATS University Islamabad

Programming Fundamentals, Object Oriented Programming, Data Structures and Algorithms, Database Systems I, Software Engineering Concepts, Design and Analysis of Algorithms, Introduction to ICT, Operating Systems, Data Communications and Computer Networks, Software Design Methodologies, Game Development, Computer Architecture, Theory of Automata, Web Technologies, Machine Learning, Human Computer Interaction, Computer Vision, Introduction to Data Science, Artificial Intelligence, Introduction to Bioinformatics, Compiler Construction, Numerical Computing, Calculus and Analytical Geometry, Discrete Structures, Multivariable Calculus, Differential Equations

**Field of study** Computer Science | **Final grade** 2.94 | **Thesis** AI Based Recruitment System

## SKILLS

Artificial Intelligence & Machine Learning | Deep Learning | Neural Networks | Natural Language Processing | Generative AI & Large Language Models | Retrieval-Augmented Generation (RAG) | Agentic AI Systems | Django | FastAPI | Flask | API Design & Integration | Data Science & Analytics | Vector Databases & Semantic Search | PostgreSQL | MySQL | SQL | Automation & Scripting | Version Control (Git/GitHub/Bitbucket) | Data Visualization | Speech & Audio Processing | Prompt Engineering | Cloud-based AI Tools & Model Deployment

## PROJECTS

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### AI-Powered Automated Restaurant System

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- Architected an intelligent restaurant management system using FastAPI for high-performance backend APIs, seamlessly integrated with a web interface for both traditional and conversational user interactions.
- Developed an agentic AI chatbot using LangGraph and OpenAI GPT-4o Mini, capable of reasoning over structured and unstructured data to help users explore menu items, filter options by taste, ingredients, or medical conditions (e.g., diabetes), and even order their desired items autonomously.
- Implemented a retrieval-augmented generation (RAG) pipeline leveraging Pinecone vector database and OpenAI text-embedding-3-large, enabling semantic search, contextual query understanding, and personalized menu recommendations.
- Integrated PostgreSQL for structured data storage and designed metadata-aware intelligence (e.g., parking availability, dining capacity, free space), empowering the chatbot to provide accurate, context-rich responses about restaurant logistics and services.

### Test Management System (TMS)

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- Currently developing an intelligent Task Management System (TMS) that integrates AI-driven automation for task creation, prioritization, and progress tracking, improving overall team productivity and workflow efficiency.
- Building a modular backend with Django REST Framework and PostgreSQL, featuring secure user authentication, role-based access control, and RESTful APIs for seamless integration with the React-based frontend.
- Implementing AI assistance using LangChain and OpenAI GPT-4o, enabling natural-language interaction for creating tasks, generating summaries, setting deadlines, and suggesting task dependencies dynamically.
- Integrating asynchronous processing with Redis and Celery to handle background tasks such as notification scheduling, report generation, and AI-powered analytics for team performance insights.

### AI-Based Recruitment System – TalentTorch

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- Developed an AI-powered recruitment platform using Django REST Framework that automated candidate-job matching through NLP-based skill extraction and semantic similarity modeling. Implemented a RAG-style ranking pipeline using the BAAI/bge-large-en embedding model and Mistral 7B
- Instruct, enabling intelligent resume parsing, skill reasoning, and contextual job matching.
- Integrated MySQL for structured data storage and designed modular APIs for scalable, real-time candidate search, ranking, and recommendation.

### Intelligent Codebase Knowledge Assistant

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- Developed an intelligent codebase analysis system using Django REST Framework and Pinecone vector database, enabling developers to query GitHub and Bitbucket repositories in natural language via semantic search powered by OpenAI text-embedding-3-small with GPT-4o for paid mode, and BGE Large (1024-dim) embeddings with LLaMA 3 8B (running locally via Ollama) for the free mode.
- Designed a dual-provider AI architecture using the Factory design pattern, supporting both OpenAI (paid) and Hugging Face/Ollama (open-source) backends with hybrid chat completion and automatic fallback, improving reliability and reducing LLM token usage.
- Implemented a scalable semantic code search pipeline processing 100+ repositories, featuring batch vector upserts, cosine similarity retrieval, and robust REST APIs with complete error handling and graceful degradation.

## CERTIFICATIONS

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Purelogics

**Python + AI bootcamp**

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IBM | Coursera

**Artificial Intelligence Essentials V2**

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LinkedIn Learning

**Microsoft Azure Machine Learning Fundamentals**

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IBM

**Generative AI and LLMs: Architecture and Data Preparation**

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LinkedIn Learning

**Fine-Tuning for LLMs: from Beginner to Advanced**

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