# MUBASIR ANWAR

**AI Engineer | RAG, LLM Agents & Evaluation Systems | Full-Stack Web Developer**

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## PROFESSIONAL SUMMARY

AI and Machine Learning Engineer specializing in production-grade RAG systems, LangChain and LangGraph agent pipelines, and vector-based retrieval, with hands-on work in LLM application evaluation and tracing through LangSmith and tool integration over the Model Context Protocol (MCP). Also builds full-stack web applications with the MERN stack (MongoDB, Express, React, Node.js) and Next.js, connecting AI backends to production-ready web interfaces. Delivered real-world systems for clients and personal products: a production Plumber Service AI Agent for a Canada-based client, WhatsApp AI agents, portfolio-integrated chatbots, and YouTube RAG systems, built on transformer, ANN, CNN and RNN architectures.

## TECHNICAL SKILLS

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|---|---|
| **Programming** | Python (Expert), C/C++, HTML/CSS, OOP Design, Data Structures & Algorithms |
| **Web Development** | HTML, CSS, JavaScript, React, Next.js, Node.js, Express.js, MongoDB — MERN stack, RESTful API integration, responsive UI development |
| **Machine Learning** | Regression, Classification, SVM, KNN, Decision Trees, XGBoost, Random Forest, Feature Engineering, Model Pipelines, Scikit-Learn |
| **Deep Learning** | ANN, CNN, RNN, Transformers, Transfer Learning, Image Classification, Data Augmentation, TensorFlow, Keras, Optimization |
| **LLM Frameworks & Agents** | LangChain (Chains, Agents, Tools, Memory), LangGraph (stateful graphs, cyclic workflows, multi-agent orchestration, checkpointing, human-in-the-loop), n8n Agents, Prompt Engineering, Structured Output |
| **MCP** | Model Context Protocol servers and clients, tool and resource exposure, stdio and HTTP/SSE transports, wiring LLM apps to external tools and data sources |
| **RAG & Vector Search** | RAG pipeline design, chunking strategies, ChromaDB, PineconeDB, Vector Stores, Embeddings (MiniLM, HuggingFace, Sentence Transformers), Document Loaders, Semantic and Hybrid Retrieval, Re-ranking |
| **LLM Evaluation & Observability** | LangSmith (tracing, datasets, evaluators, prompt versioning, monitoring), LLM application evaluation, LLM-as-a-judge, RAG metrics (faithfulness, answer relevance, context precision and recall), regression test suites, latency, token and cost tracking |
| **LLM APIs** | OpenAI API, OpenRouter (DeepSeek, LLaMA, Mixtral), Anthropic Claude, Sentence Transformers |
| **Backend & APIs** | FastAPI, Express.js, RESTful API Design, Async Endpoints, Request Validation (Pydantic), Streaming Responses, AI Model Serving, WhatsApp Business API (Twilio/Meta) |
| **Databases** | MongoDB, MySQL, ChromaDB, PineconeDB, Airtable, Vector Databases |
| **DevOps & Deployment** | Docker, Containerization, Dockerfiles, Image Optimization |
| **Tools** | GitHub, Kaggle, PDF and Text Processing, Dataset Handling, API Integration, Chatbot Embedding & UI Integration |

## EDUCATION

**BSc Computer System Engineering, CGPA 3.8/4.0** — **2023 – 2027**

*University of Engineering & Technology (UET) Peshawar*

F.Sc Pre-Engineering, 970/1100 — Lamps Education System Peshawar

Matriculation, 1070/1100 — Al-Khalim Public School Charsadda

## FEATURED PROJECTS

**Plumber Service AI Agent** — **PRODUCTION AI AGENT**

*n8n • Twilio • OpenAI • Google Calendar • Google Drive • Airtable — Canada Client, PIPEDA & CASL Compliant Production System*

- Designed and deployed a production-grade AI agent for a Canadian plumbing business that automates the full customer-to-job pipeline, from inbound call to plumber dispatch and notification
- Built a 4-phase n8n automation workflow: Twilio webhook → OpenAI Whisper STT → GPT-4o job extraction → urgency routing → Google Calendar booking → parallel multichannel notifications
- Implemented PIPEDA-compliant bilingual (EN/FR) call recording consent via Twilio TwiML, and CASL-compliant SMS with opt-out handling
- Engineered urgency detection that triggers an immediate Twilio voice call to the plumber for emergency jobs, while routing normal jobs through the standard booking flow
- Automated notifications across three parallel channels: Gmail job email, Twilio SMS to the customer, and an AI-generated OpenAI TTS voice note delivered via WhatsApp
- Implemented full error handling with developer alerts, customer fallback SMS, and Airtable error logging, so no failure passes silently

**WhatsApp AI Agent** — **AI AGENT**

*n8n • Meta WhatsApp API • PineconeDB • OpenAI*

- Built a fully functional AI-powered WhatsApp agent using n8n Agents, integrated with the WhatsApp Business API (Meta) to handle real-time user conversations over WhatsApp
- Implemented RAG-based memory and tool-use capabilities enabling the agent to answer domain-specific questions, retrieve documents, and perform multi-step reasoning autonomously

**Portfolio Website AI Chatbot** — **FULL-STACK AI**

*n8n • PineconeDB • HTML/CSS/JS • OpenAI/OpenRouter*

- Integrated an AI chatbot into a personal portfolio website so visitors can ask about skills, projects, and experience in real time
- Built an n8n RAG pipeline backed by PineconeDB with portfolio content embedded using Sentence Transformers, giving context-aware answers from a personal knowledge base
- Engineered a lightweight FastAPI backend with a custom chat UI (HTML/CSS/JS) embedded into the frontend with streaming responses

**YouTube RAG Chatbot** — **NLP PIPELINE**

*LangChain • YouTube API • ChromaDB • Sentence Transformers*

- Built a chatbot that pulls YouTube transcripts via API and returns summaries, Q&A, explanations, and concept breakdowns
- Integrated Sentence Transformers (MiniLM-L6-v2) embeddings with ChromaDB for high-performance vector retrieval
- Supports multiple LLM backends (OpenAI, OpenRouter) for flexible reasoning and response generation

## KEY ACHIEVEMENTS

- Maintained a 3.8/4.0 CGPA in Computer System Engineering at UET Peshawar
- Delivered a production Plumber Service AI Agent for a Canada-based client, PIPEDA and CASL compliant, automated from inbound call to plumber dispatch
- Built and deployed a WhatsApp AI Agent on real-world messaging infrastructure, and a live AI chatbot on a personal portfolio website
- Active contributor on GitHub and Kaggle with multiple applied AI/ML projects

## PROFESSIONAL INTERESTS

RAG Systems | LangChain | LangGraph | LangSmith | LLM Evaluation | MCP | AI Agents | Vector Databases | Deep Learning | NLP | Transformers | LLM Integration | AI Automation | MERN Stack | Next.js