

Muhammad Humza

Full Stack & AI Engineer

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PROFILE

Ambitious M.Sc. Artificial Intelligence student possessing strong computer science fundamentals and 3+ years of engineering experience spanning full-stack application development and distributed AI workflows. Proven track record building responsive React/TypeScript frontends alongside high-performance Python/FastAPI backends. Experienced with AWS event-driven architectures and production-level database management. Highly effective collaborator thriving in agile, fast-paced environments, bringing a “dig-first” troubleshooting mentality to complex systems.

TECHNICAL SKILLS

- **Core CS & Backend:** Data Structures, Algorithms, Distributed Systems, Python, FastAPI, Node.js, C# (.NET), REST APIs, GraphQL, Async Python, Structured Logging.
- **Frontend Development:** React, TypeScript, JavaScript (ES6+), HTML5, CSS3, Tailwind CSS, React Native, Streamlit, UI Component Architecture, Responsive Design.
- **AI & ML:** LangChain, LangGraph, RAG Pipelines, VAPI.ai, PyTorch, Scikit-Learn, Vector Search, Agentic Workflows.
- **Cloud, DevOps & Databases:** AWS (Lambda, S3, DynamoDB), Microsoft Azure, Docker, CI/CD (GitHub Actions, Azure DevOps), SQL Server, MongoDB, Cosmos DB, Redis.
- **Methodologies:** Agile/Scrum, Daily Syncs & Technical Deep-dives, Clean Code Standards, Object-Oriented Design.

EXPERIENCE

AI / Full Stack Engineer (Working Student)

May 2024 – Aug 2025

New Digital Intelligence GmbH, Berlin, Germany

- Built internal React/Node.js tooling enabling product and engineering teams to validate and test complex AI features before production rollout.
- Developed and integrated responsive user-facing interfaces to interact with complex RAG pipelines and real-time voice agents.
- Implemented event-driven backend tasks and scheduled cron jobs, utilizing structured logging for production observability and performance optimization.
- Collaborated actively in a flat-hierarchy agile team, engaging in daily syncs, code reviews, and technical deep-dives to evaluate new tool integrations.

Product Development Engineer / Full Stack Engineer

Aug 2022 – Mar 2023

Habib Bank Limited, Karachi, Pakistan

- Built and maintained scalable frontend features for large-scale enterprise banking web and mobile applications, prioritizing clean structure and cross-browser compatibility.
- Identified high-frequency database calls as caching candidates, successfully implementing Redis to optimize data retrieval latency.
- Migrated legacy code segments into modular, reusable UI components, reducing UI rendering bugs and speeding up future feature delivery.
- Automated build and release pipelines via cloud DevOps infrastructure, removing manual handoff steps and implementing crash monitoring tools.

Software Engineer

Jul 2021 – Jan 2022

United Bank Limited, Karachi, Pakistan

- Contributed to the modernization of web portals using JavaScript, HTML5, and CSS3 to deliver high-performance user interfaces.
- Engineered reliable backend logic with C# (.NET) and REST APIs, optimizing database interaction queries.
- Participated in daily stand-ups and cross-functional design sprints to align complex technical requirements with product goals.

Software Developer

Feb 2021 – Jul 2021

Evantagesoft, Karachi, Pakistan

- Developed and optimized web applications leveraging the MERN stack (MongoDB, Express, React, Node.js) with a focus on component state management.
- Collaborated on building responsive layouts and cross-platform mobile elements to deliver smooth and efficient end-user experiences.

EDUCATION

M.Sc. Artificial Intelligence

Apr 2023 – Present

Brandenburg University of Technology, Cottbus, Germany

- Currently enrolled; fully eligible for a working student contract under German student regulations.
- Modules: Distributed Agentic Systems, Machine Learning, Automated Reasoning, Data Structures & Advanced Algorithms.

B.Sc. Computer Science

Feb 2017 – Jan 2021

COMSATS University Islamabad, Pakistan

- Core Curriculum: Data Structures, Algorithms, Database Systems, Computer Networks, Distributed Computing.
- Thesis: Designed and developed a geo-navigation application utilizing a modern frontend stack (React Native) integrated with a Node.js backend and MongoDB.

PROJECTS

Agentic Voice Assistant with Tool-Calling

VAPI.ai, FastAPI, LangGraph, Python, AsyncIO

- Developed a real-time phone agent infrastructure utilizing asynchronous Python to orchestrate multi-step reasoning chains.
- Integrated external webhooks and dynamic tool-calling patterns to automatically process calls and synchronize data with ticket management APIs.

MidiNet GAN — Symbolic Music Generation

PyTorch, GANs, MIDI, Python

- Reimplemented and extended the MidiNet GAN architecture in modern PyTorch for symbolic MIDI music generation.
- Fixed critical architectural bugs, introduced lambda-based chord and history conditioning parameters, and ran training experiments on GPU hardware to evaluate generation quality.

Loan Default Predictor API

FastAPI, Scikit-Learn, Docker, Production Deployment

- Built and trained an end-to-end Machine Learning pipeline, wrapping the model in a high-performance FastAPI endpoint.
- Containerized the complete application using Docker to ensure seamless deployment and testing across environments.

LANGUAGES

English: Fluent (C1) • **German:** A2 (Actively targeting B1) • **Urdu:** Native