Muhammad Bilal

mbilalkh.usa@gmail.com | (317) 699-3182 | **LinkedIn:** linkedin.com/in/mbilalkhusa | **GitHub:** github.com/mbil4l

PROFESSIONAL EXPERIENCE

AI Software Engineer – Aultman Health Foundation; Canton, OH   May 2025 – Present
- Designed and shipped a Django-based AI-enabled clinical decision-support application that turns patient demographics and their medicine regimen into a single-page card highlighting physician-focused insights, reducing a 20-page generated report to a single concise screen, and improving physicians' review time from ~27 min to <3 min.
- Integrated OpenAI GPT-4o API with structured function calling to auto-generate dosage guidelines, instructions, cautions, and warnings when existing database entries don't match patient profiles, ensuring 100% coverage for novel drug-patient combinations.
- Developed a RESTful API using FHIR/HL7 standards and integrated it with Cerner via SMART on FHIR to retrieve real-time patient demographics, medications, and clinical data from the EHR.
- Implemented a rule-plus-LLM classifier that groups drugs by mechanism (e.g., COX-1/2) and flags risky combinations.
- Designed a normalized Postgres schema with seven drug-class tables and a drug interaction table. Added targeted indexes and atomic transactions, keeping n-way interaction lookups O(1), which completes in 7 sec on 10k stored records in local tests.
- Utilized Django ORM to reduce boilerplate code when interacting with the database. Used best practices like lazy evaluation, QuerySet optimization, and indexing patient demographics and drug relationships to ensure optimal performance. This sped up M2M drug classification lookups and enforced unique patient profiles.
- Developed the frontend UI layers of the Django template with Claude Code using Sonnet 4.5.

Software Engineering Tutor – iCode School Franchise; Fishers, IN   May 2023 – Aug 2023
- Mentored 20+ students in the "Introduction to Computer Science" and "Introduction to Programming" courses.

Associate Software Engineer – 10Pearls; Islamabad, PK   Mar 2021 – Nov 2021
- Worked on a business-critical process to optimize SPA loading times from 11s to 6s. Improved Google Lighthouse score of the SPA from 73 to over 80 by utilizing lazy loading, caching of assets, and CDN optimization.
- Worked on UI Improvements for web applications with a diverse team. Added support for keyboard navigation and text-to-speech screen reader functionality for power users using HTML5 tab index and ARIA role attributes throughout the HTML code.
- Ensured consistent UI functionality and responsive designs of the web applications by using CSS3 MediaQueries.
- Actively participated in peer code reviews, helping drive product quality.
- Supported the development team by writing and maintaining technical documentation, which helped the support team provide self-service more frequently.
- Volunteered as a mentor at 10Pearls University, aimed at empowering underprivileged groups in tech. Through this program, we helped them understand computer science and its career prospects. A basic Computer Science 101 workshop, featuring practical programming exercises such as the "hello-world" example, was conducted to whet their appetite.

PROJECTS

Boundless Games' Fable Table
- Contributed to an open-source *Dungeons & Dragons* web app (FastAPI/Python + React/Next.js) by fixing backend bugs and resolving GitHub security alerts by updating vulnerable dependencies. Worked in a vibecoding workflow using Claude Code and Cursor with multiple LLMs (Sonnet, Opus, Codex) for rapid iteration and debugging.

SKILLS

Languages	Python, Typescript, C#
Frameworks	Bootstrap, React, Django, Figma
Databases	MySQL, Postgres
Technologies	Docker, Git

EDUCATION

M.S. in Computer Information Science, Purdue University, Indianapolis, IN   Jan 2022 – Aug 2023
B.E. in Software Engineering, National University of Sciences and Technology, Islamabad, PK   Aug 2017 – Jul 2021