

# Mirza Noor Hamza

Full-stack Developer & AI/ML Engineer

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## Summary

Results-oriented Full Stack MERN/Next.js Developer with expanding expertise in Data Analysis, Machine Learning, and AI-powered application development. Experienced in building scalable, high-performance web applications and intelligent tools using both JavaScript/TypeScript and Python. Skilled in React, Next.js, Node.js, Express, REST APIs, along with AI/ML fundamentals including CNNs, data preprocessing, model training, OpenCV, and RAG systems with vector search. Passionate about solving real-world problems through full-stack engineering, data-driven insights, and applied artificial intelligence.

## Education

**Intermediate of Computer Science (ICS) | Punjab College | Gujrat, Punjab**

Sep 2017 – June 2019

**Bachelor of Science in Computer Science (BSCS) | University of Lahore | Lahore, Punjab**

Sep 2019 – Sep 2024

## TECHNICAL Skills

**Frontend:** HTML5, CSS3, Bootstrap, Tailwind CSS, JavaScript, TypeScript, React, Next.js, Redux, TanStack Query, Formik & Yup, shadcn, Material UI, ChartJS

**Backend:** Node.js, Express.js, REST API, FastAPI (Python)

**Database:** MongoDB, PostgreSQL, SQLite, Prisma

**AI / Data Science:** Python, Pandas, NumPy, Matplotlib, Seaborn, scikit-learn, TensorFlow/Keras, CNNs, Data Cleaning, Time Series Analysis, OpenCV

**RAG / LLM Tools:** SentenceTransformers, FAISS Vector Database, Embeddings, Text Chunking, Groq API (LLM inference)

**Content Management & Other:** Strapi, WordPress, API Integration, MVC Architecture, Responsive Design, GIT, jQuery, Context API.

# Personal Projects

## AI/ML & DATA SCIENCE PROJECTS

### Zeno AI — UX/UI Design Analysis Assistant

- Developed an AI-powered tool that analyzes UI/UX screenshots for layout, spacing, color consistency, and design quality.
- Implemented OpenCV-based component detection and K-Means for color clustering.
- Designed a Streamlit dashboard and automated JSON/PDF report generation.
- Tech Stack: Python, OpenCV, scikit-learn, Streamlit, ReportLab, NumPy.

**Tech Stack:** Tech Stack: Python, OpenCV, scikit-learn, Streamlit, ReportLab, NumPy

### HandX — Handwriting Recognition System

- Built a complete digit recognition system using a CNN achieving 99.56% accuracy on MNIST.
- Added a Streamlit drawing canvas for real-time predictions and deployed a FastAPI backend for REST endpoints.
- Constructed full ML lifecycle: preprocessing → training → evaluation → inference.

Tech Stack: Python, TensorFlow/Keras, FastAPI, Streamlit, Pillow, NumPy

### Cara AI — PDF Document Assistant (RAG System)

- Created a fully functional RAG pipeline for querying PDFs using embeddings + vector search.
- Implemented text extraction, chunking, FAISS indexing, and LLM-powered responses through Groq API.
- Built Streamlit UI, FastAPI backend, and CLI for flexible usage.

**Tech Stack:** Tech Stack: Python, FAISS, SentenceTransformers, Groq API, FastAPI, Streamlit, PyPDF2

### COVID-19 Data Analysis & Forecasting App

- Built a data analytics dashboard to visualize Covid-19 case trends and generate 30-day predictions.
- Integrated live API data and CSV uploads with automated preprocessing.
- Implemented year-wise & quarter-wise breakdowns, time-series graphs, and moving-average forecasting.

**Tech Stack:** Python, Streamlit, Pandas, Matplotlib, Requests API

## FULL-STACK DEVELOPMENT PROJECTS

### TopChrétien — French Christian Community Web App

- Built a full-stack community platform for French Christian users.
- Implemented media integration, prayer submission, daily Bible verses, blog section, and course subscriptions for an interactive and rich community experience.
- Integrated REST API endpoints for data retrieval and persistence across components, ensuring a smooth and scalable application.
- Collaborated with team members to improve functionality, perform bug fixes, and handle technical issues in both staging and production environments.

**Tech Stack:** Next.js, React, JWT, NextAuth, React Hook Form, Zod, TypeScript, TanStack Query, shadcn UI, API Integration, Responsive Design

### RoyalsEra — Ecommerce Perfume Store

- Built a **full-fledged e-commerce platform** for a luxury perfume store, delivering a sophisticated and smooth shopping experience.
- Created **custom product pages**, integrated **WooCommerce** for store functionality, implemented **secure payments with Stripe**, and configured **SMTP** for reliable email delivery of order confirmations and notifications.
- Integrated additional **plugins** (like SEO optimization, marketing tools, and loyalty programs) to enable a rich and flexible platform for growing sales.
- Collaborated closely with stakeholders to align technical implementation with business goals and customer satisfaction.

**Tech Stack:** WordPress, WooCommerce, Elementor, SMTP, Stripe, SEO & Marketing Plugins

## Additional (Hobbies)

Chess • Table Tennis • Badminton • Cricket • Jigsaw Puzzle • Gym • Powerlifting

