

Muhamad Zain Zameer

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WORK EXPERIENCE

Marquette University, USA

Nov. 2024 – Mar. 2025

Data Analyst & Computer Vision Engineer

- Conducted collaborative research with a Marquette University Master's student, analyzing 170K+ honey bee behavioral observations using R (tidyverse) with custom temporal matching algorithms, advanced EDA, and high-resolution visualizations to uncover temperature-mediated locomotion patterns.
- Engineered scalable data pipelines and applied min-max normalization, downsampling, and noise suppression to integrate multimodal datasets (movement trajectories & temperature logs), delivering reproducible insights that advanced academic insect neuroethology research.
- Developed and deployed a YOLOv8-Nano deep learning pipeline with CVAT-annotated datasets to classify thermoregulatory behaviors in hive footage, integrating results into a Django-based web app for real-time bee activity detection.

10Pearls Pakistan

Jun. 2025 – Aug. 2025

Data Scientist Intern

- Built a real-time air quality prediction system for Islamabad using the AirVisual API, advanced feature engineering, and in-depth EDA to identify trends and correlations.
- Trained and evaluated multiple ML models (Linear Regression, Random Forest, XGBoost), achieving $R^2 = 0.91$ with lag-based modeling for superior prediction accuracy.
- Deployed a ReactJS + Tailwind CSS web app on Vercel with automated data updates and CI/CD retraining for continuous model improvement.

PROJECTS

Neuroshell - AI Powered Terminal Assistant

Jul.2025 - Jul. 2025

Developed **NeuroShell**, an AI-powered command-line interface that transforms terminal usage into natural language interaction by integrating contextual session tracking, conversational memory (RAG + vector embeddings), and task automation (e.g., dynamic email generation). Built with **Python, FastAPI, React, Tailwind, Electron, and LLMs (LLaMA, LangChain, HuggingFace, ChromaDB)**, the project demonstrates next-gen human-computer interaction through intelligent, context-aware CLI automation.

MIND - Personal Mental Wellness Assistant

Jun.2025 - Jun. 2025

Built **MIND**, an AI-driven journaling and mental wellness app that leverages transformer models (DistilRoBERTa, Gemini) to detect emotions, track mood trends, and provide personalized self-care content. Featuring a smart journaling interface, real-time mood dashboard, and accessible UI, it integrates **Python, FastAPI, React, MongoDB, and data visualization** to deliver adaptive insights and intelligent feedback for mental well-being.

SKILLS

AI & Machine Learning: Model development, data pipelines, feature engineering, computer vision, RAG systems, LLMS, Langchain

Frontend: HTML, CSS, JavaScript, React.js, Next.js, Tailwind CSS, Bootstrap, Three.js

Backend: Python, REST APIs, Node.js, Firebase, FastAPI, Express.js

Data Science: Pandas, NumPy, Scikit-Learn, Matplotlib, Seaborn, R, Python, ggplot2, bioconductor

Tools & Platforms: Git, Hugging Face, Vercel, Google Cloud AI Studio

Other: UI/UX design, SaaS development, workflow automation, prompt engineering