Hizbullah Khan Jadoon

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github.com/hizbullahjadoon

Education

National University of Computer and Emerging Sciences Jun 2023
Masters of Science in Data Science *Islamabad, Pakistan*

University of Engineering and Technology, Peshawar Sep 2020
Bachelors of Science in Computer Systems Engineering *Peshawar, Pakistan*

Abbottabad Public School Aug 2016
F.Sc (Pre-Engineering) *Abbottabad, Pakistan*

Experience

National Disaster Management Authority (NDMA) Jan 2025 – Present
Trainee AI Engineer *Islamabad, Pakistan*

- Conducting Exploratory Data Analysis and developing machine learning pipelines for disaster-related datasets.
- Collaborating with cross-functional teams to design AI tools that assist in disaster risk assessment and early warning systems.

Alpha MedCare Services Feb 2024 – Jan 2025
Data Analyst *Abbottabad, Pakistan*

- Performed web scraping to collect healthcare and sales data for analysis and dashboard reporting.
- Conducted exploratory data analysis to uncover sales patterns and customer trends.
- Managed performance metrics and assisted in decision-making for the sales team.

Cognizant at Forage (Virtual Internship) Apr 2024
Data Analyst Intern - View Certificate *Remote*

- Analyzed grocery sales data (Gala Groceries) using Python to identify performance trends.
- Built a predictive machine learning model and presented actionable insights through a PowerPoint report.

Secured IoT Devices Lab, UET Peshawar 2019 – 2020
Trainee Engineer *Peshawar, Pakistan*

- Assisted in the development of a secure IoT-based monitoring and control system for agricultural silos.
- Focused on data acquisition, and encryption for sensor data.

Technical Skills

Programming Languages: Python — R — MATLAB

Lbraries & Frameworks: Pytorch — TensorFlow — Keras — OpenCV — Pandas — Numpy — SkLearn — Matplotlib — Seaborn — Flask — Fast Api — Langchain — Streamlit — Hugging Face — My SQL — SQLite — HTML — CSS — Javascript

Geo-Spatial Analytics Tools: Geopandas, Rasterio, Cartopy, Shapely, GDAL, Folium, Contextily, QGIS, ArcMap

Interests: Data Science — Machine Learning — Deep Learning — Large Language Models

Certifications: AWS Certified Cloud Practitioner — December 2022
View Certificate

Projects

Landslide Prediction using Machine Learning

- Developed a predictive model for landslides using geospatial and environmental factors.
- Performed geospatial data analysis and feature extraction using **ArcMap** and **QGIS**.
- Implemented machine learning models including **XGBoost, Logistic Regression, Random Forest, Artificial Neural Networks, SVM** and **KNN** to classify landslide-prone areas.
- Enabled disaster management teams to assess landslide risks effectively and make informed decisions.

Weather Alerts Dashboard

- Developed a dashboard to generate weather alerts using **RAG** based on multiple environmental features including temperature, precipitation, and NDVI.
- Implemented province-level and district-level alert generation for targeted monitoring.
- Designed an intuitive UI with interactive maps displaying district boundaries and locations for better visualization.
- Enabled real-time decision-making for weather-sensitive operations through automated alert generation.

Academic Research Knowledge for Disaster Management

- Designed and developed an intelligent chatbot to assist in disaster management research for academic knowledge.
- Utilized **Retrieval-Augmented Generation (RAG)** to generate context-aware documents from academic papers.
- Built an intuitive web interface using **HTML, CSS, and JavaScript**, with a **Flask** backend and **LLaMA** for document generation.
- Accelerated research workflows and supported disaster response teams by eliminating the need for manual document searches.

Chatbot Integration for Geo-Spatial Portals

- Designing and integrating intelligent chatbots into geo-spatial data portals to enable natural language interaction with spatial datasets.
- Implementing **Retrieval-Augmented Generation (RAG)** to handle spatial queries and return relevant geospatial insights.
- Built the frontend using **HTML,CSS,Javascript** with backend via **Flask**.
- Enhancing accessibility for researchers and decision-makers by bridging the gap between complex spatial databases and intuitive AI-driven interactions.

Earthquake Impact Analysis on Total Electron Content (TEC) Distribution

- Conducted geospatial and temporal analysis of ionospheric **Total Electron Content (TEC)** variations before, during, and after seismic events.
- Collected and processed GNSS-based TEC data from **IGS** stations and integrated global earthquake datasets from **USGS**.
- Applied statistical techniques to identify ionospheric anomalies potentially linked to earthquake precursors.
- Visualized spatial TEC distribution maps using **Cartopy, Matplotlib** for pattern recognition.

A Semi-Supervised Learning Approach for Image Classification (*Thesis)

- Designed a multi-class image classification system using binary classifiers for pseudo-label prediction, eliminating the need for oversampling in the One-vs-All approach.
- Applied a high confidence threshold (0.9) to ensure precise and reliable pseudo-label assignments during training.
- Reduced inference time and achieved a 5× reduction in model size, enhancing efficiency for deployment in resource-constrained environments.

Headings Extraction From PDFs

- Developed a tool to extract structured headings and their associated content from PDFs, saving each section in separate text files named after the headings.
- Used **Streamlit** for an intuitive user interface and **LLaMA** for accurate heading recognition and content segmentation.
- Improved extraction speed and structure compared to conventional PDF parsing techniques.

News Research Tool

- Developed a tool to extract and analyze news articles from provided URLs, enabling users to ask targeted questions.
- Simplified information retrieval by providing answers to user queries, eliminating the need to read entire articles.
- Implemented using **Streamlit** for UI, **FAISS Index** and **Instructor Embeddings** for semantic document search, and **Llama** for question-answering.

Chat With Multiple PDFs

- Developed a tool utilizing Langchain to facilitate chatting with multiple PDFs.
- Helped in reducing the amount of time required for reading whole text in the PDF is decreased.
- Used Streamlit, FAISS Index, Instructor Embeddings and OpenAI API for user interface, document search and query response.

Publications

Hizbullah Khan Jadoon, Akhtar Jamil, Atif Zulfiqar, Alaa Ali Hameed: "ENHANCING THE MULTI CLASS IMAGE CLASSIFICATION ACCURACY USING BINARY CLASSIFIERS FOR SEMI SUPERVISED LEARNING", Published in the IEEE International Conference on Artificial Intelligence, Block Chain and Internet of Things (AIBThings), September 2023, University of Michigan USA.