MAHR ALI ARSHAD
Artificial Intelligence Engineer

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Professional Summary

Results-driven AI Engineer with 2 years of experience designing, developing, and deploying end-to-end AI/ML solutions in Generative AI, NLP, Big Data, and Computer Vision. Published work in Scientific Reports for advancing multilingual modeling in low resource languages especially Urdu.

Technical Skills

- **Programming Languages:** Python, C/C++, Java, SQL, JavaScript, HTML, CSS
- **Machine Learning / Deep learning / Image Processing:** Keras, TensorFlow, CUDA, PyTorch, SnnTorch, Torch, Scikit-learn, OpenCV, Pandas, Numpy
- **NLP / Generative AI:** spaCy, NLTK, LangChain, Transformers, AWS
- **Automation / Development Tools:** n8n, Git, Docker, Streamlit, Flask, FastAPI
- **Databases:** MySQL, PostgreSQL
- **Languages:** Urdu (Native), English (Fluent), French (A2 & Learning), Arabic (A2)

Experience

Oct 2023 – Jan 2025
Research Assistant – Pattern Recognition Lab @ PIEAS (Islamabad, Pakistan)
Supervisor: Dr. Ijaz Hussain

- **Hussain, I., Arshad, M.M.A., Cheema, A.N.** *et al.* Enhancing Urdu hate speech detection through differential transfer learning and adaptive loss functions. *Sci Rep* 15, 37407 (2025)
  Introduced a novel dataset: NUHONS (manually annotated) and a model: DAmBERT, for hate speech classification in Urdu, a low resource language, achieving state-of-the-art F1-score.
- Developed a full-stack code generation chatbot for Python by fine-tuning LLaMa2 in FP16 using Q-LoRa providing better responses specific to coding problems.

July 2023 – Sep 2023
AI Intern – Systems Limited (Islamabad, Pakistan)
Advisor: Sana Salman

- Developed an EDA web application for users to visualize and analyze their datasets as well as apply different machine learning models to improve accessibility and efficiency in data exploration.

PROJECTS

Global Air Pollution Prediction: BitGrit Challenge

Technologies: Scikit-learn, LightGBM, KMeans

- Ranked 4th at Bitgrit International Competition in Public Leaderboard achieving 89.79% accuracy using LightGBM.
- Used K-Means for clustering geospatial regions and feature engineered location based (latitude and longitude) and temporal based features

Power Consumption Prediction: Daecon AI/Big Data Competition

Technologies: Scikit-learn, LightGBM, Random Forest, XGBoost, CatBoost

- Achieved 7.50% SMAPE for forecasting **hourly based power consumption** for **100 buildings** encompassing 10 different categories from 25 Aug 2024 to 31 Aug 2024.

Multi-Class Thoracic Disease Classification

Technologies: Pytorch, Snntorch, scikit-learn,

- Conducted a comparative study of a proposed architecture of spiking neural network with CNN, ResNet, VGG16, ViT, and Swin transformer, achieving 67% less training time on NIH chest x-ray dataset for 14 thoracic diseases.

Social Media Post Automation
Technologies: n8n, OpenAI, Claude, NocoDB, Facebook/Instagram API handling
- Developed an automated workflow using n8n to automate Facebook/Instagram post generation for a travel agency
- Used Claude 3.5 and GPT 4o mini to generate ideas and auto publish, captions, post, and images after approval from user via Telegram bot

Multi-Class Tumor Classification
Technologies: Pytorch, Snntorch, Scikit-learn
- Achieved 91% Accuracy and 90% Precision, Recall, and F1-score using Spiking Neural Network, classifying three types of tumors to help provide patients with another opinion.

Medical Named Entity Recognition
Technologies: BERT, Tensorflow
- Fine-tuned BERT on the NCBI disease corpus and CDR dataset, to identify disease and chemical terms.

Education
- **EPITA**– MSc in Artificial Intelligence Systems   **02/2025 – 02/2026**
- **Pakistan Institute of Engineering and Applied Sciences (PIEAS)** – BSc in Computer Science   **09/2020 – 01/2025**