Ayesha Fazal Lashkarwala

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EDUCATION

Brandenburgische Technische Universität Cottbus — **Cottbus, Germany**
Master of Science in Artificial Intelligence — *Graduation Date: Sep 2026*

Lahore University of Management Sciences (LUMS) — **Lahore, Pakistan**
Bachelors of Science in Computer Science — *Graduation Date: Jun 2023*

WORK EXPERIENCE

Technische Universität Berlin — **Berlin, Germany**
Working Student - Data Integration and Preparation — *Jul 2025 - Present*

- Curated and prepared a domain-specific dataset from Hugging Face for efficient experimentation.
- Developed a visual logging tool to streamline monitoring and analysis of Large Language Model outputs.
- Researched and evaluated inference servers to identify the most suitable solution for deployment.
- Engineered a high-performance ML microservice using FastAPI.
- Integrated Polars to optimize data ingestion and convert raw data uploads into Hugging Face Datasets.
- Implemented a middleware layer to ensure seamless frontend-backend integration.

Brandenburgische Technische Universität Cottbus — **Cottbus, Germany**
Student Assistant - Explainable Machine Learning — *Oct 2025 - Present*

- Developed and delivered a Python programming curriculum to 100+ enrolled students.
- Taught core ML concepts, focusing on data hygiene and the implementation and interpretation of Linear and Logistic Regression models.
- Demonstrated the impact of Feature Engineering (Standardization, Normalization) on model performance through hands-on programming tutorials.

Spur Solutions Pvt Ltd — **Karachi, Pakistan**
Associate Software Engineer — *Dec 2023 - Sep 2024*

- Integrated SignalR into a legacy .NET Framework system, optimizing real-time communication for enhanced user experience.
- Enhanced the capabilities of an established legacy system programmed on .NET Framework by integrating functionalities for two distinct roles.
- Reduced execution time by 89% by optimizing a complex stored procedure within the legacy system which supported real-time decision-making based on user-defined rules.
- Performed in-depth data analysis to standardize and harmonize system metrics, enhancing data consistency and reliability across the software platform.

Lahore University of Management Sciences (LUMS) — **Lahore, Pakistan**
Teaching Assistant - Data Science — *Jan 2023 - May 2023*

- Encouraged students to learn by organizing tutorials in Python and conducting office hours weekly.
- Aided the instructor by regularly preparing assignments and checking quizzes and assignments as well as leading a semester long project for 80+ students.

Bazaar Technologies Pvt Ltd — **Karachi, Pakistan**
Product Analytics Intern — *May 2022 - Jul 2022*

- Analyzed data using Mixpanel and SQL queries to find useful insights.
- Identified discrepancies in the available data and reported them to higher authorities.

PROJECT EXPERIENCE

Brandenburgische Technische Universität Cottbus — **Cottbus, Germany**
AdaptiRead - Data Exploration in AI/ML — *Nov 2025 - Jan 2026*

- Developed an interpretable Artificial Intelligence system to simplify text for dyslexic readers.
- Engineered a custom complexity metric combining lexical rarity (Zipf frequency) and phonological features (syllable count) to quantify reading difficulty.
- Fine-tuned a T5-small Seq2Seq Transformer on the WikiAuto dataset to generate simplified text.
- Implemented a semantic preservation loop using BERTScore (F1-score > 0.85) to prevent meaning drift.
- Integrated Explainable AI (XAI) using LIME to interpret model outputs.

Lahore University of Management Sciences (LUMS) **Lahore, Pakistan**

Thesis - Adaptive Learning Application for Maths *Feb 2022 - May 2023*

- Conducted research and created a machine learning-based system to classify and analyze common mathematical mistakes made by 220 young learners in low-resourced schools in Pakistan, identifying eight distinct mistake categories.
- Designed and implemented a machine learning pipeline using classical (Naive Bayes, Logistic Regression) and deep learning techniques, achieving up to 87% accuracy with classical models.
- Used Google Vision API for image-to-text conversion and feature extraction, creating detailed CSV files for model training and testing.
- Performed data augmentation and image processing (cropping, grayscale adjustments) to expand the dataset, improving deep learning model accuracy from 37% to 60%.
- Designed and prototyped a user-friendly web application interface (MathMate) using Figma, incorporating HCI principles, local context, and insights from extensive research on existing EdTech platforms.
- Followed a "test-first, learn-later" approach to provide personalized feedback to students, enhancing their understanding of mathematics in low-resourced environments.

Consulting Wizards - Software Engineering *Jan 2023 - May 2023*

- Prepared a System Requirements Document (SRS) containing all the use cases that the system entailed.
- Drew class, sequence, flow, and activity diagrams to understand the basic flow of the backend of the application.
- Used Figma to design the frontend of the application and compiled all the diagrams along with the frontend design in System Design Document (SDS).
- Used React, Express, MongoDB, Material UI, and firebase authentication to develop the application. Tested the application manually and automatically using Jest.

Authorship Attribution Model - Machine Learning *Nov 2022 - Dec 2022*

- Scraped tweets of 600+ Twitter/X users.
- Performed data cleaning using regular expressions (regex) library, extracted features forming the vocabulary.
- Used Laplace Smoothing to cater to any out of vocabulary words.
- Built multiple machine learning models (KNN, Gradient Boosting Trees and Multi-layer Perceptron Neural network) to see which model performed the best.

Mask Detection System - Computer Vision *Oct 2021 - Dec 2021*

- Utilized Darknet and YOLOv3 to make a mask detection system.
- Developed the model to be compatible with both live as well as recorded videos.

SKILLS

Programming: Python, C#, C++, JavaScript, SQL, R
AI and ML: PyTorch, TensorFlow, Keras, Scikit-learn, Hugging Face, XAI (LIME)
Backend and Data: FastAPI, Polars, Pandas, ETL Pipelines, REST APIs
Tools: Git/GitHub, Figma, Mixpanel, TFVS
Soft Skills: Problem Solving, Pattern Recognition, Communication, Teaching, Leadership, Collaboration, Time Management, Analysis, Research.

LANGUAGES

English: C2 - Native/Bilingual
German: A2 - Conversational
Urdu: C2 - Native

CERTIFICATIONS

- Placed on Deans Honor List in LUMS (2019-2020, 2022-2023).
- Winner of the Robotics Competition 2019 hosted by the Electrical Engineering Department of LUMS