

Muhammad Arbab Arshad

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EDUCATION

Iowa State University

Ph.D. (Computer Science)

American University of Sharjah

M.S (Computer Engineering)

Lahore University of Management Sciences

B.S (Computer Science)

Iowa, USA

Jan. 2022 – Dec 2025

Sharjah, UAE

Aug. 2019 – Aug 2021

Lahore, PK

Aug. 2015 – May 2019

EXPERIENCE

Machine Learning Engineer

OpenUAE

May 2020 – Dec 2021

Sharjah, UAE

- Designed and implemented 12 **machine learning algorithms** including regression and classification, handling over 50 million records to predict monthly electricity use in Dubai, achieving 92.5% accuracy.
- Led a 6-person team, fostering collaboration, to drive model analysis and improvements; attained 10x faster training time utilizing advanced algorithmic optimization techniques and a strong mathematical foundation ([URL](#)).
- Showcased expertise in Python for prototype development and algorithm adjustments, ensuring scalable performance.

Research Assistant - ML

Laboratory for Software Design

May 2022 – August 2022

Iowa, USA

- Worked on the execution of 5 automated program repair tools, emphasizing both supervised and unsupervised learning, on SLURM-based GPU clusters.
- Leveraged strong mathematical skills (linear algebra, calculus) and parallel processing to reduce execution time by 16x, enabling tools to operate on 40 GPU clusters simultaneously.
- Distinguished Paper Award recipient for a publication at the 38th IEEE/ACM International Conference, showcasing depth in machine learning research ([URL](#)).

Software Engineering Intern

Kingland

05/2022 – 08/2022

Iowa, USA

- Deployed scalable solutions like auto-scaling in AWS Fargate; employed stress tests to validate container replication and enhanced resource efficiency.
- Developed an end-to-end pipeline using Python for routine stress tests, utilizing JMeter and Blazemeter via Taurus for cloud execution.
- Customized GitLab CI/CD pipeline for seamless test execution, ensuring uninterrupted AWS operations and consistent development workflow.
- Earned formal recognition twice for establishing a robust baseline for load tests, demonstrating a proactive and impactful approach.

PROJECTS

Adapting Image Clustering for Audio Analysis of Bat Behaviors - Masters Thesis | Python, Keras, TensorFlow, PyTorch

- Adapted unsupervised machine learning techniques to transform image clustering algorithms for analyzing bat behavior through echolocation calls, showcasing proficiency in both supervised and unsupervised learning.
- Leveraged popular frameworks including Keras and TensorFlow; successfully classified bat behaviors with an accuracy of 88.28% using IMSAT, IIC, SCAN, JULE, and DeepCluster algorithms.

Amazon Elastic Inference for Intrusion Detection | Java, AWS EC2, Keras

- Designed and deployed a machine learning solution for industrial application, specifically targeting intrusion detection in traffic data; identified SSH and FTP brute-force attacks.
- Achieved an impressive F1 score of 99% and boosted inference speed by 8x using AWS EC2's Elastic Inference compared to local ML processing, demonstrating scalable ML experience.

Utilizing GANs for Emotional Melody Generation | Python, Keras

- Pioneered a text-to-audio generation system utilizing Generative Adversarial Networks (GANs), reflecting strong expertise in deep learning systems.
- Engineered the system to produce melodies with a perceived similarity rate of 68% to real melodies, further showcasing applied machine learning expertise.

MeditateGPT | MERN Stack, GPT-3 API, Amazon Polly, AWS S3

- Conceptualized and developed MeditateGPT, a user-driven application that tailors meditation sessions using GPT-3, highlighting the ability to collaborate and interpret user-generated data.
- Enhanced user experience by synthesizing natural-sounding audio meditations via integration with Amazon Polly's TTS API.

TECHNICAL SKILLS

Machine Learning and Deep Learning: Python, R, Keras, TensorFlow, PyTorch, Scikit-learn, Unsupervised Deep Learning, Regression, Classification

Prototyping and Development: Java, JavaScript, C++, SQL, MATLAB, Git

Cloud and Scalable ML: AWS (EC2, Lambda, S3, IAM, Amazon Polly, Elastic Inference), CUDA, MapReduce, Streaming

Advanced Analytics: Time Series Analysis, OpenCV, GPT-3 API