

Muhammad Arbab Arshad

848-313-9857 | arbab@iastate.edu | [linkedin.com/in/arb-ab-arshad](https://www.linkedin.com/in/arb-ab-arshad) | [arb-ab-ml.github.io](https://github.com/arb-ab-ml)

EDUCATION

Iowa State University

Ph.D. (Computer Science)

Iowa, USA

Jan. 2022 – Dec 2025

American University of Sharjah

Sharjah, UAE

M.S (Computer Engineering)

Aug. 2019 – Aug 2021

Lahore University of Management Sciences

Lahore, PK

B.S (Computer Science)

Aug. 2015 – May 2019

EXPERIENCE

Research Assistant - Machine Learning

May 2022 – August 2022

Laboratory for Software Design

Iowa, USA

- Engaged in advanced ML research, leading to the execution of 5 automated program repair tools on SLURM-based GPU clusters.
- Achieved a Distinguished Paper Award for the research publication at the 38th IEEE/ACM International Conference on Automated Software Engineering, emphasizing ML's potential ([URL](#)).
- Implemented parallel algorithms, reducing execution time by 16x on 40 GPU clusters, showcasing proficiency in optimizing large-scale computations.

Software Engineering Intern

05/2022 – 08/2022

Kingland

Iowa, USA

- Deployed auto-scaling in AWS Fargate; ensuring optimal resource usage and illustrating capabilities in cloud-based solutions.
- Devised and managed an end-to-end pipeline for comprehensive load tests, emphasizing strong teamwork and communication skills.
- Garnered recognition in two sprint retrospectives for excellence in DevOps and infrastructure.

Machine Learning Engineer

May 2020 – Dec 2021

OpenUAE

Sharjah, UAE

- Spearheaded the development of 12 ML models, successfully predicting monthly electricity use in Dubai with an impressive 92.5% accuracy, highlighting a passion for real-world problem-solving.
- Directed a 6-person team, emphasizing teamwork and leadership; achieved a 10x faster model training time through advanced algorithmic techniques ([URL](#)).

PROJECTS

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

- Pioneered a novel approach by adapting unsupervised ML image clustering algorithms to **audio data** for understanding bat behavior through echolocation calls.
- Employed state-of-the-art algorithms like IMSAT, IIC, SCAN, JULE, and DeepCluster, resulting in an impressive 88.28% accuracy in bat classification.

Utilizing GANs for Emotional Melody Generation | Python, Keras

- Designed a system utilizing **Generative Adversarial Networks (GANs)** to transform text (poetry) into emotion-driven melodies.
- Achieved a 68% perceived similarity to real-world melodies, highlighting the effectiveness of the ML model in generating audio.

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

- Deployed a solution using Amazon Elastic Inference (EI) to detect SSH and FTP brute-force attacks in traffic data, demonstrating proficiency in cloud ML deployment.
- Attained a high F1 score of 99% and increased inference speed by 8x, showcasing optimization skills in real-time threat detection.

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

- Developed a user-centric application, MeditateGPT, offering personalized meditation sessions driven by the GPT-3 model, reflecting expertise in **Content Intelligence**.
- Integrated SSML with Amazon Polly's TTS API, producing natural-sounding audio, illustrating proficiency in audio technologies.

TECHNICAL SKILLS

Machine Learning and AI: Python, TensorFlow, PyTorch, Keras, Scikit-learn, GPT-3 API, Unsupervised Deep Learning, Computer Vision (OpenCV)

Programming and Systems: C++, Java, R, CUDA, Git, SQL, MATLAB

Cloud Services and Audio Processing: Amazon Web Services (EC2, Lambda, S3, VPC, ELB, IAM, KMS), Amazon Polly (Text-to-Speech)