

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

M.S (Computer Engineering)

Sharjah, UAE

Aug. 2019 – Aug 2021

Lahore University of Management Sciences

B.S (Computer Science)

Lahore, PK

Aug. 2015 – May 2019

EXPERIENCE

Research Assistant - ML

May 2022 – August 2022

Laboratory for Software Design

Iowa, USA

- Executed and optimized automated program repair tools on **SLURM-based GPU clusters**, aligning with distributed software systems expertise.
- Enhanced system design through a **16x reduction in execution time** by leveraging parallel processing across 40 GPU clusters.
- Publication received a *Distinguished Paper Award* at the 38th IEEE/ACM International Conference on Automated Software Engineering, showcasing advanced understanding in **machine learning research** ([URL](#)).

Machine Learning Engineer

May 2020 – Dec 2021

OpenUAE

Sharjah, UAE

- Pioneered and refined 12 **ML models using Pytorch**, processing 50 million records, achieving a **92.5% prediction accuracy** for monthly electricity consumption in Dubai.
- Steered a 6-member team through model analysis, successfully accelerating training time 10x through advanced **algorithmic optimization techniques** ([URL](#)).

Software Engineering Intern

May 2022 – August 2022

Kingland

Iowa, USA

- Deployed and refined auto-scaling on AWS Fargate, reinforcing skills in **distributed software systems**.
- Designed a comprehensive pipeline for recurring stress tests, employing JMeter and Blazemeter, showcasing comfort with **data analysis** and system improvement.
- Integrated GitLab CI/CD to run tests without interference, underlining proficiency in **software development processes**.
- Earned *recognition in two sprint retrospectives* for pioneering a benchmark for exhaustive load tests.

PROJECTS

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

- Adapted **unsupervised ML algorithms** to analyze echolocation calls, mimicking **complex, distributed software systems** in audio data for bat behavior.
- Employed and optimized IMSAT, IIC, SCAN, JULE, and DeepCluster using **PyTorch**, attaining **88.28% accuracy** in bat behavior classification.

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

- Harnessed **Amazon Elastic Inference (EI)** to detect SSH and FTP brute-force attacks remotely, showcasing skills in **distributed software systems**.
- Achieved **F1 score of 99%** and improved inference speed by **8x**, emphasizing proficiency in enhancing **system performance**.

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

- Pioneered MeditateGPT, an app offering tailored guided meditations via GPT-3, reflecting capability in designing **user-centric software systems**.
- Integrated SSML with **Amazon Polly's TTS API** for realistic audio synthesis, aligning with the **data analysis** competency.

Utilizing GANs for Emotional Melody Generation | *Python, Keras*

- Crafted a text-to-audio transformation system for poetry-to-melody using Generative Adversarial Networks (**GANs**).
- Generated melodies with a **68% perceived similarity** to actual melodies, highlighting prowess in **ML-based content creation**.

TECHNICAL SKILLS

Languages: C/C++, Python, Java, R, MATLAB

Deep Learning Frameworks: PyTorch, TensorFlow, Keras, CUDA, GPT-3 API, Scikit-learn, OpenCV

Distributed Systems: Unsupervised Deep Learning, Debugging, Performance Analysis

Software Development: Git, SQL, Hardware and Software Processes

Cloud Services: Amazon Web Services (Compute: EC2, Lambda; Storage: S3; Networking: VPC, ELB; Security: IAM, KMS; AI: Amazon Polly)