Muhammad Arbab Arshad

848-313-9857 | arbab@iastate.edu | linkedin.com/in/arbab-arshad | arbab-ml.github.io

Education

Iowa State University — Iowa, USA
Ph.D. (Computer Science) — *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

vbnet Copy code

Research Assistant - Machine Learning — May 2022 – August 2022
Laboratory for Software Design — *Iowa, USA*

- Designed and executed *Machine Learning algorithms* as part of an empirical study on SLURM-based GPU clusters, using tools like Python and Java.
- Innovatively reduced execution time by 16x by enabling parallel tool processing on 40 GPU clusters, showcasing a strong ability to think outside the box.
- Collaborated with a diverse team and contributed to the publication that received a *Distinguished Paper Award* at the 38th IEEE/ACM International Conference on Automated Software Engineering (URL), illustrating profound research experience in Machine Learning.

Machine Learning Engineer — May 2020 – Dec 2021
OpenUAE — *Sharjah, UAE*

- Skillfully developed and optimized 12 ML models using Python, handling 50 million records to predict monthly electricity use, and achieved a remarkable 92.5% accuracy.
- Demonstrated leadership skills by heading a 6-person team in model analysis and employed advanced algorithmic optimization techniques to achieve 10x faster training time (URL).
- Regularly collaborated with interdisciplinary teams, showcasing excellent interpersonal skills and a drive to produce outstanding results.

Software Engineering Intern — 05/2022 – 08/2022
Kingland — *Iowa, USA*

- Executed auto-scaling in AWS Fargate using Java, stress-tested API to validate container duplication, and ensured optimal resource usage.
- Constructed a comprehensive pipeline for routine stress tests using JMeter and Blazemeter via Taurus, emphasizing proficiency in large scale data processing.
- Customized GitLab CI/CD pipeline ensuring seamless test executions with no disruptions, demonstrating keen analytical and problem-solving skills.
- Achieved formal *recognition in two sprint retrospectives* for setting the standard for comprehensive load tests and consistently showcasing a results-driven approach.

Projects

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

- Pioneered the adaptation of unsupervised ML image clustering algorithms for audio data analysis using tools like Python and TensorFlow.
- Implemented cutting-edge algorithms such as IMSAT, IIC, SCAN, JULE, and DeepCluster, demonstrating proficiency in deep learning and achieving an accuracy of 88.28% in classifying bats.

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

- Developed a novel approach using Amazon Elastic Inference (EI) for remote detection of SSH and FTP brute-force attacks, demonstrating hands-on experience with large scale data processing.
- Achieved an impressive F1 score of 99% and enhanced inference speed by 8x with the model on EI compared to local methods, highlighting analytical and problem-solving abilities.

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

- Innovatively developed a poetry-to-melody generation system using Generative Adversarial Networks (GANs), showcasing expertise in AI and Deep Learning.
- Generated melodies that bore a 68% perceived similarity to authentic melodies, emphasizing my ability to think outside the box.

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

- Engineered MeditateGPT, a unique application for tailored guided meditations utilizing the GPT-3 API, underlining a drive for innovation in the field of AI.
- Integrated SSML and Amazon Polly's TTS API for synthesis of authentic-sounding audio, reflecting strong collaborative and technical skills.

Technical Skills

Languages: C++, Java, Python, R, MATLAB **Deep Learning**: TensorFlow, PyTorch, Keras, CUDA, Scikit-learn, OpenCV, GPT-3 API, Unsupervised Techniques **Data Processing and Analytics**: Hadoop, MapReduce, SQL **Amazon Web Services**: EC2, Lambda, S3, VPC, ELB, IAM, KMS, Amazon Polly **General Tools**: Git