Zaryab Muhammad Akram

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Education

National University of Sciences and Technology (NUST) — Islamabad, Pakistan
Bachelors of Science in Computer Science, ***CGPA: 3.95/4.0 (99%)*** — *2017 – 2021*

Eastern European Machine Learning Summer School (EEML) — Krakow, Poland (Virtual)
Deep Learning and Reinforcement Learning — *Summer 2020*

Research Interests

Machine Learning, Deep Learning, Computer Vision, Computer Graphics, Generative Modeling, Image Synthesis, 3D Reconstruction, Representation Learning, Neural Rendering

Research Experience

Machine Learning Engineer (Research Team) — Jun. 2022 – Present
Quixel, Epic Games — *Islamabad, Pakistan*

- Created end-to-end training and evaluation pipeline for machine learning models on AWS SageMaker
- Trained and fine-tuned state-of-the-art inpainting models, including LaMa and Stable Diffusion, for texture repair
- Developed segmentation models for precise texture identification and segmentation within 2D and 3D assets
- Automated scalable deployment workflows leveraging AWS Cloud Development Kit (CDK)

Undergraduate Research Assistant (Machine Learning) — Sept. 2019 – July 2021
TUKL-NUST Research & Development Center — *Islamabad, Pakistan*

- contributed to multiple research projects under the supervision of *Dr. Faisal Shafait*
- Used Deep Neural Networks to update the level-set forcing term of classical segmentation algorithms
- Applied Case-Based Reasoning (CBR) to retrieve similar cases from Court Room records

Machine Learning Intern — Jun. 2019 – Aug. 2019
VisionX Technologies — *Islamabad, Pakistan*

- Designed and tested information extraction system for courier package label images
- Implemented Named Entity Recognition on extracted text using a CNN-BiLSTM-CRF model
- Explored Object Detection and Segmentation algorithms including Faster R-CNN and Mask R-CNN

Industry Experience

Product Engineer — Jul. 2021 – Jun. 2022
AMK Technologies — *Ohio, US (Remote)*

- Improved customer traffic by 20% through designing a real-time provider search feature
- Built a high-performance patient registration workflow enhancing the preexisting structure
- Supported product deployment while optimizing components performance

Artificial Intelligence Engineer — Oct. 2021 – Dec 2021
Digital Product School, UnternehmerTUM — *Munich, Germany (Remote)*

- Automated processing of the event-log data from factory floors through process mining
- Detected and visualized cycles in workers trajectories through process graphs
- Validated the application through user-tests and deployed it in an agile approach

Web Developer — Jul. 2018 — Aug. 2018
Nausal Technologies — *Islamabad, Pakistan*

- Translated Photoshop designs into responsive webpages, contributing clean code

Teaching Experience

Teaching Assistant, Data Structures & Algorithms Oct. 2020 – Jan. 2021
School of Electrical Engineering and Computer Science, NUST *Islamabad, Pakistan*

- assisting *Dr. Muhammad Shahzad* with **Data Structures and Algorithms** course
- Designed and graded quiz problems and homework assignments
- Held weekly office hours to help students with their issues and queries

Projects

Discerning Deepfake Videos using Deep Learning | *TensorFlow, Keras, MTCNN, Dlib*
- Designed a lightweight Recurrent Convolutional Network to efficiently extract low-level spatio-temporal features
- Achieved state-of-the-art results on public benchmark DeepFake datasets (e.g. CelebDF, FaceForensics++)

Image Noise Reduction with Auto-encoders | *TensorFlow, Keras, Matplotlib*
- Improved classification accuracy on noisy and corrupted MNIST images
- Enhanced noisy input with a Convolutional Auto-encoder

Document Localization in Natural Images | *TensorFlow, Keras, Pandas*
- Localized documents in natural images using Deep Convolutional Neural Networks
- Achieved state-of-the-art results on ICDAR 2015 SmartDoc Competition 1 dataset

Search Engine | *Python, BeautifulSoup, Flask*
- Designed a scalable hypertextual Web Search Engine on the Simple Wikipedia Data Dump
- Implemented a custom search index and Web Crawler
- Developed a full-stack web application using Flask

File Management System | *Python, Multiprocessing, Synchronization*
- Developed a multi-user friendly File Management System based on Client-Server architecture
- Solved Reader-Writer Problem through process synchronization

Awards

- **President's Gold Medal** for securing First Position in the Class of 2021
- **Dean's High Achiever Award** (School of Electrical Engineering and Computer Science)
- **Merit Scholarship** for all undergraduate semesters

Certifications

Machine Learning *Stanford*

Deep Learning Specialization (deeplearning.ai) *Coursera*

Tensorflow in Practice Specialization *Coursera*

Technical Skills

Languages: Python, C/C++, Java, MATLAB, SQL; basic proficiency with Assembly

Machine Learning Frameworks: TensorFlow, Keras, PyTorch, NumPy, Matplotlib, Pandas, OpenCV

Web Frameworks: HTML, CSS, Bootstrap, JavaScript/ TypeScript, jQuery, PHP, React, NodeJS

AWS Services: SageMaker, Cloud Development Kit (CDK)