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Qaiser Abbas

Medical A.I Researcher

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Experienced Machine Learning Engineer with 3+ years of industrial experience. Skilled in Deep Learning, Computer Vision, and Natural Language Processing. Strong R&D professional currently working as a Sr. Machine Learning Engineer at SDSol Technologies.

RESEARCH INTERESTS

- Deep Learning
- Medical Image Computing
- Transfer Learning
- Computer Vision
- Self-Supervised Learning
- Clinical Applications of A.I

EDUCATION

MS Computer Science

University of Engineering & Technology, Lahore | 3.78/4.00 CGPA | Top 10%

Sep 2018 — Nov 2020

Thesis: Detection and Prediction of Acral Lentiginous Melanoma in Dermoscopic Images using Deep Learning

BS Information Technology

University of Sargodha, Sargodha | 3.63/4.00 CGPA | Gold Medalist

Oct 2014 — May 2018

Final Year Project: Energy Optimized Smart Surveillance System using a Raspberry Pi and Pi Camera

EXPERIENCE

Sr. Machine Learning Engineer

Nov 2022 — Present

SDSol Technologies

Lahore, Pakistan

- Designed and Developed an Audio Analysis Pipeline for Psychological Applications using LLMs (Whisper and GPT)
- Developed a Multiprocessing GPU based pipeline for audio (therapy sessions) processing.
- Leveraged AWS services including EC2, S3, Lambda, ECR, and AppRunner to ensure seamless and scalable system deployment.
- Pioneered the development of a GPU-accelerated backend daemon on EC2 for audio and text data processing.
- Innovatively employed unsupervised association rule mining to craft a personalized food recommendation system and implemented it as a robust REST API using FastAPI.
- Orchestrated the development and deployment of a user query classification pipeline using state-of-the-art NLP techniques and Transformers.
- Developed an insect classification model using Transfer Learning, optimized for CPU inference using Intel OpenVino and deployed using ACR and Azure App service.

Software Engineer (Deep Learning & Computer Vision)

Nov 2021 — Jan 2022

Wortel AI

Lahore, Pakistan

- Created a robust weed detection algorithm using YOLOv5 and satellite imagery.
- Developed a medical speech recognition system by fine-tuning an Nvidia QuatNet model via NeMo library.
- Leveraged AWS S3 and MLFlow platforms for efficient deployment and continuous maintenance of deep learning models.

AI Instructor

Mar 2021 — Sep 2022

University of Engineering & Technology

Lahore, Pakistan

- Taught comprehensive undergraduate courses in both AI & ML, including theory and hands-on lab sessions.
- Collaborated closely with senior faculty for development of AI/ML course content & preparation of research grant proposals.
- Authored a research proposal titled "Tea Disease Detection using Machine Learning and Remote Sensing." which achieved notable recognition by securing a research grant of PKR 3.5 Million from the Higher Education Commission's National Research Program for Universities.

Freelance Deep Learning Engineer

Nov 2020 — Mar 2021

UpWork & Freelancer.com

Remote, Pakistan

- Developed an image captioning algorithm for image retrieval by leveraging natural language descriptions associated with images.
- Designed and developed a GAN model specifically tailored for the detection of COVID-19 in CT scans.

Research Assistant (Deep Learning)

Jan 2020 — Oct 2020

Bioinformatics Research Lab, UET

Lahore, Pakistan

- Worked with Prof. Dr. Muhammad Usman Ghani Khan on detection of rare and lethal Acral Lentiginous Melanoma.
- Designed and implemented a specialized CNN architecture to develop an effective detection system for acral melanoma in dermoscopic images.
- Actively participated in Plant Disease Detection projects, leveraging datasets and machine learning techniques.

Computer Vision Engineer

Aug 2019 — Dec 2019

Wizdojo Technologies

Lahore, Pakistan

- Developed a vehicle registration plate detection system using different deep learning algorithms.
- Collected and annotated data and trained a Mask RCNN model to detect and segment the vehicle registration plate.
- Designed a pipeline for extracting text from segmented license plate using Tesseract OCR.

PUBLICATIONS

- **Qaiser Abbas**, Sabahat Qayum, "Back to Convolutions: A comparison of Convolutional Networks with Vision Transformers for Histopathological Image Classification" [ongoing]
- **Qaiser Abbas**, Nadeem Yousof, Muhammad Usman Ghani, "Leveraging Orthogonal Projection Loss with efficient Convolutional Architecture for Chest Disease Classification" [ongoing]
- **Qaiser Abbas**, Qasim Bin Asif, Ghulam Murtaza, "Generative Pre-Training via Vision Transformers for Skin Lesion Analysis" [ongoing]
- **Qaiser Abbas**, Sadaf Hina, Hamza Sajjad Khurram Shabih Zaidi, Rehan Akbar, "Optimization of predictive performance of intrusion detection system using hybrid ensemble model for secure systems", PeerJ Computer Science 9 (2023): e1552.
- Hamza Khalid, Ghulam Murtaza, **Qaiser Abbas**, "Using Data Augmentation and Bidirectional Encoder Representations from Transformers for Improving Punjabi Named Entity Recognition", ACM Transactions on Asian and Low-Resource Language Information Processing (2023).
- **Qaiser Abbas** and Anza Gul, "Detection and Classification of Malignant Melanoma Using Deep Features of NASNet." SN Computer Science 4.1 (2023): 1-13."
- **Qaiser Abbas**, Farheen Ramzan, and Muhammad Usman Ghani. "Acral melanoma detection using dermoscopic images and convolutional neural networks." Visual Computing for Industry, Biomedicine, and Art 4.1 (2021): 1-12.

TECHNICAL SKILLS

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|-------------------------|---|
| Languages | Python, C++, MATLAB, JS, SQL |
| Deep Learning | Keras, TensorFlow, OpenCV, FastAI, PyTorch, OpenVino, Transformers, SpaCy, NLTK |
| Machine Learning | Numpy, Pandas, scikit-learn, Matplotlib, Seaborn |
| Tools | Linux, VS Code, Jupyter-Notebook, Google Colab, Postman, Streamlit |
| Technologies | Git, FastAPI, HTML, CSS, Docker, Azure, AWS |

CERTIFICATIONS

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|---|------------|
| Python 3 Programming Specialization by University of Michigan | July 2020 |
| Deep Learning Specialization by deeplearning.ai | April 2021 |
| Mathematics for Machine Learning by Imperial College London | Sep 2020 |

SERVICES

- Reviewer for Academic Journals:
 - Visual Computing for Industry, Biomedicine, and Art
 - SN Computer Science
 - Informatics in Medicine Unlocked
- Promoting Education in Remote Areas: Facilitating education access in under-served regions of Punjab.
- Career Guidance Tutor: Providing guidance for career development to UGs.
- Project Advisor: Advising various students from different universities in R&D for their research projects.

HONORS & AWARDS

- (2020) Ranked in the Top 10% of the MS Class.
- (2019) Excellence Scholarship, Defence Housing Authority Lahore (1st Position in BS) - 120,000 PKR.
- (2019) Fauji Foundation Excellence Award (1st Position in BS) - 30,000 PKR.
- (2018) Gold Medalist (Campus Level), University Of Sargodha.
- (2017-2018) Served as a Teaching Assistant for Network Security and Cloud Computing.
- (2014-2018) Represented my class as a class representative for four consecutive years.
- (2014-2018) Departmental Scholarship for entire Bachelor's studies.

REFERENCES

- Prof. Dr. Muhammad Usman Ghani Khan
Professor of Computer Science | Chairman Department of Computer Science
Department of Computer Science, UET Lahore, Pakistan
Email: usman.ghani@uet.edu.pk
- Dr. Sadaf Hina
Lecturer of Cyber Security
Department of Computer Science, University of Salford, the UK
Email: s.hina@salford.ac.uk
- Shafiq ur Rehman
Chief Operating Officer
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Email: shafiq@sdsol.com