Muhammad Saeed

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Education

BS in Computer Science Aug 2017 – Sep 2021
Islamia College Peshawar CGPA: 3.40/4.00
Thesis: ViT Based Covid-19 Detection and Classification from CXR Images.
Major courses: Artificial Intelligence, Machine Learning, Image Processing, Programming, Data Structure, and Algorithms.

HSSC(Pre Engineering) Sep 2015 – April 2017
Qurtuba College Hayatabad Peshawar, Peshawar, Pakistan Marks: 773/1100
Major courses: Mathematics, Physics, Chemistry, and English.

Research Interests

- Medical Image Analysis: Creating pioneering approaches to derive critical insights from medical imagery, enhancing diagnostic accuracy and patient care.
- Video Analytics and Multimodal Data Processing: Expertise in detecting and recognizing features in video data, and extracting various modalities for comprehensive analysis.
- Integrating Computer Vision with the Metaverse: Innovating applications that enhance our interaction with computers and contribute to the evolution of immersive technologies.

Experience

Graduate Research Assistant
Metaverse Center, Mohamed Bin Zayed University of Artificial Intelligence

- Led the Development and Launch of ZapAura Hubs: A custom metaverse platform based on Mozilla hubs, where I spearhead the integration of advanced features such as full body avatar, real-time OpenAI interaction, and immersive metaverse experience.
- Developed a visual avatar assistant with OpenAI integration, with plans to further train it on multimedia books and research papers for enhanced educational capabilities.
- Played a key role in the implementation of violence detection in real-life scenarios using advanced deep learning technologies at the Technology Innovation Institute (TII).
- Developed a cutting-edge automatic face recognition system for research applications.
- Implemented a Retrieval-Augmented Generation (RAG) system using LLaMA model with LoRA fine-tuning for haptics domain knowledge, featuring efficient document processing and local deployment with FastAPI.

Undergraduate Research Assistant
Digital Image Processing (DIP) Lab Islamia College Peshawar, Pakistan, in collaboration with NTNU Norway and IMLAB South Korea
Main Research Topics: Medical Imaging, Facial emotion recognition, Activity recognition.

- Contributing to NTNU's ALAMEDA AI Toolkit Project: Analyzing Parkinson's Disease Stages through Gait Analysis
- Pioneered the automatic reconstruction of 3D models from satellite imagery, enhancing the capabilities in remote sensing and geospatial analysis.

Publications

- **M. Saeed**, Muhammad, Mohib Ullah, Sultan Daud Khan, Faouzi Alaya Cheikh, and Muhammad Sajjad. "Vit based covid-19 detection and classification from cxr images." Electronic Imaging 35 (2023): 407-1.
- M. Khan, **M. Saeed**, A. El Saddik and W. Gueaieb, "ARTriViT: Automatic Face Recognition System Using ViT-Based Siamese Neural Networks with a Triplet Loss," 2023 IEEE 32nd International Symposium on Industrial Electronics (ISIE), Helsinki, Finland, 2023, pp. 1-6, doi: 10.1109/ISIE51358.2023.10228106.

- **M. Saeed**, A. Khan, M. Khan, M. Saad, A. El Saddik and W. Gueaieb, "Gaming-Based Education System for Children on Road Safety in Metaverse Towards Smart Cities," 2023 IEEE International Smart Cities Conference (ISC2), Bucharest, Romania, 2023, pp. 01-05, doi: 10.1109/ISC257844.2023.10293623.
- M. Saad, M. Khan, **M. Saeed**, A. E. Saddik and W. Gueaieb, "Combating Counterfeit Products in Smart Cities with Digital Twin Technology," 2023 IEEE International Smart Cities Conference (ISC2), Bucharest, Romania, 2023, pp. 1-5, doi: 10.1109/ISC257844.2023.10293496.
- CP-Diffusion: Conditional Prompt-Based Diffusion Models for Video Generation **Submitted to CVPR**
  Muhammad Saeed,Mustaqeem khan,Muhammad Saad, El Saddik

Projects

- Advanced UAV-Based Human Detection System using Yolov5 and SSD: A project focused on improving the capabilities of unmanned aerial vehicles for human detection. (2022)
- Natural Disaster Response through AI: Fire and Flood Detection using Yolov5: A significant contribution to disaster management technology using advanced AI tools. (2022)
- Comprehensive Facial Analysis System using Deepface: Developed an innovative system for face detection, recognition, and database retrieval. (2022)
- State-of-the-Art Violence Detection in Hockey using LSTM, GRU, and Vision Transformer: Explored and applied cutting-edge sequence models for sports violence detection. (2023)
- Real-Time Violence Detection on Jetson Nano (2023): Implemented a compact and efficient system for violence detection on constrained devices. (2023)

Skills

Programming: Python, C++, Java, JavaScript. (HTML/CSS)

Frameworks: Keras, Tensorflow, Pytorch, Scikit-learn, NodeJS, React. A-Frame, Blender, Docker, Latex

Languages: Pashto (Native), Urdu (National), English (Educational)

Honors and Awards

- Awarded with Certificate of Amazon Web Services (AWS) Solution Architect (Associate) by KPITB with Collaboration of Youth Employment and Private Sector Development Specialist, UNDP.
- Featured speaker certificate awarded at the Middle East Youth Summit2023 organized by Youth Break the Boundary in Kingdom of Saudia Arabia.
- Awarded a data science certificate by the government of Pakistan (NAVTTC).
- Participated in Application Competition for Intelligent Reality of the 3^{rd} International Conference of Intelligent Reality (ICIR).

References

- **Prof. Abdulmotaleb El Saddik**
  University Research Chair and Professor in the School of Electrical Engineering and Computer Science at the University of Ottawa, Canada
  Professor, Department of Human Computer Interaction, Mohamed Bin Zayed University of Artificial Intelligence, Abu Dhabi, UAE
  Email: elsaddik@uOttawa.ca
- **Prof. Muhammad Sajjad**
  Associate Professor, Department of Computer Science, Islamia College Peshawar, Pakistan
  Email: Muhammad.sajjad@icp.edu.pk