MUHAMMAD SAAD

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EDUCATION

BS in Software Engineering Aug 2017 – Sep 2021
Islamia College and University of Peshawar, Pakistan CGPA: 3.44/4.00
Thesis: Visual explanation of deep learning-based breast cancer classification via gradient localization.
Major courses: Object-Oriented Programming (OOP), Data Structure and Algorithms, Software Architecture, Artificial Intelligence,

HSSC(Pre Engineering) Sep 2015 – April 2017
Government College Peshawar, Pakistan Marks: 825/1100
Major courses: Math's, Physics, Chemistry

RESEARCH INTERESTS

- Medical Image Analysis: Developing advanced methods to extract meaningful insights from medical images, enabling improved patient care and accurate diagnosis.
- Cross-Domain Transfer Learning: Leveraging knowledge from diverse datasets to enhance AI models' adaptability and performance across various applications.
- Integrating Computer Vision and the Metaverse: Designing innovative applications that enhance human-computer interaction and contribute to the growth of immersive technologies.

EXPERIENCE

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

- Worked on real-time violence detection on Jetson Nano at the Technology Innovation Institute (TII).
- Interactive avatar animation with Mixamo and real-time lip-syncing using JavaScript and TypeScript.
- Developed a complete React-based dashboard for the Malaria No More (MnM) project, designed for seamless data visualization and enhanced decision-making
- Created a visual avatar assistant powered by a fine-tuned LLaMA 3 model, customized with haptics and multimedia data to enhance educational experiences and interactive multimedia books.
- Build a custom virtual learning platform named ZapAura, built on Mozilla Hubs, featuring full-body avatars, real-time lip-syncing, and an AI teaching assistant powered by ChatGPT for multilingual interactions.

Undergraduate Research Assistant
Digital Image Processing (DIP) Lab in collaboration with NTNU Norway and IMLAB South Korea, ICP, Peshawar, Pakistan

- Teaching assistant for Python programming course.
- Attention-based CNN-LSTM for complex activity recognition in sports (cricket).
- Contributed to NTNU's implementation of the Facial Emotion Recognition Module assigned by the ALAMEDA AI Toolkit to analyze facial expressions for pain assessment and emotional state monitoring in neurological healthcare.

PUBLICATIONS

1. **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.
2. 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.
3. M. Khan, **M. Saad**, Abbas Khan, Wail Gueaieb; Abdulmotaleb El Saddik; Giulia De Masi; Fakhri Karray, "Action Knowledge Graph for Violence Detection Using Audiovisual Features," 202 IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, NV, USA, 2024, pp. 1-5, doi: 10.1109/ICCE59016.2024.10444158.

4. **M. Saad**, M. Ullah, H. Afridi, F. A. Cheikh and M. Sajjad, "BreastUS: Vision Transformer for Breast Cancer Classification Using Breast Ultrasound Images," 2022 16th International Conference on Signal-Image Technology Internet-Based Systems (SITIS), Dijon, France, 2022, pp. 246-253, doi: 10.1109
5. **Co-Authored Submissions (Under Review):**
    - All Languages Matter: Evaluating LMMs on Culturally Diverse 100 Languages, submitted to *CVPR 2025*.
    - CP-Diffusion: Conditional Prompt-Based Diffusion Models for Video Generation, submitted to *CVPR 2025*.

PROJECTS

- Created a web-based application for image enhancement, converting dark images to light. (2023)
- Explored SOTA sequence (LSTM, GRU, and Vision Transformer) for hockey violence detection. (2023)
- Implemented the CutMix data augmentation technique to enhance training data diversity and boost the generalization capability of CNNs. (2022)
- Visual explanation of COVID-19 progression diagnosis via Grad-CAM on X-ray images using a CNN model. (2021)
- Worked on skin malignancy detection in histopathological images using AI-based methods to improve classification accuracy. (2021)

HONORS AND AWARDS

- Award of appreciation for securing 1st position in Youth Talent Expo.
- Awarded a data science certificate by the government of Pakistan (NAVTTC).
- High achiever award from Islami Jamiat Talaba (IJT) president for organizing the best cricket tournament.

SKILLS

Programming: Python, C++, SQL, JavaScript. (HTML/CSS)
Technologies: Keras, Tensorflow, Pytorch, Scikit-learn, NodeJS, React, A-Frame, ThreeJs, AWS (Amazon Web Services), Digital Ocean, Docker, Latex
Languages: Urdu (Native), English (Professional)

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. Wail Gueaieb**
  Professor in the School of Electrical Engineering and Computer Science (EECS) at the University of Ottawa, Canada
  Email: wgueaieb@uottawa.ca