ANEES UR REHMAN HASHMI

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Education

Mohamed Bin Zayed University of Artificial Intelligence **August 2022 – June 2024**
Master of Science (Machine Learning)

NED University of Engineering and Technology **October 2017 – September 2021**
Bachelor in Engineering (Biomedical Engineering) ***Gold Medal***

Awards and Achievements

Gold Medal in B.E. Biomedical Engineering, *NEDUET*
3^{rd} **Position** in the BraTS competition in *MICCAI-2023*
Finalist Aspire Leaders Program *Harvard Business School*
2^{nd} **position** in the *Alibaba Cloud AI Hackathon* organized in the GITEX 2023
Winner Bioinformatics Hackathon organized by *Insilico Medicine*
Icon Award in Pakistan's first Youth Leadership Conference *Markhor*
Best Delegate Award in *Camp Himalayas*, a Peace-Oriented Leadership Conference

Selected Publications

- **Anees H.**, et al. (2024). XReal: Realistic Anatomy and Pathology-Aware X-ray Generation via Controllable Diffusion Model - ArXiV
- **Anees H.** et al (2023). Envisioning MedClip: A Deep Dive into Explainability for Medical Vision-Language Models. IEEE ISBI-2024
- F Maani, **Anees H.**, et al. (2023). Advanced Tumor Segmentation in Medical Imaging: An Ensemble Approach for BraTS 2023 Adult Glioma and Pediatric Tumor Tasks - MICCAI - BrainLesion-2023
- Ibrahim A., Santosh H., **Anees H.**, et al. (2024). MedMerge: Merging Models for Effective Transfer Learning to Medical Imaging Tasks - ArXiV
- **Anees H.**, M. Amine (2023). TMN: An Efficient Robust Aggregator for Federated Learning. MICAD-2023 - Cambridge

Research Experience

Controllable X-ray Generation through Latent Diffusion Models **MBZUAI — Thesis**
MSc Thesis *MICCAI 2024 - Under Review*

- Proposed a method to enhance medical realism in synthetic X-ray images through precise control over the anatomy and pathology infusion in the intended location.
- Developed a lightweight method to add spatial control to diffusion models.

Age-Related Effect Brain Connectivity Analysis **NEDUET — Thesis**
Undergraduate Capstone Project

- Researched to study the changes in causal connectivity among different brain regions associated with language comprehension.
- Used Dynamic Causal Modeling on a large scale fMRI dataset to understand the language compensation related neural plasticity in aged population.
- Presented our research findings titled "Effective Brain Connectivity Changes in the Language Network during Healthy Aging" at the 6th All Pakistan DUHS-DICE Health Innovation Exhibition.

3D Brain Tumor Segmentation Using Deep Learning **MBZUAI — Summers**
BraTS 2023 Competetion

- Secured 3rd place in the BraTS Adult Glioma Challenge in MICCAI-2023.
- Developed SegResnet-based Deep Learning model to perform automatic segmentation of Glioma patients.
- Utilized an ensemble approach combining MedNext and SegResnet to predict the 3D segmentation mask.

A Comparative Analysis of CNN and ViT **MBZUAI — Fall 2022**
Course Project for ML701

- Performed a thorough and in-depth comparison of Transformers and Convolutional Neural Networks (CNNs) for the classification of Optical Coherence Tomography (OCT) images.
- Investigated the impact of pre-training and transfer learning on the performance of various deep learning models.
- Analyzed the effect of inductive biases on the model performance in data-scarcity scenarios.

Robustness Analysis of Segmentation Models **MBZUAI — Fall 2022**

Course Project for AI701

- Carried out a research study to assess the performance of state-of-the-art semantic segmentation models under varying image perturbation.
- Analyzed the performance of different segmentation backbones in various image types and zero-shot settings.

Experience

Inception Institute of Artificial Intelligence (IIAI) - G42 **July 2023 - August 2023**

AI Research Intern *Abu Dhabi, UAE*

- Conducted research as an AI Research Intern at IIAI, focusing on the explainable AI methods for Deep Learning models.
- Proposed an approach to enhance explainability in Vision Language Models.

DHL Global Logistics **April 2023 - May 2023**

AI Intern *Dubai, UAE*

- Worked as an AI intern at DHL Logistics and undertook the project for automating the dangerous goods inspection process.
- Used OCR and other computer vision methods to alleviate the bottleneck in the overall inspection process.

MOOCS and Certifications

- Human Phenotype Project Hackathon, MBZUAI
- Director Registrations at Pakistan's First Outdoor Leadership Conference - Markhor 2023
- Machine Learning, Stanford University - Coursera
- Introduction to Data Science in Python, University of Michigan - Coursera
- Network Protocols and Architecture, Cisco - Coursera
- Technological Entrepreneurship: Lab to Market, Harvard University - edX
- Internet of Things, Habib University

Skills

Technical: Deep Learning, Machine Learning, Computer Vision, Full-Stack Development
Programming Languages and Frameworks: Python, Pytorch, JavaScript, ReactJS, ExpressJS, MATLAB
Interests: AI in Healthcare, Generative AI, Vision-Language Models, Explainable AI
Languages: English (IELTS: 7.5), Urdu (Native)

References

Will be provided upon request