

Hamna Moieez

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WORK EXPERIENCE

ClinicOS

Apr. 2024 – Present

Machine Learning Engineer

Edmonton, Canada

- Developing novel generative AI (Generative Adversarial Networks (GANs), Stable Diffusion, DiT) based methods to generate realistic, and high-fidelity postoperative images given preoperative image for various plastic surgical operations.
- Developed deep learning algorithms to reliably interpolate between preoperative and postoperative images to generate a realistic video indicating the change in the region of interest post undergoing a surgical procedure.
- Optimized ETL pipelines for large-scale medical datasets from various partner plastic surgeons, utilizing data wrangling techniques and automated feature engineering to improve the data pre-processing workflow, significantly reducing model training times and improving accuracy.
- Deployed and maintained machine learning models in production environments using MLOps best practices, including Docker containerization, and continuous integration/continuous deployment (CI/CD) pipelines, incorporating client feedback through iterative fine-tuning and hyper-parameter optimization.

AltaML

May 2023 – Sept. 2023

Associate Machine Learning Developer

Calgary, Canada

- Achieved a significant reduction in manual intervention for code generation and module autocompletion, leading to a streamlined and more efficient workflow for plant operators.
- Implemented advanced data cleaning and pre-processing techniques, resulting in higher accuracy and reliability of the generated configurations.
- Designed and implemented fine-tuning of Large Language Models (LLMs) using Azure Virtual Machine and optimizing GPU resource utilization.
- Trained LLMs for Fill-in-the-Middle (FIM) task, leading to more contextually accurate completions based on prefix and suffix prompts.

Intelligent Signal Processing And Multi Media (ISPAMM) Lab

Feb. 2022 – Feb. 2023

Graduate Research Assistant

Rome, Italy

- Developed a novel self-supervised continual learning technique for semantic segmentation of sparsely labeled satellite imagery, collaborating closely with [Prof. Simone Scardapane](#) to refine and optimize the continual learning framework.
- Conducted extensive empirical validation of the introduced technique, demonstrating its superior performance in comparison to existing methodologies. The results showcased a marked improvement in segmentation accuracy for scenarios with scarce labeled data, which eventually resulted in publication at IGARSS, 2023.

TUKL-NUST R&D Center

Jun. 2019 – Jun. 2020

Research Assistant

Islamabad, Pakistan

- Conducted extensive fieldwork and collaborated with local authorities to ensure the accurate collection and labeling of a comprehensive satellite dataset focused on slum locations in Islamabad and Karachi, Pakistan. This dataset became a valuable resource for urban planners, policymakers, and researchers addressing issues related to urban development and poverty alleviation.
- Developed a robust semantic segmentation and localization pipeline to characterize the spread of the slums within the two major cities, leveraging cutting-edge techniques in computer vision and remote sensing to address the unique challenges associated with slum detection and localization, under the supervision of [Prof. Faisal Shafait](#).
- Designed a web-based interface using Flask API to localize slum and detect change in slum over the years providing a critical tool for understanding the dynamics of urban sprawl, enabling evidence-based decision-making for urban planners and policymakers.

TECHNICAL SKILLS

Programming: Python, R, Java, SQL, C++

ML/DL: Tensorflow, PyTorch, Scikit-Learn, Pandas, Huggingface

MLOps: MLflow, ClearML, Flask, FastAPI, Docker

Mobile Stack: Kotlin, Java, Firebase

Cloud: Azure, GCP, AWS

EDUCATION

Sapienza University of Rome

Masters of Engg. in Computer Science, CGPA - 102/110 or 3.71/4.00

Rome, Italy

Sept. 2021 – Feb. 2023

Polytechnic University of Madrid

Graduate Erasmus Scholar, Exchange Student, Masters of Engg. in Computer Science

Madrid, Spain

Sept. 2021 – Jan 2022

National University of Sciences and Technology (NUST)

Bachelors of Engg. in Software Engineering, CGPA - 3.46/4.00

Islamabad, Pakistan

Sept. 2016 – Jun. 2020

PUBLICATIONS

Hamna Moieez, Valerio Marsocci, Simone Scardapane

[Paper](#) / [Code](#) / [Talk](#)

Continual Self-Supervised Learning in Earth Observation with Embedding Regularization

IGARSS 2023