Parisima Abdali

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Experience

New York University Langone Health Radiology Department **New York, USA**

NTV Intern Research Assistant | MR Contrast Image Synthesis - GenAI *July. 2023 – Present*

- Employed k-means clustering to develop constraint maps guiding unsupervised contrastive learning within a U-Net architecture, enhancing downstream task performance by 55.2%.
- Advanced MRI image synthesis by fine-tuning a TensorFlow-based U-Net model, significantly improving missing MR contrast image generation on the BraTS'21 dataset.
- Performed statistical hypothesis testing on SSIM, PSNR, and LPIPS (using AlexNet and VGG) for a cohort of test subjects, demonstrating that the resulting p-values provide statistically significant evidence.
- Developed a Singularity container to optimize computational processes, enabling efficient execution of large deep learning training jobs on distributed HPC systems.

IKIU Research Department **Tehran, Iran**

Deep Learning Engineer Intern (remotely) *Aug. 2020 – Dec. 2021*

- Designed data preprocessing pipeline in MATLAB to format raw audio for machine learning; generated labels for classification tasks and fine-tuned a CNN using MATLAB's Deep Learning Toolbox, achieving 75% accuracy in detecting multiple speakers.
- Integrated YOLOv3 and MonoDepth models, training them on the NYU Depth Dataset using PyTorch and TensorFlow frameworks, which led to achieving 87.3% accuracy in social distancing estimation tasks.
- Achieved 77.5% accuracy in detecting crowded areas using advanced computer vision models on large-scale, real-time video data.

Selected Projects

U.S. STEM Occupations Analysis | Tableau (Portfolio) **Sept. 2023 – Dec. 2023**

- Leveraged advanced data analysis techniques in Tableau Prep Builder and Pandas within Python for comprehensive statistical analysis, data cleaning and preprocessing.
- Engaged in business analytics practices by collaborating on cross-functional teams for seamless data integration.
- Employed advanced data visualization and presentation skills to develop interactive Tableau dashboards on STEM employment trends, effectively conveying insights and facilitating data-driven decisions among stakeholders.

Image Denoising and MRI Reconstruction | Python (Website) **Jan. 2023 – May. 2023**

- Developed an advanced algorithm for the denoising of images affected by high-level noise, achieving a 45% improvement in edge detection and detail preservation.
- Applied Compressed Sensing to MRI reconstruction, addressing complex data processing in k-space.
- Developed a novel reference-based Magnitude Subtraction image reconstruction algorithm enhancing temporal and spatial quality of image and video over 27.6% in PSNR across DCE-MRI brain datasets.

PokéGAN | Python (Github) **Jan. 2023 – May. 2023**

- Designed a custom-tuned Generative Adversarial Network (GAN) using the PyTorch framework to generate novel Pokémon images, incorporating data augmentation techniques for enhanced image synthesis quality.
- Enhanced generative model performance by integrating Autoencoders, resulting in high-dimensional pattern recognition in newly generated images — achieving a 21.3% performance improvement over the baseline model.
- Optimized computational resources within distributed systems using HPC and multi-GPU clusters, achieving a 68% increase in data processing efficiency.

Education

New York University, Tandon School of Engineering **New York, USA**

Masters of Science in Electrical and Computer Engineering; ***GPA: 3.4/4*** *Fall. 2022 - Present*

Affiliated with: NYU Video Lab, Rapid Imaging Lab

Imam Khomeini International University **Qazvin, Iran**

Bachelor of Science in Electrical Engineering; ***GPA: 3.84/4 (Ranked 1st)*** *Fall. 2016 – Summer. 2020*

Teaching Experiences (Link)

Technical Skills and Interests

Languages & Development Tools: Python, C/C++, MATLAB, SQL, CUDA, Shell, GitHub, LATEX.
Data Science & Machine Learning: Pandas, NumPy, Matplotlib, Seaborn, SciPy, OpenCV, Tableau, Scikit-learn, Keras, TensorFlow, PyTorch.
Cloud & Big Data Technologies: Azure, SSMS, Composer, Containers, High-Performance Computing (HPC)