Parisima Abdali

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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*
Collaboration: Prof. Yao Wang at NYU Video Lab, Prof. Li Feng at 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*
Relevant Coursework: Deep Learning, Machine Learning, Data Visualization, Data Structure and Algorithms, Database, Probability and Stochastic

Technical Skills and Interests

Languages & Frameworks: Python, C/C++, MATLAB, SQL, VHDL, Verilog, CUDA, Shell, Jekyll, LATEX.
Data Processing & Visualization: Pandas, NumPy, Matplotlib, Seaborn, SciPy, OpenCV, Tableau.
Machine Learning/Deep Learning: Scikit-learn, Keras, Tensorflow, Pytorch, High Performance ML
Cloud & Big Data Technologies: Azure Fundamentals, SSMS, Composer, HPC

Experience

New York University Langone Health Radiology Department **New York, USA**
NTV Intern Research Assistant | MRI Reconstruction - Prof. Li Feng *Summer. 2023 – Present*

- Implemented Magnitude Subtraction-MRI optimization technique with the Primal-Dual Splitting Algorithm, increasing PSNR by 10.8% and 5% over Independent and Dynamic Compressed Sensing methods in DCE-MRI brain datasets.
- Enhanced MS-MRI with parallel imaging integration, resulting in a 27.6% improvement in PSNR and image resolution, as well as increased robustness across multiple coil setups.
- Leading a new project using a novel Contrastive Learning approach for MR image synthesis using U-net model
- Utilizing HPC for handling large-scale MRI datasets, enhancing data analysis and processing efficiency.

New York University **New York, USA**
Teacher Assistant | CS-GY 6953 Deep Learning *Fall 2023 – Present*

- Mentoring students in proposal development and project execution, and progress evaluation during weekly OH.
- Delivering constructive feedback on team projects to facilitate effective learning and successful project outcomes.

Imam Khomeini International University **Tehran, Iran**
Research Intern | Deep Learning - Signal Processing Lab (remotely) *Fall. 2020 – Fall. 2021*

- Constructed and fine-tuned CNN model in MATLAB, achieving 75% accuracy in detecting up to five speakers. Used dropout and batch normalization to prevent overfitting, improving model accuracy and efficiency.
- Integrated YOLOv3 and MonoDepth on NYU Depth Dataset using PyTorch and TensorFlow, achieving 87.3% accuracy on social distancing estimation. Enhanced crowded area detection with 77.5% accuracy on recorded videos, significantly improving performance and speed in populated areas.

Selected Projects

MR-Contrast Guided Contrastive Learning for MR Image Synthesis | Python **Present**

- Developed a Constraint Map using PCA and k-means clustering on contrast images for guidance in TensorFlow-based Contrastive Learning with a U-net model.
- Optimized pretraining and synthesis tasks in the U-net model, adjusting parameters and employing augmentation to improve detail recovery in images.

Data Analysis - Trends in US Engineering and Science Occupations | Tableau (Portfolio) **2023**

TV-Denoising and Compressed Sensing for MRI | Python (Website) **2023**

- Developed an ROF-Total Variation denoising model using ADMM and Primal Dual Splitting (PDS) algorithms for grayscale images, resulting in a 25% increase in processing speed and 9.6% improvement in PSNR with PDS.
- Implemented Compressed Sensing for MRI reconstruction with PDS, demonstrating that a random 4-fold accelerated undersampling mask yields fewer artifacts compared to an equidistant mask, enhancing image quality.

PokeGAN: Generating New Pokémon Using Generative Adversarial Networks | Python (Github) 2023

- Developed a custom-tuned Generative Adversarial Network (GAN) in PyTorch for generating Pokémon images, achieving significantly low discriminator and generator losses after 500 epochs, indicative of high-quality image synthesis.
- Led analytical benchmarks, demonstrating that Autoencoding GANs outperformed standard GANs in producing clearer and more distinctive images on the same Pokémon dataset, showcasing advanced image synthesis capabilities.
- Optimized computational resources on an HPC environment, achieving 40% less training time and 25% increased processing efficiency