Parisima Abdali

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Experience

Machine Learning Engineer Intern **New York, USA**

NYU Langone Health | MR Contrast Image Synthesis using Deep Learning - Generative AI *July. 2023 – Present*

- Adapted Constrained Contrastive Learning for feature engineering to enhance subsequent synthesis tasks, improving the performance of image generation by 55.2%.
- Developed constraint maps using k-means clustering to facilitate data mining and classifying MR tissue-specific information, guiding a self-supervised learning model in feature extraction.
- Fine-tuned an encoder-decoder U-Net model on the BraTS'21 dataset to generate the T1CE images using other MR contrast images, enhancing predictive modeling accuracy.
- Conducted statistical analysis on SSIM, PSNR, and LPIPS metrics (using AlexNet and VGG), demonstrating that the p-values provide statistically significant evidence.
- Implemented in TensorFlow, optimizing computational processes to enable efficient execution of large deep-learning training jobs on distributed HPC systems.

AI Engineer Intern **Tehran, Iran**

IKIU | Computer Vision & Audio Processing using Deep Learning *Aug. 2020 – Dec. 2021*

- Designed data preprocessing pipelines in MATLAB for audio data analysis, generating labels for machine learning classification tasks and fine-tuned a CNN model, achieving 75% accuracy in detecting multiple speakers.
- Customized and integrated advanced neural networks model (YOLOv3, MonoDepth) for real-time applications, training on the NYU Depth Dataset, which led to achieving 87.3% accuracy in social distancing estimation tasks.
- Achieved 77.5% accuracy detecting crowded areas using advanced computer vision on live video data.

Selected Projects

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

- Leveraged statistical analysis and advanced data analysis techniques in Tableau Prep Builder and Pandas within Python for comprehensive data cleaning and preprocessing.
- Collaborated on cross-functional team, utilizing statistics and business analytics 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 Senssing to MRI reconstruction, addressing complex data processing and optimization.
- Developed a novel reference-based Magnitude Subtraction image reconstruction algorithm enhancing temporal and spatial quality of image and video over 27.6% in performance metrics across DCE-MRI brain datasets.

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

- Designed a custom-tuned deep learning model, Generative Adversarial Network (GANs), using PyTorch to generate novel Pokémon images, incorporating data augmentation for improved synthesis quality.
- Enhanced generative model performance by integrating Autoencoders, achieving a 41.3% improvement in high-dimensional pattern recognition over the baseline.
- Optimized computational resources for large deep learning models in 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 - May 2024*

Imam Khomeini International University **Qazvin, Iran**

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

Affiliated with: NYU Video Lab, Rapid Imaging Lab

Teaching Experiences (Link)

Technical Skills and Interests

Languages: Python, C/C++, MATLAB, VHDL, CUDA, Shell, LATEX
Libraries: TensorFlow, PyTorch, Pandas, NumPy, Matplotlib, Seaborn, SciPy, OpenCV, Scikit-learn, Keras
Cloud/Database: Azure, AWS, Containers, High-Performance Computing (HPC), MySQL, GCP
Dev Tools: VScode, Git, Github, Docker
Data Analysis & Visualization: Tableau, SQL
Relevent Coursework: Data Structures & Algorithms, Probability & Stochastic Processes, Machine Learning, Deep Learning, Data Analysis, Image and Video Processing, Signal Processing