PARISIMA ABDALI

New York, NY

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Experience

Machine Learning Research Scientist Intern   New York, USA

NYU Langone Health | MR Contrast Image Synthesis using Deep Learning - Generative AI   *July. 2023 – May. 2024*

- Adapted Constrained Contrastive Learning, a ML model, for feature engineering to enhance subsequent synthesis tasks, improving the performance of image generation by 55.2%.
- Developed constraint maps using unsupervised ML algorithm, 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 and Keras, optimizing computational processes to enable efficient execution of large deep-learning training jobs on distributed HPC systems.

Teacher Assistant - Deep Learning and Machine Learning Courses   New York, USA

NYU Courant Institute of Mathematical Sciences | CS-GY 6953 & CS-GY 6923 (Link)   *Sept. 2023 – May. 2024*

- Co-led a Deep Learning Kaggle project competition using Pytorch, enriching the course with hands-on challenges.
- Mentored students in developing various deep learning projects (CV, LLMs, NLP, etc.), offering technical support, regular progress assessments, and instruction on implementing within distributed systems using HPC resources.

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 denoising images affected by high-level noise, achieving a 45% improvement in detail preservation, and optimized algorithms for MRI reconstruction using Compressed Sensing.
- 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 and accelerated 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   *Fall. 2022 – May. 2024*

Imam Khomeini International University   Qazvin, Iran

Bachelor of Science in Electrical Engineering   *Sept. 2016 – Oct. 2020*

Affiliated with: NYU Video Lab, Rapid Imaging Lab

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

Developer 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