Nimish Magre

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EDUCATION

Northeastern University   Boston, MA
Candidate for Master of Science in Electrical and Computer Engineering   August 2022
Concentration: Computer Vision, Machine Learning and Algorithms (CVLA)   GPA: 3.9/4.00
Courses: Big Data and Sparsity in Control, Advances in Deep Learning, Advanced Computer Vision

Australian National University   Canberra, Australia
Bachelor Of Engineering (Honors)   July 2019
Concentration: Mechatronic Systems   GPA: 5.75/7.00
Courses: Computer Vision, Robotics, Control Systems, Computing for Engineering Simulation

TECHNICAL SKILLS

Proficient	**Basic**
Matlab, Python, C++, OpenCV, Pytorch, Tensorflow Keras API, Pandas, LaTeX	R, ROS, Multiview Geometry, SQL

WORK EXPERIENCE

Martinos Research Center (Massachusetts General Hospital)   (Python, OpenCV, Tensorflow-GPU, scikit-image)
Research Intern   January 2022-June 2022
- Implemented a self-supervised denoising network to denoise MRI scans using Bernoulli sampled instances of the scans (the work helped in reducing the time required for patients to complete an MRI scan)
- Tested the model for PSNR value comparison with supervised image denoising models and additive gaussian noise to find similar, and at times better performance.
- Tested a CNN based model to reconstruct raw MRI scans based on the Blip Up-Down Acquisition (BUDA) reconstruction technique

AI Skunkworks (Northeastern University)   (Python, OpenCV, Pandas, Numpy, Scipy, LaTeX)
Graduate Student Researcher   June 2021-August 2022
- Designed a python-based pipeline to generate an MNIST-style dataset comprising of 565,292 MNIST-style grayscale images representing 1,812 unique glyphs in varied styles of 1,355 Google-fonts for typography analysis
- Published an introductory paper for the dataset on *Arxiv* as a first author
- Researched on glyph identities and eye-tracking tools to implement real time mapping of type (fonts) to cognitive properties
- Took leadership and presented the research as a start-up business entity for financial funding from Y-combinator, RISE and other research-funding platforms

PROJECT EXPERIENCE

Northeastern University   (Pytorch, matplotlib, OpenCV)
Siamese network for object-tracking (github)   January 2021-April 2021
- Conducted literature review of the current state-of-the-art Siamese networks for single object-tracking and segmentation
- Presented a detailed review with demo samples of the Siamese Box Adaptive Network (SiamBAN) for object tracking
- Modified the template patch used during track using correlation between initial, t-1 and search frames to detect occlusion and improve tracking performance when multiple instances are present
- Tested the performance of the modified architecture on sample VOT-2018 videos

Northeastern University   (Convex Optimization,regularization)
Time Frequency Weighted Overlapping Group Shrinkage for Speech Denoising (github)   August 2021-December 2021
- Made use of the l1-norm cost term to sparsify speech samples iteratively
- Introduced a mixed-norm non-separable penalty term to promote group sparsity and remove residual noise
- Utilized a time-frequency weight matrix to further make algorithm more effective even with impulsive noise
- The project paper is currently (Nov,22) under consideration for the IEEE-ICASSP conference

HONORS AND AWARDS

- ANU College of Engineering and Computer Science International Partnership Scholarship
- Bronze medal on Kaggle for typography dataset *(TMNIST, TMNIST_Glyphs)*
- 2-year data hosting sponsorship by AWS for publishing the *TMNIST-Glyphs* dataset