Shrikant Arvavasu

Ann Arbor, MI - 48105
734-596-8050 ashri@umich.edu linkedin.com/in/shrikant-arvavasu-b8a14b198/ github.com/ashrikant39

Education

University of Michigan **Aug 2022 – Present**
MS in Electrical and Computer Engineering (SIPML) *Ann Arbor, MI*
GPA: 3.97/4.0

National Institute of Technology Karnataka **Aug 2018 – April 2022**
B.Tech in Electronics and Communication Engineering *Karnataka, India*
GPA: 3.87/4.0

Experience

Research Assistant 2 : **University of Michigan** **April 2023 – Present**

- Developed and implemented sampling algorithms for optimizing posterior analysis in **latent diffusion models** for inverse imaging challenges, improving the sampling quality for the LSUN Bedrooms dataset with an **FID score of 0.04**.
- Applied **latent diffusion models** to simulate a **source and channel decoding** system using diffusion denoising, resulting in a reconstruction PSNR of 24.4 dB using **DDIM sampling** on a channel SNR of 0 dB.
- Currently working on **LiDAR point cloud** upsampling in the BEV space using diffusion posterior sampling.

Machine Learning Intern : **Skylark Labs** **June 2023 – August 2023**

- Designed and executed a machine learning algorithm utilizing ResNet50 for efficient **few-shot classification** tasks.
- Applied vector quantization techniques for feature extraction, enhancing the efficiency of the model to detect objects from newly learned classes.

Research Assistant 1 : **University of Michigan** **August 2022 – April 2023**

- Trained an attention-UNET-based model specifically for aortic segmentation, enhancing the accuracy and efficiency of the VDM pipeline, resulting in an improvement of 3% in the F1-score, particularly around aortic walls.
- Played a pivotal role in advancing the overall functionality and efficiency of the Elastix-based CT Registration Pipeline.

Computer Vision Intern : **SixSense Corporation** **January 2022 – April 2022**

- Worked on detecting and classifying defects in semiconductor chips using convolutional neural networks.
- Applied randomized **automatic augmentation** techniques for several public datasets and in-house datasets which improved by to average error rate of 2.3%.

Projects

Block-Based Compressed Sensing for Natural Images and Videos **January 2023**

- Innovated a block-based compressed sensing approach for natural images and videos, leveraging deep learning inspired by the insights from the paper ”Video Compressed Sensing Using a Convolutional Neural Network.”
- Trained the model and achieved a compression factor of 0.1 on non-keyframes of videos of KITTI Dataset.

Automatic Stroke Lesion Identification **November 2021**

- Developed a method for segmenting stroke lesions in brain MRI volumes, utilizing deep 3-D convolutional networks (Residual-UNETs). This approach aimed to enhance the accuracy of stroke risk assessment in patients.
- Improved the lesion segmentation F1-score from 51.7% to 56.3% by incorporating brain parcellations into Grey Matter (GM) and White Matter (WM), improving the precision of diagnosis.

Graph-Cuts for Utilizing Partial Segmentation Masks **May 2021 - October 2021**

- Developed an efficient codebase for training and testing for semantic segmentation of sclera regions in the eye images.
- Acquired partial annotations using a game where the partial masks are saved as players competed for scoring regions.
- Acquired an F1 score of 0.94 on the test segmentation set using multiple partial annotations.

Publications

- A Chanchal, S Lal, D Barnwal, P Sinha, **S Arvavasu**, and J Kini. Evolution of Livernet 2.x: Architectures for automated liver cancer grade classification from HE stained liver histopathological images. Multimedia Tools and Applications.

Technical Skills

Languages: Python, C, C++, MATLAB, Julia, Shell Scripting
Developer Tools: OpenCV, ITK, Pytorch, Pytorch-Lightning, SLURM
Technologies/Concepts: Diffusion Models, Inverse Imaging, MR Imaging