SMEET DHAKECHA

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EDUCATION

University of Southern California — CA, USA
Master of Science in Electrical and Computer Engineering (Emphasis: Machine Learning and Data Science) — May 2023
Relevant Coursework: Probability, Linear Algebra, Machine Learning, Deep Learning

Sardar Vallabhbhai National Institute of Technology — Surat, India
B.Tech. in Electronics and Communication Engineering — May 2021
Relevant Coursework: Digital Communication, Data Communication & Networks, Image Processing, Introduction to Data Science

SKILLS AND CERTIFICATIONS

- **Skills** – TensorFlow-Keras, Pytorch, NumPy, OpenCV, Pandas, Scikit-Learn, Matplotlib, Computer Vision
- **Tools** – MS Office, Tableau, IBM QRadar, Jupyter Notebook, Anaconda, GitHub
- **Languages** – C, C++, Python, Java, SQL, HTML, CSS, MATLAB, JavaScript
- **Certifications** – Deep Learning Specialization by DeepLearning.AI; Sequences, Time series, and Prediction

EXPERIENCE

ITEMS Institute, University of Southern California — Los Angeles, CA
Research Assistant — Sep 2021-Present

- Working on segmentation of axon and myelin regions from microscopic nerve excitation data
- Focused on optimizing the U-net based model using Tensorflow-Keras framework through hyperparameter optimization and searching & implementing various CNN architectures
- Improved performance matrices of U-net CNN architecture for segmentation by incorporating Atrous Convolutions; tested it on accuracy & Dice parameters

National Institute of Technology, Surat — Surat, India
Research Intern — Apr 2020-Aug 2020

- Worked in a team of 3 and led primary research to come up with different machine learning models for communication systems
- Utilized RadioML dataset consisting of 160K samples for the model, performed data analysis, predicted missing values using sinusoidal interpolation and plotted samples of 11 different modulation categories
- Formulated several strategies to revamp existing neural network model in TensorFlow-Keras for Automatic modulation classification system, predicting modulation category of a received signal
- Enhanced model accuracy from 85% to 98% and from 79% to 93% for signals of SNR 18 dB and 16 dB, respectively, and evaluated model by plotting confusion matrices to analyze classification accuracy of each category

Indian Institute of Technology, Ropar — Punjab, India
Research Intern — May 2019-Jul 2019

- Collaborated with a team of 2 to work on 'Demosaicing of RGB and Multispectral images' employing ML techniques
- Designed a deep neural network model to demosaic and reconstruct RGB images and Improved PSNR of model from 29 to 34 dB
- Developed python software system that takes a camera sensor image as an input to interpolate image using deep learning
- Employed CAVE multispectral image dataset to train the U-net model to demosaic and refine five-band images; evaluated model by 6-fold cross-validation method

PROJECTS

Retinal Vessel Segmentation using Deep Convolutional Neural Networks - GAN, CNN, TensorFlow, Python

- Leveraged TensorFlow framework to implement a generative adversarial model and experimented with Autoencoders, VAE and U-net for Generator architecture to segment blood vessels from fundus images for glaucoma detection in patients
- Optimized architecture by utilizing Depth-wise separable Convolutions, resulted in a 38% reduction of total parameters
- Incorporated dice loss function in model to enhance quantitative matrices by 4%
- Authored research paper on comparison of various state-of-the-art deep learning methods; presented it at an IEEE conference

PUBLICATIONS

- **Smeet Dhakecha**, Ojas Ramwala, Chirag Paunwala, Mita Paunwala, "Reminiscent Net: Conditional GAN based Old Image De-Creasing", International Journal of Image and Graphics 2021
- **Smeet Dhakecha**, Ojas Ramwala, Antriksh Ganjoo, Divyanshu Visiya, Jignesh Sarvaiya, "Leveraging Adversarial Training for Efficient Retinal Vessel Segmentation", IEEE International Conference on Electronics Computers and Artificial Intelligence 2021

LEADERSHIP AND INVOLVEMENT

Microsoft Student Partner, SVNIT – Designer and Event Lead — Aug 2019-Aug 2020

Conducted a webinar for high school students from rural areas to utilize technology towards learning new things online
Co-ordinated with team of 4 to direct an online coding competition for freshmen and sophomore students