Tanish Mittal

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Education

Birla Institute of Technology and Science, Pilani [2019 - PRESENT] *Pilani, Rajasthan, India*
- B.E. Computer Science and M.Sc. Physics; **CGPA - 9.12/10.00**
(5 Year Integrated Dual Degree Program)

Experience

North Eastern Space Application Centre (NESAC), Umiam, Meghalaya | **Summer term**
*Under the guidance of **Sri Nilay Nishant, Engineer, NESAC*** *[June 2021 - July 2021]*
* ***Predicting map Segmentation of Built-up Area from Satellite Images***
- **Created a dataset** containing sentinel images of Indian cities and corresponding built-up mask.
- Implemented a **six level Attention-UNet model with self-trainable balanced Binary Cross Entropy loss function**
- Achieved an overall accuracy of **99.8%**
- Currently writing a Machine learning research paper for this project.
* ***Development of cloud native geoprocessing framework using open source tools***
- Developed a **high-level open-source python API** for doing complex computations on satellite images.
- Integrated Django as backend server with the python API to deploy Machine learning based algorithms.
- Currently writing a research paper regarding the high-level python API also.

Projects

* **Low-dose CT scan denoising with edge enhancing Vision Transformer** *[June 2021 - Present]*
*Under the guidance of **Mr. Santosh Yadav, PhD, BITS Pilani***
- Used **Low Dose CT Image and Projection Data** by The Cancer Imaging Archive
- Implemented **a non-overlapping window-based self-attention Vision Transformer** for Medical Image Denoising
- Introduced a novelty in Existing Transformer by adding edge enhancing convolution kernels
- Achieved **43.487 PSNR, 0.0067 RMSE and 0.9861 SSIM** which is better than previous State-of-the-art
- Submitted a short four page research paper to **ICCVW'21 CVAMD** which is currently under-review
* **Reinforcement Learning-based Decision Support system for COVID mitigation** *[June 2021 - Present]*
*Under the guidance of **Dr. Kamlesh Tiwari, BITS Pilani** and **Dr. Heena Rathore, UT San Antonio***
- Carried a thorough **literature review** on Reinforcement Learning and COVID pandemic
- Proposed new methods involving Reinforcement learning for COVID Decision Support system

Relevant Courses and MOOCs

Probability and Statistics | Linear Algebra and Complex Numbers | Differential Equations | Calculus | Machine Learning by Stanford University | MIT Deep Learning 6.S191 | UC Berkeley CS285 Fall 2019

Programming Skills

Python | Pytorch | Tensorflow 2.x | MATLAB | LATEX | C | OpenCv | Pillow | NumPy | Pandas | Matplotlib

Current Position of Responsibility

* **Computer Vision Research Society (BITS Pilani)** | **Core Member** *[June 2021 - Present]*
- Explained Deep Image Prior Research Paper by Dmitry Ulyanov in a reading session
- Participated in all Computer Vision reading sessions
* **The Radio Astronomy Club (BITS Pilani)** | **Ligo-DL Researcher** *[January 2021 - Present]*
- **Curated Deep Learning Fast track course** for upcoming batches
- Helped in designing a deep learning network to replace digital signal processing technique: **matched filter**.
- Implemented **2D CNN architectures for Glitch classification** in LIGO Gravitational Strain Data
- Procured and Performed signal processing on LIGO Gravitational Strain Data using GWPY, PyCBC and Bilby.
- The Radio Astronomy Club is affiliated to **Raman Research Institute, India.**