ANSHUL SHIVHARE

M.Tech - Artificial Intelligence

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EXPERIENCE

Data Science Intern : WinZO

Project : Graph Analysis for Recommendation System

Jun 2021 – Aug 2021 Bangalore

- Graph analysis on 4 M users (out of 40 M) for recommendation system, Used few accelerated data science techniques like RAPIDS (for faster processing).
- Extensive exploratory data analysis and feature engineering on real-world data.
- Community detection, Centrality Algorithm (To find influential users), Page Rank algorithm on graph. Formulated a measure to detect fraud using graphs.
- Used Graph Convolutional Networks (GCN) to predict whether the new user will be a depositor or not. Got around 64 % Accuracy.

RESEARCH PROJECT

Project : Classification and Visualization of medical images

Aug 2021 – Aug 2022 Bangalore

- The retinal optical coherence tomography (OCT) data are used for the diagnosis of multiple retinal diseases.
- Confocal Endomicroscopy (Covivo) images consist of brain tissue in real-time. Hence, we have to detect various types of Brain Tumor.
- Removed speckle noise from both types of images using convolutional neural networks. Generated synthetic data for the same.
- **Ongoing task:** Multi-label Medical Image Classification, Visualization with the help of Grad-CAM and Score-CAM technique.

ACADEMIC PROJECTS

Image Denoising using Unet GitHub Link

- Residual learning technique is used to denoise the image.
- Experimented on 2 types of noises, Gamma and Poisson.
- Achieved 6 db increase in PSNR value and SSIM upto 0.93 on predicted image compared to noisy image.

Link/Edge prediction GitHub Link

- Predicting K important non-existing edges, based on ranking the elements of U-E (set of non-existing edges) in G.
- Implemented three different ways to predict edges. (Jaccard's coefficient, Katz's score, Hitting time).

Graph Representation Learning with Generative Adversarial Networks

- Embed each vertex in a graph into a low-dimensional vector space.
- Minimax game, Generative and Discriminative modeling.
- Traditional softmax is replaced by graph softmax.
- The accuracy of Discriminator and Generator were 76 % after training the network for 30 epochs.

Movie Recommendation System

- Content-based recommendation, Finds other movies with similar content. Then ranks movies according to their similarity scores.
- Collaborative filtering using Matrix factorization.
- The data set used is Movie Lens with 25 M movie ratings.

PERSONAL PROJECTS

- Pattern replacement
- Mosaic implementation: Merging many overlapping images to form single image (image stitching)
- Segmentation
- Modeling the Spread of COVID-19 in Karnataka
- Duckworth-Lewis method for predicting target runs in limited over cricket.

COURSES

- Computational Methods of Optimization,Computational Linear Algebra, Stochastic Models and Application
- Pattern Recognition and Neural Networks, Data Structures and Algorithms, Machine Learning and Signal Processing, Computer Vision
- Ongoing Courses: Advanced Deep Learning, Data Analytics, Digital Video: Perception and Algorithms

SKILLS

Python | C | MATLAB | C++ | Pytorch | Keras | SKLearn | Pandas

PUBLICATIONS

- Med-Neurips-2022 -"Denoising Enhances Visualization of Optical Coherence Tomography Images"
- IEEEISBI2023 -"ENSEMBLE-CAM: Robust Visualization For Optical Coherence Tomography Image Classification" (In Process).

EDUCATION

M.Tech Artificial Intelligence

Indian Institute of Science

2020-2022 Bangalore

CGPA: 7.9/10

B.E Computer Science Engineering

Acropolis Institute of Technology and research

2016-2020 Indore

CGPA: 7.63/10