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Arijit De

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With over 6 years of dedicated experience in Machine Learning (ML) development, I am proficient in applying Data Science fundamentals, Data Analysis and Visualization in python and SQL to extract meaningful information from data. Developed end to end ML solutions using PyTorch, TensorFlow, OpenCV, Scikit-Learn, NLTK and applying principles of Machine Vision, and Natural Language Processing. Have strong background in planning, estimation and risk management of projects. Demonstrated technical leadership skills by managing a group of 4-5 people, possessing effective client interaction and collaboration skills. Also have knowledge of deploying and running ML applications in cloud platforms like Azure. Committed to delivering innovative and effective solutions, having a thirst for learning.

Work Experience

TCS Research Fellow — **Jadavpur University** — **Sep 2019 – Present**
IVPR Group — Bengaluru, India

- Developed Deep Learning (DL) and Machine learning (ML) infused solution to classify Alzheimer's Disease from 3D MRI Scans and brain region based data. Used data analysis and data cleaning techniques using pandas and matplotlib to understand data, Scikit-learn to preprocess data and Tensorflow to perform data augmentation and train Convolutional Neural Networks and Random Forests to create state of the art classification model.
  Github Link - https://github.com/arijitde92/Alzheimer_Classification**.**
- Developed Brain tumor classification models using multi modal data using OpenCV for data preprocessing and PyTorch for model training. Paper link - https://ieeexplore.ieee.org/document/9956229
- Involved in joint project collaboration with Institute of Neurosciences (Kolkata) that required planning data requirements, client interaction, estimating project time and cost.

Data Quality Analyst — **Mercedes-Benz Research and Development India** — **Aug 2018 – Sep 2019**
Data Management team — Bengaluru, India

- Developed tools (in PyQt) for manual quality control of annotated images for Vulnerable Road User (VRU) detection.
- Created python scripts for automatic quality checks and data analysis/visualization of labeled/annotated data which increased annotation throughput by 20%.
- Involved in data cleaning and dataset preprocessing for gesture recognition of VRU.

Systems Engineer — **Tata Consultancy Services** — **Aug 2014 – April 2015**
Software Maintenance team — Kolkata, India

- Was involved in maintenance of the TCS internal website - "Ultimatix".
- Handled feature requests in both frontend (HTML, Bootstrap CSS, JavaScript) and backend (Java, MySQL).

Projects

- **Alzheimer's Disease classification App** - A web application that implements the Alzheimer's Disease classification work done as TCS Research Fellow. Built using Python and Flask along with MySQL to handle the database requirements. Github Link - https://github.com/arijitde92/AD_Classification_App
- **Obstructive Sleep Apnea Syndrome (OSAS) Detection** - Performed extensive data analysis, data cleaning, data preprocessing, outlier detection, on 1D signal data like ECG and PSG and modified existing ML model LeNet5 to receive 1D data in order to identify Sleep Apnea subtypes. Work has been submitted for publication in a conference.
  Github Link - https://github.com/arijitde92/OSAS_Detection
- **Plant Disease Classification** - Developed an AI based app to train a Machine learning model to identify any plant disease when the image of its leaf is fed to the model. Trained CNN models using PyTorch to perform classification.
  Github Link - https://github.com/arijitde92/Plant_Disease_Classification
- **Movie Reviews Spoiler Detection** - Used exploratory data analysis to find irregularities like corrupt, undefined data points and outliers. Cleaned them using Pandas. Used spacy to perform tokenization and vectorization. Extracted features using spacy and Scikit-learn MLP to train a model to detect spoilers in a movie review.
  https://github.com/arijitde92/Spoiler_detection

Skills

- Languages: Python, Java, C++, SQL
- Technologies: PyTorch, Tensorflow, OpenCV, MySQL, Git, NLTK
- Other: Computer Vision, Deep Learning, Data Science, Exploratory Data Analysis, Data Visualization, NLP.

Education and Certifications

- **M.Tech. Computer Science & Engineering,** Jadavpur University, Kolkata, India. GPA - 8.83 **2016–2018**
- **B.Tech. Computer Science & Engineering,** Techno India, Kolkata, India. GPA - 8.81 **2010–2014**

Certifications

- **Deep Learning, a 5-course specialization**, by Deeplearning.ai. Verify at - https://shorturl.at/eiuPT
- **TensorFlow in Practice Specialization**, by Deeplearning.ai. Verify at - https://shorturl.at/loKO7
- **MCPS: Microsoft Certified Professional**, Microsoft Certification no: E319-6162

Publications

- A. De, M. Tiwari and A. S. Chowdhury, "3D Hippocampus Segmentation Using a Hog Based Loss Function with Majority Pooling," 2023 IEEE International Conference on Image Processing (***ICIP***), Kuala Lumpur, Malaysia, 2023, pp. 2260-2264, doi: 10.1109/ICIP49359.2023.10223145.
- A. De, R. Mhatre, M. Tiwari and A. S. Chowdhury, "Brain Tumor Classification from Radiology and Histopathology using Deep Features and Graph Convolutional Network," 2022 26th International Conference on Pattern Recognition (***ICPR***), Montreal, QC, Canada, 2022, pp. 4420-4426, doi: 10.1109/ICPR56361.2022.9956229.
- A. De, M. Tiwari, E. Grisan and A. S. Chowdhury, "A Deep Graph Cut Model For 3D Brain Tumor Segmentation," 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (***EMBC***), Glasgow, Scotland, United Kingdom, 2022, pp. 2105-2109, doi: 10.1109/EMBC48229.2022.9871685.
- A. De, **A.S. Chowdhury:** DTI based Alzheimer's Disease Classification with Rank Modulated Fusion of CNNs and Random Forest, ***Expert Syst. Appl.*** **169** (2021), 114338.

Mentoring Experience

Machine Learning Mentor **Edustation** **Dec 2022 – May 2023**
Mentoring team Remote, India

- Responsibilities included teaching theoretical & practical concepts of various Machine Learning (ML) algorithms & data pre-processing techniques to build efficient end to end ML applications.

Machine Learning Mentor **Upskillz** **May 2022 – Oct 2022**
Mentoring team Remote, India

- Taught theoretical concepts on machine learning and data science along with hands-on practical sessions. Guided two ML projects to make students experience the end to end development and designing of ML models.

Open Source Contributions

- Contributed to nexB repositories pertaining to both feature enhancements and documentations.
- Contributed to TheAlgorithms (https://github.com/TheAlgorithms/Python) helping them implement the Postfix evaluation algorithm in python..