COMP 6721- APPLIED ARTIFICIAL INTELLIGENCE
GROUP- B
PROJECT: LEAF DISEASE CLASSIFICATION

GROUP CONTRIBUTIONS

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Explored various CNN architectures for the leaf disease classification task and selected three of them Explored multiple datasets for classification task and selected three datasets Prepared dataset for the classification task i.e applied dataset reduction Studied and applied different augmentation techniques to get rid of overfitting Conducted analysis of different loss function and selected that was most suitable according to our dataset and model Researched various optimization algorithms and applied it Studied various hyperparameters of for optimization and selected best values Implemented early stopping technique	Studied the VGG19, MobileNetV2 architecture thoroughly and implemented it over all the three datasets. Performed hyperparameter tuning on VGG19 architecture on Mendeley dataset and MobilenetV2 on Rice leaf dataset. Analyzed how the changing of learning rate affects the accuracy of the generated models. Implemented the batch size changed for all the 9 combinations of the three architecture with three datasets Generated the tSNE graphs to understand how different architectures are working on different datasets in terms of classifications. Worked on the statistics of the plotting the different graphs of comparison like	Learned the MobileNetV2,Resnet and VGG architectures. Suggested topic on choosing reliable dataset for the classification task and choosing potential datasets. Applied dataset reduction and chose hyperparameters carefully for avoiding overfitting. Completed initial model training of RiceLeaf,Mendly datasets. Created Github repository as per the project guidelines. Managed the epochs iteration and analyzed the results for the architectures. Discussed hyperparameter optimization for choosing best values. Helped in all	Explored the MobileNetV2 and VGG19 architecture Prepared dataset and implemented data pre-processing and augmentation techniques on the datasets. Successfully managed the model training for the Mendeley and Rice Leaf datasets. Managed epoch iterations for model training, carefully balancing between underfitting and overfitting to refine model performance. Conducted partial optimization work on the VGG model for the Rice Leaf dataset, enhancing model performance. Generated and analyzed graphs post-training, providing clear visual insights into model performance and accuracy trends.

Implemented the training, validation and testing loop for all models and optimized the code for resource consumption Studied and implemented hyperparameter tuning for all models Researched about importance of transfer learning and implemented it for all models Actively participated in group discussions for project studies and contributed in developing code Actively contributed in initial project proposal, progress report and final project report	one for model comparison, one for hyperparameter tuning. Performed Transfer Learning on VGG19 architecture on Mendeley dataset. Actively participated in group discussions for project studies and contributed in developing code Actively contributed in initial project proposal, progress report and final project report	implementations and analyzed the results on the trained models. Actively recorded all the analyzed results and carefully documented each of them with explanation. Studied deeply about transfer learning and on its implementation methods. Co-ordinated with the team actively for the project discussions from choosing the dataset to the final report . Added contributions in progress reports and cross checked with requirements as per the project guidelines.	Conducted analysis of model outcomes, evaluating key metrics like accuracy, precision, recall, and F1 scores to gauge the effectiveness of the MobileNetV2 model on the Mendeley and Rice Leaf datasets. Actively participated in group discussions for project studies and contributed in developing code Coordinated with the creation of comprehensive documentation, including the development of reports, README file and PowerPoint presentation.