Microsoft Rice Disease Classification Challenge

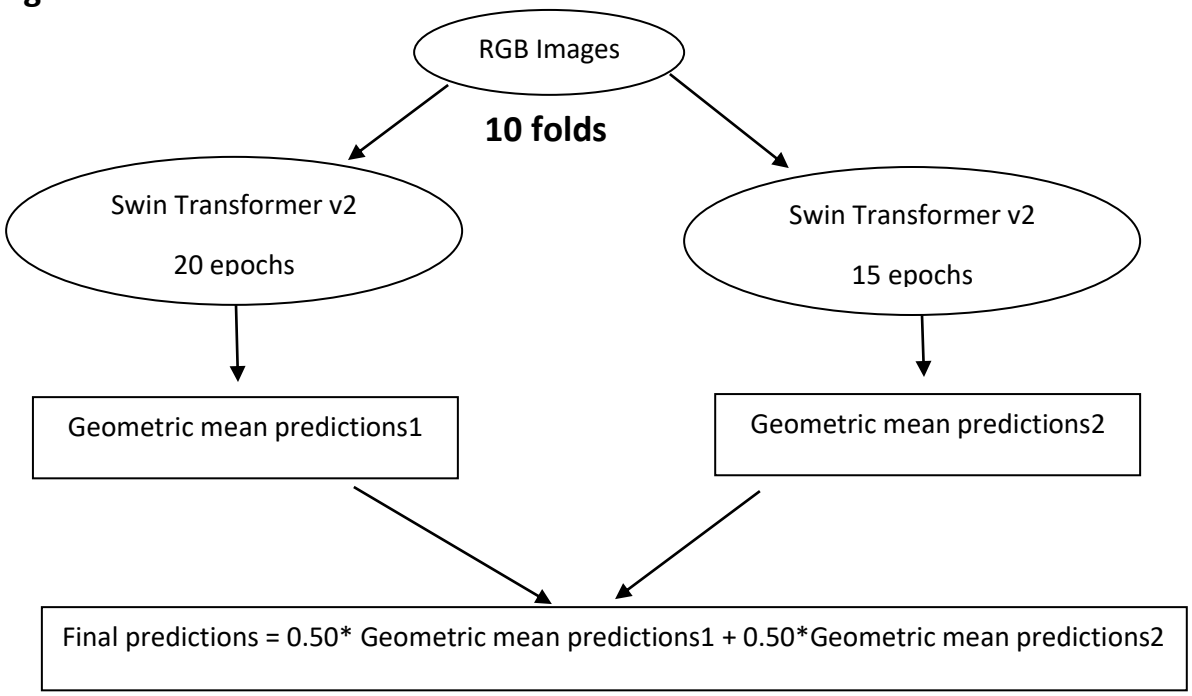
Introduction

One of the biggest threats to food security is crop diseases. Therefore, this challenge comes to help in predict and distinguish between rice fungal diseases which they have similar appearances at early stage. After several attempts using RGB and Infrared images, we noticed RGB images outperform Infrared images in all our attempt with a big difference. Therefore, we used just RGB images in our final solution with some on-the-fly processing “described below” before feeding them into the model. We used Swin transformer v2 model trained over 10 folds for 15 epochs, then we ensembled their predictions using geometric mean to have first final prediction. After that another Swin transformer v2 trained over 10 folds of RGB images for 20 epochs, then ensembled their predictions using geometric mean as well to have second final prediction. Finally, we used weighted average prediction to blend the final two predictions together and submit our final prediction.

Pre-processing the images

This step has been implemented to do on-the-fly. First, we squish each image into 400x400 size, then batch them into 16-images batches. Then, for each batch at once we zoomed in and resized them to smaller size 192x192. After applying this processing steps, applied different augmentations like flipping, rotating and lightning.

Modeling



First, we splitted the dataset into 10 folds using stratified k-folds. Then, trained Swin transformer v2 10 times on different subsets of dataset for 15 epochs, then ensemble their results using geometric mean because local cv was fluctuated during training. Then the same 10 folds used to train Swin transformer v2 but for more epochs “20 epochs” then ensemble their results using geometric mean.

Now, we have two final predictions from ensembling predictions from previous step. Finally, we blended their results using weighted average by giving them similar weights 50% for each prediction because they have similar scores on leaderboard and almost similar local cv.