Download the level1_trainmodel.py file. Create your own python file to run the model. You need to put Level1_TrainModel.py file into your Python system directory to import it directly into any python file. Otherwise, you need put Level1_TrainModel.py file into the same folder as your own python file.

Import Level1_TrainModel.

`prepare_train_val_data(val_portion)`

use this function to load the data and split training the validation data by setting the validation proportion. It will output trainX, trainY, valX, valY in sequence. Labels are one hot encoded.

`train_best(dir,trainX, trainY, valX, valY)`

use this function to train the model with the best hyperparameter settings found from the experiments, you need to define the directory for the model to save. Train_X, train_Y, val_X, val_Y are your training images, training labels in one hot encode, validation images, validation labels in one hot encode format. Dir is where you want the model to be saved.

The result is saved in folder
base_model_mobileNetV2_alpha_0.900_lr_0.0005000_m_0.90_wd_0.000000000

Within your directory defined.

`hyp_tuning(alpha, learning_rate, momentum, weight_decay, n_epoch, directory,train_X, train_Y,val_X,val_Y)`

It is used to train your own model. It used MobileNetV2 as basemodel. alpha is the width multiplier of MobileNetV2. learning_rate is the initial training rate. Momentum is the momentum during the training. RMSprop is used as the optimizer. weight_decay is the alpha applied to the L2 norm to penalize the big weight. directory is where you want the model to be saved to. Train_X, train_Y, val_X, val_Y are your training images, training labels in one hot encode, validation images, validation labels in one hot encode format.

This function saves models and training process graph in a folder in your directory. This folder is named with your parameter setting, such as
base_model_mobileNetV2_alpha_0.100_lr_0.000_m_0.00_wd_0.000000

Download level1_testmodel.py file. The same step as before

`model_evaluate(model_path)`

Use this function evaluate model accuracy and performance. It will calculate the inference time per image, the model classification report, plot the confusion matrix.

Model_path needs to be defined, something like …/base_model_mobileNetV2_alpha_0.900_lr_0.0005000_m_0.90_wd_0.000000000/model.h5