Homework 2

Date assigned: 2 Oct 2019

Professor Ho-Jin Choi Date due: 10 Oct 2019

Submit your homework file (HW2.ipynb) to your TA via email (gks8030@gmail.com) by the due date. Late submissions will not be accepted. Write your student ID and name on the 'Information' section in HW2.ipynb file.

Questions:

In this assignment, you are going to train a convolutional neural network to classify images of dog and cats as their breeds. To do this, TA will provide ***HW2.ipynb*** which includes the codes such as loading the dataset. Using this ipynb file, write your code for the following steps:

Step 1. Define a function to preprocess the dataset
- The function should scale the input channels to a range of `[-1, 1]` and resize the images to a fixed size, `IMAGE_SIZE`

Step 2. Apply the defined preprocessing function to `raw_train` and `raw_test`. Then, shuffle the dataset and combine them into batches

Step 3. Load `InceptionV3` model without the final classification layer using `tf.keras.applications.InceptionV3`. Then, freeze the model to prevent it from being trained

Step 4. Define a convolutional neural network using the loaded `InceptionV3` to classify images of dogs and cats as their breeds. Then, compile your model with appropriate parameters.

Step 5. Train the model at least 10 epochs

Step 6. To fine-tune the model, unfreeze the top layers of the model. Then, compile the model again with appropriate parameters

Step 7. Fine-tune the model at least 10 epochs

Step 8. Evaluate the trained model using test dataset and print the test accuracy of the model

Extra points:

TAs will rank the submissions based on the test accuracy and assign extra points according to the rank.

For more information on writing code please refer to the ipynb files TAs provided.

Reference: Deep learning practice (Week 2)