Train The Model

Topic: AI-powered Nutrition Analyzer for Fitness Enthusiasts

Team-ID: PNT2022TMID15800

Train The Model

Now, let us train our model with our image dataset. The model is trained for 15 epochs and after every epoch, the current model state is saved if the model has the least loss encountered till that time. We can see that the training loss decreases in almost every epoch till 15 epochs and probably there is further scope to improve the model.

fit_generator functions used to train a deep-learning neural network
Arguments:

- steps_per_epoch: it specifies the total number of steps taken from the generator as soon as one epoch is finished and the next epoch has started. We can calculate the value of steps_per_epoch as the total number of samples in your dataset divided by the batch size.
- Epochs: an integer and number of epochs we want to train our model for.
- validation_data can be either:
  - an inputs and targets list
  - a generator
  - inputs, targets, and sample_weights list which can be used to evaluate the loss and metrics for any model after any epoch has ended.
- validation_steps: only if the validation_data is a generator then only this argument can be used. It specifies the total number of steps taken from the generator before it is stopped at every epoch and its value is calculated as the total number of validation data points in your dataset divided by the validation batch size.

Train The Model

```
model.fit_generator(
        generator=x_train,steps_per_epoch = len(x_train),
        epochs=15, validation_data=x_test,validation_steps = len(x_test))
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:3: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators.
  This is separate from the ipykernel package so we can avoid doing imports until
Epoch 1/15
678/678 [==============================] - 1032s 2s/step - loss: 0.6563 - accuracy: 0.7358 - val_loss: 0.5077 - val_accuracy: 0.8019
Epoch 2/15
678/678 [==============================] - 40s 59ms/step - loss: 0.4958 - accuracy: 0.8105 - val_loss: 0.4646 - val_accuracy: 0.8138
Epoch 3/15
678/678 [==============================] - 37s 55ms/step - loss: 0.4596 - accuracy: 0.8205 - val_loss: 0.5185 - val_accuracy: 0.7761
Epoch 4/15
678/678 [==============================] - 37s 54ms/step - loss: 0.4293 - accuracy: 0.8297 - val_loss: 0.5085 - val_accuracy: 0.8084
Epoch 5/15
678/678 [==============================] - 39s 58ms/step - loss: 0.4104 - accuracy: 0.8338 - val_loss: 0.4118 - val_accuracy: 0.8375
Epoch 6/15
678/678 [==============================] - 40s 58ms/step - loss: 0.3796 - accuracy: 0.8563 - val_loss: 0.4090 - val_accuracy: 0.8418
Epoch 7/15
678/678 [==============================] - 38s 57ms/step - loss: 0.3710 - accuracy: 0.8568 - val_loss: 0.4093 - val_accuracy: 0.8342
Epoch 8/15
678/678 [==============================] - 38s 55ms/step - loss: 0.3537 - accuracy: 0.8660 - val_loss: 0.4260 - val_accuracy: 0.8482
Epoch 9/15
678/678 [==============================] - 38s 55ms/step - loss: 0.3258 - accuracy: 0.8737 - val_loss: 0.4051 - val_accuracy: 0.8558
Epoch 10/15
678/678 [==============================] - 37s 55ms/step - loss: 0.3148 - accuracy: 0.8772 - val_loss: 0.3917 - val_accuracy: 0.8590
Epoch 11/15
678/678 [==============================] - 35s 52ms/step - loss: 0.2993 - accuracy: 0.8825 - val_loss: 0.3850 - val_accuracy: 0.8751
Epoch 12/15
678/678 [==============================] - 37s 55ms/step - loss: 0.2875 - accuracy: 0.8837 - val_loss: 0.4000 - val_accuracy: 0.8698
Epoch 13/15
678/678 [==============================] - 39s 58ms/step - loss: 0.2608 - accuracy: 0.8999 - val_loss: 0.4117 - val_accuracy: 0.8536
Epoch 14/15
678/678 [==============================] - 37s 55ms/step - loss: 0.2494 - accuracy: 0.9073 - val_loss: 0.5154 - val_accuracy: 0.8041
Epoch 15/15
678/678 [==============================] - 36s 53ms/step - loss: 0.2249 - accuracy: 0.9109 - val_loss: 0.4428 - val_accuracy: 0.8547
<keras.callbacks.History at 0x7f0648c9fa50>
```