TRAIN THE MODEL :

Team ID	PNT2022TMID13764
Project Name	AI-powered Nutrition Analyzer forFitness Enthusiasts

Now, let us train our model with our image dataset. The model is trained for 20 epochs and afterevery 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 20 epochs and probably there is further scope to improve the model.

Fit_generator functions used to train a deep learning

neural networkArguments:

- 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 argumentCan 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 pointsInyour dataset divided by the validation batch size.

```
[16] history = model.fit(train_images, train_labels, epochs=10,
     validation_data=(test_images, test_labels))
```

Epoch 1/10
1563/1563 [==============================] - 83s 53ms/step - loss: 1.5055 - accuracy: 0.4557 - val_loss: 1.1985 - val_accuracy: 0.5770
Epoch 2/10
1563/1563 [==============================] - 78s 50ms/step - loss: 1.1320 - accuracy: 0.6014 - val_loss: 1.0676 - val_accuracy: 0.6261
Epoch 3/10
1563/1563 [==============================] - 76s 49ms/step - loss: 0.9748 - accuracy: 0.6556 - val_loss: 1.0061 - val_accuracy: 0.6506
Epoch 4/10
1563/1563 [==============================] - 78s 50ms/step - loss: 0.8825 - accuracy: 0.6906 - val_loss: 0.9767 - val_accuracy: 0.6707
Epoch 5/10
1563/1563 [==============================] - 76s 49ms/step - loss: 0.8059 - accuracy: 0.7192 - val_loss: 0.9129 - val_accuracy: 0.6876
Epoch 6/10
1563/1563 [==============================] - 78s 50ms/step - loss: 0.7537 - accuracy: 0.7356 - val_loss: 0.8510 - val_accuracy: 0.7098
Epoch 7/10
1563/1563 [==============================] - 78s 50ms/step - loss: 0.6993 - accuracy: 0.7567 - val_loss: 0.8377 - val_accuracy: 0.7190
Epoch 8/10
1563/1563 [==============================] - 78s 50ms/step - loss: 0.6531 - accuracy: 0.7709 - val_loss: 0.8465 - val_accuracy: 0.7175
Epoch 9/10
1563/1563 [==============================] - 76s 49ms/step - loss: 0.6104 - accuracy: 0.7849 - val_loss: 0.8269 - val_accuracy: 0.7250
Epoch 10/10
1563/1563 [==============================] - 78s 50ms/step - loss: 0.5743 - accuracy: 0.7977 - val_loss: 0.8723 - val_accuracy: 0.7218