Project Development PhaseModel Performance Test

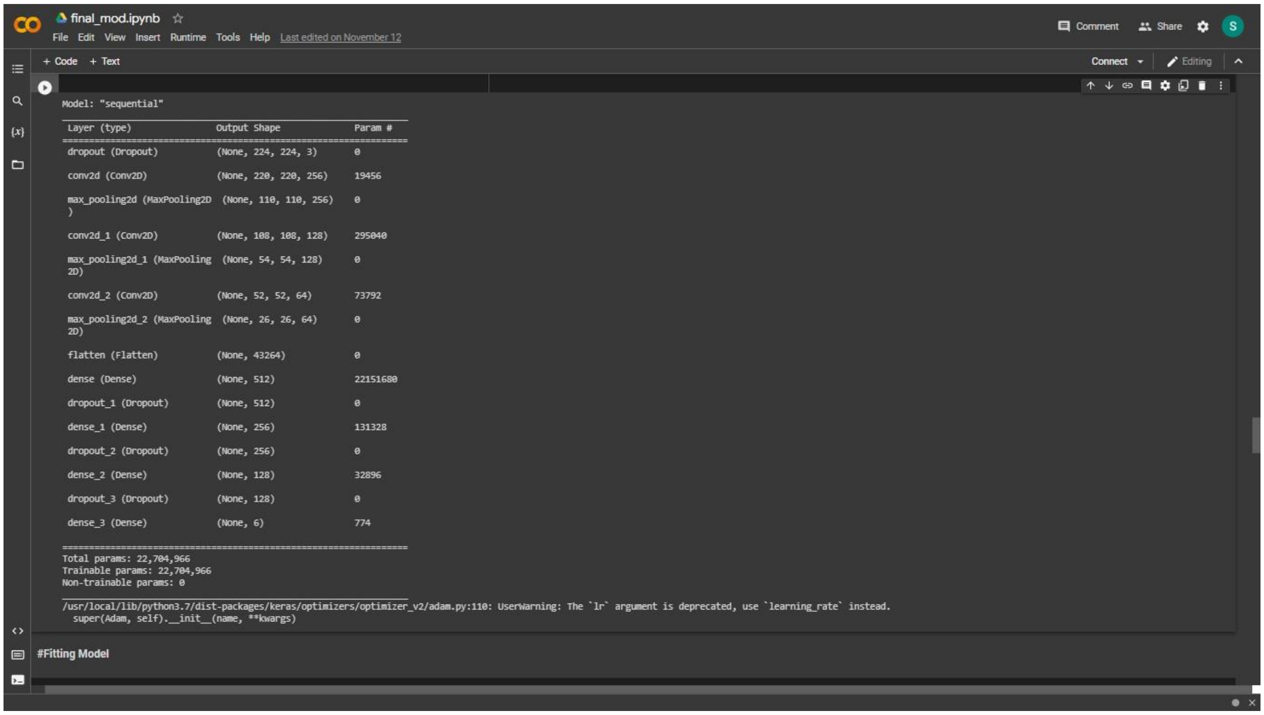
Date	19 November 2022
Team ID	PNT2022TMID12315
Project Name	Digital Naturalist – AI Enabled tool for Biodiversity Researchers
Maximum Marks	10 Marks

Model Performance Testing:

Click Here To view The Project (Hyperlink)

S. No	Parameter	Values	Screenshot
1.	Model Summary	**Total params: 22,704,966** **Trainable params: 22,704,966** **Non-trainable params: 0**	Screenshot 1
2.	Accuracy	Training Accuracy - 92.73% Validation Accuracy – 80.73%	Screenshot 2

SCREENSHOT 1:


final_mod.ipynb
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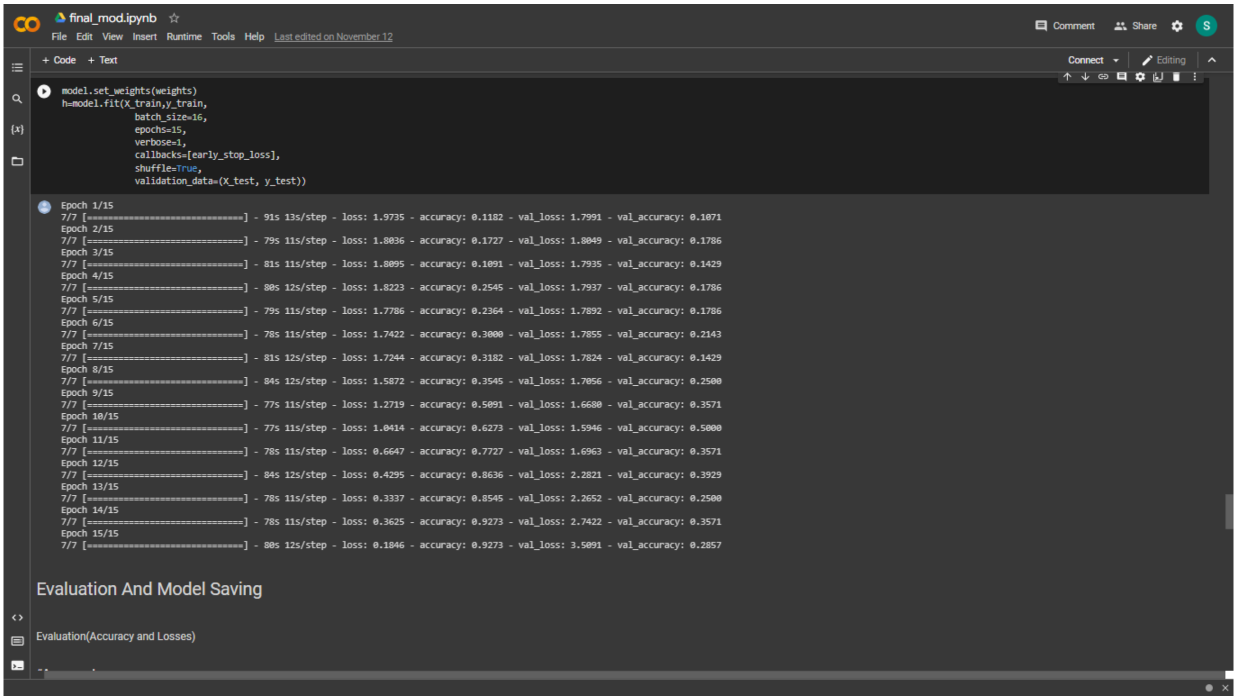
```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 dropout (Dropout)           (None, 224, 224, 3)       0

 conv2d (Conv2D)             (None, 220, 220, 256)     19456

 max_pooling2d (MaxPooling2D  (None, 110, 110, 256)    0
 )

 conv2d_1 (Conv2D)           (None, 108, 108, 128)     295040

 max_pooling2d_1 (MaxPooling  (None, 54, 54, 128)      0
 2D)

 conv2d_2 (Conv2D)           (None, 52, 52, 64)        73792

 max_pooling2d_2 (MaxPooling  (None, 26, 26, 64)       0
 2D)

 flatten (Flatten)           (None, 43264)             0

 dense (Dense)               (None, 512)               22151680

 dropout_1 (Dropout)         (None, 512)               0

 dense_1 (Dense)             (None, 256)               131328

 dropout_2 (Dropout)         (None, 256)               0

 dense_2 (Dense)             (None, 128)               32896

 dropout_3 (Dropout)         (None, 128)               0

 dense_3 (Dense)             (None, 6)                 774

=================================================================
Total params: 22,704,966
Trainable params: 22,704,966
Non-trainable params: 0
_________________________________________________________________
/usr/local/lib/python3.7/dist-packages/keras/optimizers/optimizer_v2/adam.py:110: UserWarning: The `lr` argument is deprecated, use `learning_rate` instead.
  super(Adam, self).__init__(name, **kwargs)
```

#Fitting Model

SCREENSHOT 2:


final_mod.ipynb
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```
model.set_weights(weights)
h=model.fit(X_train,y_train,
              batch_size=16,
              epochs=15,
              verbose=1,
              callbacks=[early_stop_loss],
              shuffle=True,
              validation_data=(X_test, y_test))
```

```
Epoch 1/15
7/7 [==============================] - 91s 13s/step - loss: 1.9735 - accuracy: 0.1182 - val_loss: 1.7991 - val_accuracy: 0.1071
Epoch 2/15
7/7 [==============================] - 79s 11s/step - loss: 1.8036 - accuracy: 0.1727 - val_loss: 1.8049 - val_accuracy: 0.1786
Epoch 3/15
7/7 [==============================] - 81s 11s/step - loss: 1.8095 - accuracy: 0.1091 - val_loss: 1.7935 - val_accuracy: 0.1429
Epoch 4/15
7/7 [==============================] - 80s 12s/step - loss: 1.8223 - accuracy: 0.2545 - val_loss: 1.7937 - val_accuracy: 0.1786
Epoch 5/15
7/7 [==============================] - 79s 11s/step - loss: 1.7786 - accuracy: 0.2364 - val_loss: 1.7892 - val_accuracy: 0.1786
Epoch 6/15
7/7 [==============================] - 78s 11s/step - loss: 1.7422 - accuracy: 0.3000 - val_loss: 1.7855 - val_accuracy: 0.2143
Epoch 7/15
7/7 [==============================] - 81s 12s/step - loss: 1.7244 - accuracy: 0.3182 - val_loss: 1.7824 - val_accuracy: 0.1429
Epoch 8/15
7/7 [==============================] - 84s 12s/step - loss: 1.5872 - accuracy: 0.3545 - val_loss: 1.7056 - val_accuracy: 0.2500
Epoch 9/15
7/7 [==============================] - 77s 11s/step - loss: 1.2719 - accuracy: 0.5091 - val_loss: 1.6680 - val_accuracy: 0.3571
Epoch 10/15
7/7 [==============================] - 77s 11s/step - loss: 1.0414 - accuracy: 0.6273 - val_loss: 1.5946 - val_accuracy: 0.5000
Epoch 11/15
7/7 [==============================] - 78s 11s/step - loss: 0.6647 - accuracy: 0.7727 - val_loss: 1.6963 - val_accuracy: 0.3571
Epoch 12/15
7/7 [==============================] - 84s 12s/step - loss: 0.4295 - accuracy: 0.8636 - val_loss: 2.2821 - val_accuracy: 0.3929
Epoch 13/15
7/7 [==============================] - 78s 11s/step - loss: 0.3337 - accuracy: 0.8545 - val_loss: 2.2652 - val_accuracy: 0.2500
Epoch 14/15
7/7 [==============================] - 78s 11s/step - loss: 0.3625 - accuracy: 0.9273 - val_loss: 2.7422 - val_accuracy: 0.3571
Epoch 15/15
7/7 [==============================] - 80s 12s/step - loss: 0.1846 - accuracy: 0.9273 - val_loss: 3.5091 - val_accuracy: 0.2857
```

Evaluation And Model Saving

Evaluation(Accuracy and Losses)