Project Development Phase
Model Performance Test

Date	18 November 2022
Team ID	PNT2022TMID00210
Project Name	Project - Natural disaster intensity analysis and classification using artificial intelligence
Maximum Marks	10 Marks

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Model Summary	**CNN-** {optimizer:Adam,loss:categorical_ crossentropy,metrics:accuracy}	Refer fig 1.1
2.	Accuracy	Training Accuracy - 91.51% Validation Accuracy -73.74%	Refer fig 1.2

```
model=Sequential()
model.add(Conv2D(32,(3,3),input_shape=(64,64,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Conv2D(32,(3,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())
model.add(Dense(units=128,activation='relu'))
model.add(Dense(units=4,activation='softmax'))
model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['accuracy'])
```

```
model.summary()
```

```
Model: "sequential_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_2 (Conv2D)           (None, 62, 62, 32)        896

 max_pooling2d_2 (MaxPooling  (None, 31, 31, 32)       0
 2D)

 conv2d_3 (Conv2D)           (None, 29, 29, 32)        9248

 max_pooling2d_3 (MaxPooling  (None, 14, 14, 32)       0
 2D)

 flatten_1 (Flatten)         (None, 6272)              0

 dense_2 (Dense)             (None, 128)               802944

 dense_3 (Dense)             (None, 4)                 516

=================================================================
Total params: 813,604
Trainable params: 813,604
Non-trainable params: 0
_________________________________________________________________
```

Fig 1.1

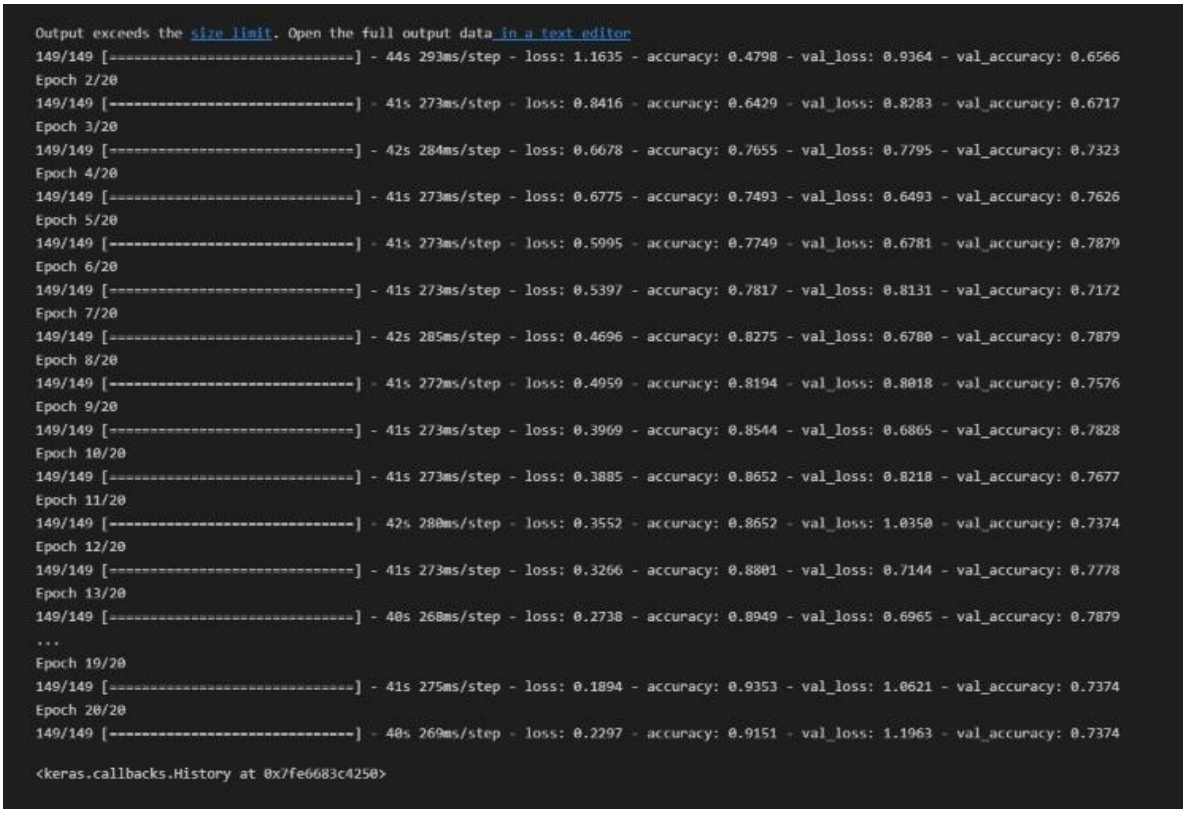
Output exceeds the size limit. Open the full output data in a text editor
149/149 [==============================] - 44s 293ms/step - loss: 1.1635 - accuracy: 0.4798 - val_loss: 0.9364 - val_accuracy: 0.6566
Epoch 2/20
149/149 [==============================] - 41s 273ms/step - loss: 0.8416 - accuracy: 0.6429 - val_loss: 0.8283 - val_accuracy: 0.6717
Epoch 3/20
149/149 [==============================] - 42s 284ms/step - loss: 0.6678 - accuracy: 0.7655 - val_loss: 0.7795 - val_accuracy: 0.7323
Epoch 4/20
149/149 [==============================] - 41s 273ms/step - loss: 0.6775 - accuracy: 0.7493 - val_loss: 0.6493 - val_accuracy: 0.7626
Epoch 5/20
149/149 [==============================] - 41s 273ms/step - loss: 0.5995 - accuracy: 0.7749 - val_loss: 0.6781 - val_accuracy: 0.7879
Epoch 6/20
149/149 [==============================] - 41s 273ms/step - loss: 0.5397 - accuracy: 0.7817 - val_loss: 0.8131 - val_accuracy: 0.7172
Epoch 7/20
149/149 [==============================] - 42s 285ms/step - loss: 0.4696 - accuracy: 0.8275 - val_loss: 0.6780 - val_accuracy: 0.7879
Epoch 8/20
149/149 [==============================] - 41s 272ms/step - loss: 0.4959 - accuracy: 0.8194 - val_loss: 0.8018 - val_accuracy: 0.7576
Epoch 9/20
149/149 [==============================] - 41s 273ms/step - loss: 0.3969 - accuracy: 0.8544 - val_loss: 0.6865 - val_accuracy: 0.7828
Epoch 10/20
149/149 [==============================] - 41s 273ms/step - loss: 0.3885 - accuracy: 0.8652 - val_loss: 0.8218 - val_accuracy: 0.7677
Epoch 11/20
149/149 [==============================] - 42s 280ms/step - loss: 0.3552 - accuracy: 0.8652 - val_loss: 1.0350 - val_accuracy: 0.7374
Epoch 12/20
149/149 [==============================] - 41s 273ms/step - loss: 0.3266 - accuracy: 0.8801 - val_loss: 0.7144 - val_accuracy: 0.7778
Epoch 13/20
149/149 [==============================] - 40s 268ms/step - loss: 0.2738 - accuracy: 0.8949 - val_loss: 0.6965 - val_accuracy: 0.7879
...
Epoch 19/20
149/149 [==============================] - 41s 275ms/step - loss: 0.1894 - accuracy: 0.9353 - val_loss: 1.0621 - val_accuracy: 0.7374
Epoch 20/20
149/149 [==============================] - 40s 269ms/step - loss: 0.2297 - accuracy: 0.9151 - val_loss: 1.1963 - val_accuracy: 0.7374
<keras.callbacks.History at 0x7fe6683c4250>

Fig 1.2