**EARLY DETECTION OF FOREST FIRE USING DEEP LEARNING**

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| Date | 12 November 2022 |
| Team ID | PNT2022TMID54434 |
| Project Name | Emerging Methods for Early Detection of Forest Fires |

**( Training the model)**

# Training the model

```
:  model.fit(x_train,steps_per_epoch=13,epochs=30,validation_data=x_test,validation_steps=3)
   #steps_per_epoch = no of training images/batch size
   #validation_steps = no of testing images/batch size
```

```
Epoch 1/30
13/13 [==============================] - 35s 3s/step - loss: 1.2777 - accuracy: 0.6906 - val_loss: 0.1433 - val_accuracy: 0.947
9
Epoch 2/30
13/13 [==============================] - 32s 2s/step - loss: 0.2452 - accuracy: 0.8886 - val_loss: 0.1780 - val_accuracy: 0.937
5
Epoch 3/30
13/13 [==============================] - 31s 2s/step - loss: 0.2379 - accuracy: 0.8812 - val_loss: 0.0777 - val_accuracy: 0.968
8
Epoch 4/30
13/13 [==============================] - 31s 2s/step - loss: 0.1669 - accuracy: 0.9257 - val_loss: 0.0580 - val_accuracy: 0.989
6
Epoch 5/30
13/13 [==============================] - 50s 4s/step - loss: 0.2029 - accuracy: 0.9158 - val_loss: 0.1837 - val_accuracy: 0.927
1
Epoch 6/30
13/13 [==============================] - 34s 3s/step - loss: 0.2043 - accuracy: 0.9059 - val_loss: 0.1173 - val_accuracy: 0.968
8
Epoch 7/30
13/13 [==============================] - 35s 3s/step - loss: 0.1687 - accuracy: 0.9356 - val_loss: 0.0698 - val_accuracy: 0.979
2
Epoch 8/30
13/13 [==============================] - 47s 4s/step - loss: 0.1475 - accuracy: 0.9332 - val_loss: 0.0681 - val_accuracy: 0.968
8
Epoch 9/30
13/13 [==============================] - 43s 3s/step - loss: 0.1168 - accuracy: 0.9579 - val_loss: 0.0506 - val_accuracy: 0.979
2
```

```
Epoch 10/30
13/13 [==============================] - 35s 3s/step - loss: 0.1575 - accuracy: 0.9307 - val_loss: 0.0273 - val_accuracy: 1.000
0
Epoch 11/30
13/13 [==============================] - 38s 3s/step - loss: 0.1306 - accuracy: 0.9431 - val_loss: 0.0281 - val_accuracy: 1.000
0
Epoch 12/30
13/13 [==============================] - 36s 3s/step - loss: 0.1195 - accuracy: 0.9543 - val_loss: 0.0217 - val_accuracy: 0.989
6
Epoch 13/30
13/13 [==============================] - 34s 3s/step - loss: 0.1202 - accuracy: 0.9653 - val_loss: 0.0284 - val_accuracy: 0.989
6
Epoch 14/30
13/13 [==============================] - 36s 3s/step - loss: 0.1102 - accuracy: 0.9579 - val_loss: 0.0336 - val_accuracy: 0.979
2
Epoch 15/30
13/13 [==============================] - 38s 3s/step - loss: 0.1340 - accuracy: 0.9455 - val_loss: 0.0169 - val_accuracy: 0.989
6
Epoch 16/30
13/13 [==============================] - 47s 4s/step - loss: 0.1156 - accuracy: 0.9579 - val_loss: 0.0227 - val_accuracy: 1.000
0
Epoch 17/30
13/13 [==============================] - 39s 3s/step - loss: 0.1126 - accuracy: 0.9505 - val_loss: 0.0121 - val_accuracy: 1.000
0
Epoch 18/30
13/13 [==============================] - 38s 3s/step - loss: 0.0923 - accuracy: 0.9678 - val_loss: 0.0096 - val_accuracy: 1.000
0
```

```
Epoch 19/30
13/13 [==============================] - 39s 3s/step - loss: 0.0895 - accuracy: 0.9653 - val_loss: 0.0065 - val_accuracy: 1.000
0
Epoch 20/30
13/13 [==============================] - 39s 3s/step - loss: 0.1103 - accuracy: 0.9604 - val_loss: 0.0144 - val_accuracy: 1.000
0
Epoch 21/30
13/13 [==============================] - 40s 3s/step - loss: 0.1265 - accuracy: 0.9480 - val_loss: 0.0427 - val_accuracy: 0.979
2
Epoch 22/30
13/13 [==============================] - 43s 3s/step - loss: 0.1068 - accuracy: 0.9530 - val_loss: 0.0204 - val_accuracy: 1.000
0
Epoch 23/30
13/13 [==============================] - 44s 3s/step - loss: 0.1069 - accuracy: 0.9505 - val_loss: 0.0131 - val_accuracy: 1.000
0
Epoch 24/30
13/13 [==============================] - 41s 3s/step - loss: 0.1265 - accuracy: 0.9505 - val_loss: 0.0192 - val_accuracy: 1.000
0
Epoch 25/30
13/13 [==============================] - 35s 3s/step - loss: 0.0929 - accuracy: 0.9653 - val_loss: 0.0075 - val_accuracy: 1.000
0
Epoch 26/30
13/13 [==============================] - 39s 3s/step - loss: 0.0719 - accuracy: 0.9777 - val_loss: 0.0050 - val_accuracy: 1.000
0
Epoch 27/30
13/13 [==============================] - 40s 3s/step - loss: 0.0675 - accuracy: 0.9777 - val_loss: 0.0458 - val_accuracy: 0.979
2
```

```
Epoch 28/30
13/13 [==============================] - 38s 3s/step - loss: 0.1056 - accuracy: 0.9629 - val_loss: 0.0151 - val_accuracy: 1.000
0
Epoch 29/30
13/13 [==============================] - 40s 3s/step - loss: 0.0937 - accuracy: 0.9604 - val_loss: 0.0076 - val_accuracy: 1.000
0
Epoch 30/30
13/13 [==============================] - 43s 3s/step - loss: 0.0909 - accuracy: 0.9752 - val_loss: 0.0138 - val_accuracy: 1.000
0
```