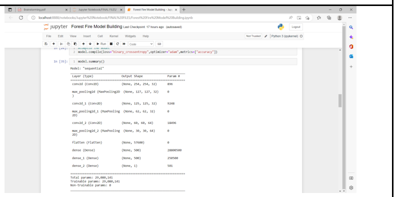
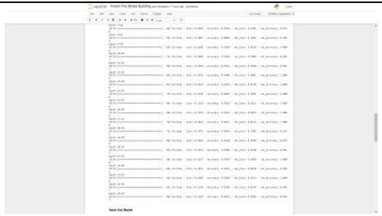
Project Development Phase
Model Performance Test

Date	19 November 2022
Team ID	PNT2022TMID35796
Project Name	Project - Emerging Methods for Early Detection Of Forest Fires
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	Attached below	
2.	Accuracy	Training Accuracy - 0.9654 Validation Accuracy – 0.991	

Brainstorming.pdf
Jupyter Notebook/FINAL FILES/
Forest Fire Model Building - Jup
localhost:8888/notebooks/Jupyter%20Notebook/FINAL%20FILES/Forest%20Fire%20Model%20Building.ipynb
jupyter Forest Fire Model Building Last Checkpoint: 17 hours ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Not Trusted
Python 3 (ipykernel)
Run
Code

```
model.compile(loss="binary_crossentropy",optimizer="adam",metrics=["accuracy"])

In [35]: model.summary()

Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d (Conv2D)             (None, 254, 254, 32)      896

 max_pooling2d (MaxPooling2D  (None, 127, 127, 32)     0
 )

 conv2d_1 (Conv2D)           (None, 125, 125, 32)      9248

 max_pooling2d_1 (MaxPooling  (None, 62, 62, 32)       0
 2D)

 conv2d_2 (Conv2D)           (None, 60, 60, 64)        18496

 max_pooling2d_2 (MaxPooling  (None, 30, 30, 64)       0
 2D)

 flatten (Flatten)           (None, 57600)             0

 dense (Dense)               (None, 500)               28800500

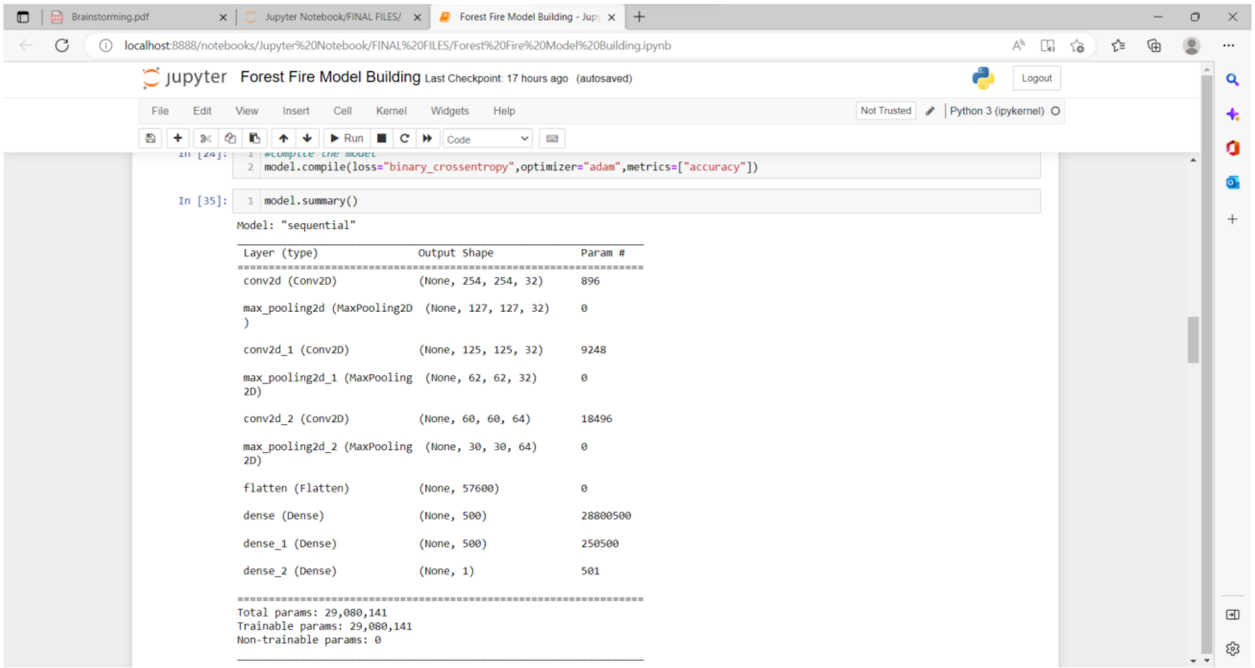
 dense_1 (Dense)             (None, 500)               250500

 dense_2 (Dense)             (None, 1)                 501

=================================================================
Total params: 29,080,141
Trainable params: 29,080,141
Non-trainable params: 0
_________________________________________________________________
```

<u>Model Summary:</u>

Screenshot:



Brainstorming.pdf
Jupyter Notebook/FINAL FILES/
Forest Fire Model Building - Jupy
localhost:8888/notebooks/Jupyter%20Notebook/FINAL%20FILES/Forest%20Fire%20Model%20Building.ipynb
jupyter
Forest Fire Model Building Last Checkpoint: 17 hours ago (autosaved)
Logout
File
Edit
View
Insert
Cell
Kernel
Widgets
Help
Not Trusted
Python 3 (ipykernel)
Run
Code

```
In [24]:  #compile the model
          model.compile(loss="binary_crossentropy",optimizer="adam",metrics=["accuracy"])
```

```
In [35]:  model.summary()
```

```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d (Conv2D)             (None, 254, 254, 32)      896

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 max_pooling2d_1 (MaxPooling  (None, 62, 62, 32)       0
 2D)

 conv2d_2 (Conv2D)           (None, 60, 60, 64)        18496

 max_pooling2d_2 (MaxPooling  (None, 30, 30, 64)       0
 2D)

 flatten (Flatten)           (None, 57600)             0

 dense (Dense)               (None, 500)               28800500

 dense_1 (Dense)             (None, 500)               250500

 dense_2 (Dense)             (None, 1)                 501

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Total params: 29,080,141
Trainable params: 29,080,141
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Values:

```
Layer (type)                Output Shape              Param #
=================================================================
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 max_pooling2d (MaxPooling2D  (None, 127, 127, 32)     0
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 max_pooling2d_1 (MaxPooling  (None, 62, 62, 32)       0
 2D)

 conv2d_2 (Conv2D)           (None, 60, 60, 64)        18496

 max_pooling2d_2 (MaxPooling  (None, 30, 30, 64)       0
 2D)

 flatten (Flatten)           (None, 57600)             0

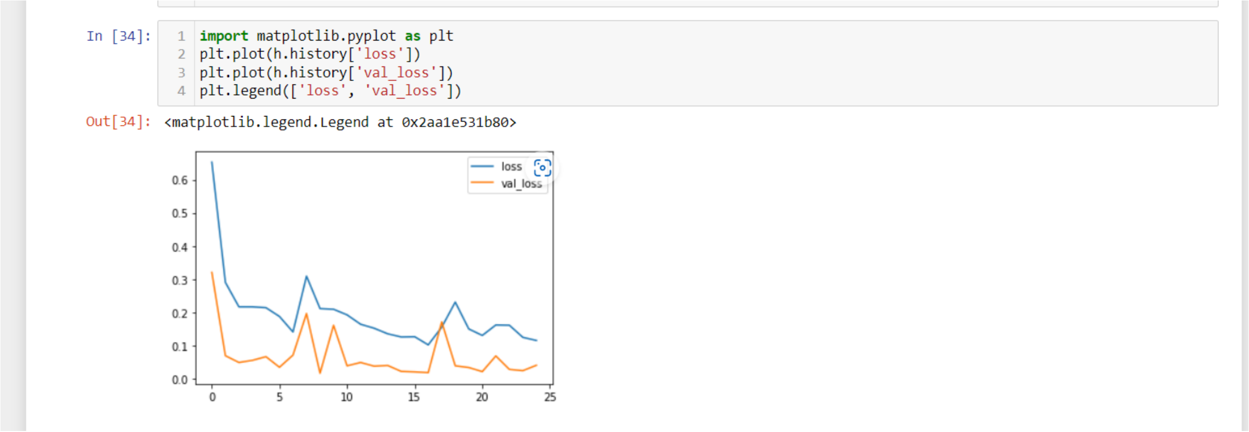
 dense (Dense)               (None, 500)               28800500

 dense_1 (Dense)             (None, 500)               250500

 dense_2 (Dense)             (None, 1)                 501

=================================================================
Total params: 29,080,141
Trainable params: 29,080,141
Non-trainable params: 0
```

Accuracy:



In [34]:

```
import matplotlib.pyplot as plt
plt.plot(h.history['loss'])
plt.plot(h.history['val_loss'])
plt.legend(['loss', 'val_loss'])
```

Out[34]: `<matplotlib.legend.Legend at 0x2aa1e531b80>`

```
Epoch 1/25
14/14 [==============================] - 76s 5s/step - loss: 0.6528 - accu
racy: 0.6697 - val_loss: 0.3201 - val_accuracy: 0.9167
Epoch 2/25
14/14 [==============================] - 64s 5s/step - loss: 0.2900 - accu
racy: 0.8730 - val_loss: 0.0686 - val_accuracy: 0.9750
Epoch 3/25
14/14 [==============================] - 62s 4s/step - loss: 0.2161 - accu
racy: 0.9145 - val_loss: 0.0482 - val_accuracy: 1.0000
Epoch 4/25
14/14 [==============================] - 63s 4s/step - loss: 0.2161 - accu
racy: 0.9053 - val_loss: 0.0545 - val_accuracy: 0.9833
Epoch 5/25
14/14 [==============================] - 67s 5s/step - loss: 0.2135 - accu
racy: 0.9145 - val_loss: 0.0656 - val_accuracy: 0.9917
Epoch 6/25
14/14 [==============================] - 66s 5s/step - loss: 0.1870 - accu
racy: 0.9169 - val_loss: 0.0337 - val_accuracy: 0.9917
Epoch 7/25
14/14 [==============================] - 64s 4s/step - loss: 0.1402 - accu
racy: 0.9330 - val_loss: 0.0705 - val_accuracy: 0.9750
Epoch 8/25
14/14 [==============================] - 65s 5s/step - loss: 0.3087 - accu
racy: 0.8868 - val_loss: 0.1961 - val_accuracy: 0.9583
Epoch 9/25
14/14 [==============================] - 65s 5s/step - loss: 0.2108 - accu
racy: 0.9284 - val_loss: 0.0156 - val_accuracy: 1.0000
Epoch 10/25
14/14 [==============================] - 79s 6s/step - loss: 0.2088 - accu
racy: 0.9169 - val_loss: 0.1604 - val_accuracy: 0.8833
Epoch 11/25
14/14 [==============================] - 85s 6s/step - loss: 0.1918 - accu
racy: 0.9192 - val_loss: 0.0380 - val_accuracy: 0.9917
Epoch 12/25
```

```
14/14 [==============================] - 86s 6s/step - loss: 0.1635 - accu
racy: 0.9400 - val_loss: 0.0481 - val_accuracy: 1.0000
Epoch 13/25
14/14 [==============================] - 87s 6s/step - loss: 0.1515 - accu
racy: 0.9376 - val_loss: 0.0370 - val_accuracy: 1.0000
Epoch 14/25
14/14 [==============================] - 75s 5s/step - loss: 0.1348 - accu
racy: 0.9607 - val_loss: 0.0391 - val_accuracy: 1.0000
Epoch 15/25
14/14 [==============================] - 94s 7s/step - loss: 0.1252 - accu
racy: 0.9538 - val_loss: 0.0212 - val_accuracy: 1.0000
Epoch 16/25
14/14 [==============================] - 80s 6s/step - loss: 0.1259 - accu
racy: 0.9561 - val_loss: 0.0197 - val_accuracy: 1.0000
Epoch 17/25
14/14 [==============================] - 74s 5s/step - loss: 0.1013 - accu
racy: 0.9677 - val_loss: 0.0174 - val_accuracy: 1.0000
Epoch 18/25
14/14 [==============================] - 72s 5s/step - loss: 0.1547 - accu
racy: 0.9654 - val_loss: 0.1707 - val_accuracy: 0.9333
Epoch 19/25
14/14 [==============================] - 68s 5s/step - loss: 0.2305 - accu
racy: 0.9238 - val_loss: 0.0380 - val_accuracy: 0.9750
Epoch 20/25
14/14 [==============================] - 66s 5s/step - loss: 0.1493 - accu
racy: 0.9400 - val_loss: 0.0328 - val_accuracy: 0.9917
Epoch 21/25
14/14 [==============================] - 68s 5s/step - loss: 0.1297 - accu
racy: 0.9584 - val_loss: 0.0205 - val_accuracy: 1.0000
Epoch 22/25
14/14 [==============================] - 64s 5s/step - loss: 0.1613 - accu
racy: 0.9515 - val_loss: 0.0678 - val_accuracy: 0.9833
Epoch 23/25
14/14 [==============================] - 61s 4s/step - loss: 0.1606 - accu
racy: 0.9469 - val_loss: 0.0272 - val_accuracy: 1.0000
Epoch 24/25
14/14 [==============================] - 63s 5s/step - loss: 0.1239 - accu
racy: 0.9538 - val_loss: 0.0234 - val_accuracy: 0.9917
Epoch 25/25
14/14 [==============================] - 88s 6s/step - loss: 0.1145 - accu
racy: 0.9654 - val_loss: 0.0396 - val_accuracy: 0.9917
```