Group No: 20

Project Title: Fire and Smoke Detection using Images

Group Members:

Sarthak Dave AU2244001

Yukta Patel AU2244002

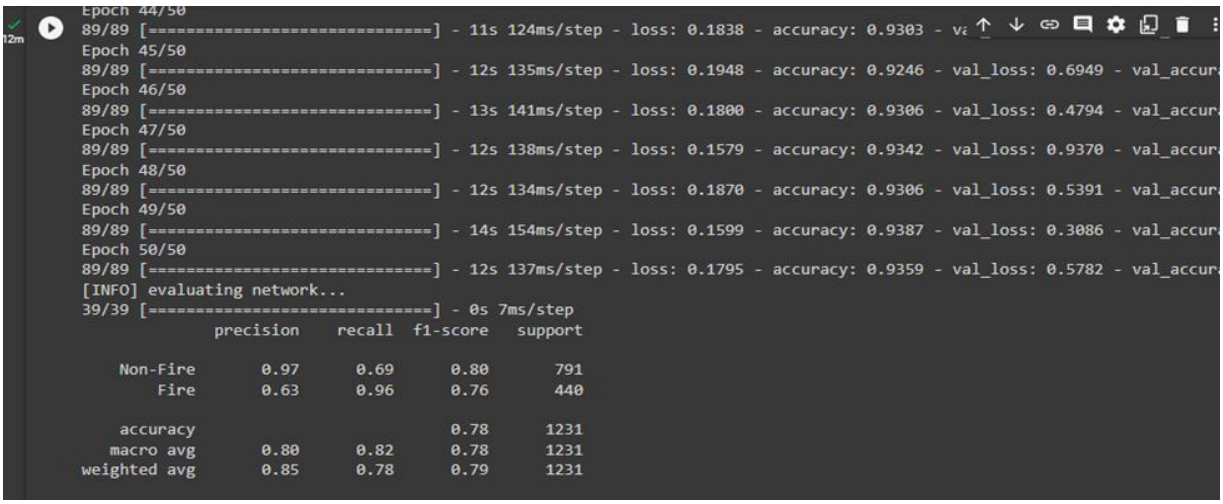
Saiyam Sanghvi AU2244003

Dhaval Makwana AU2244004

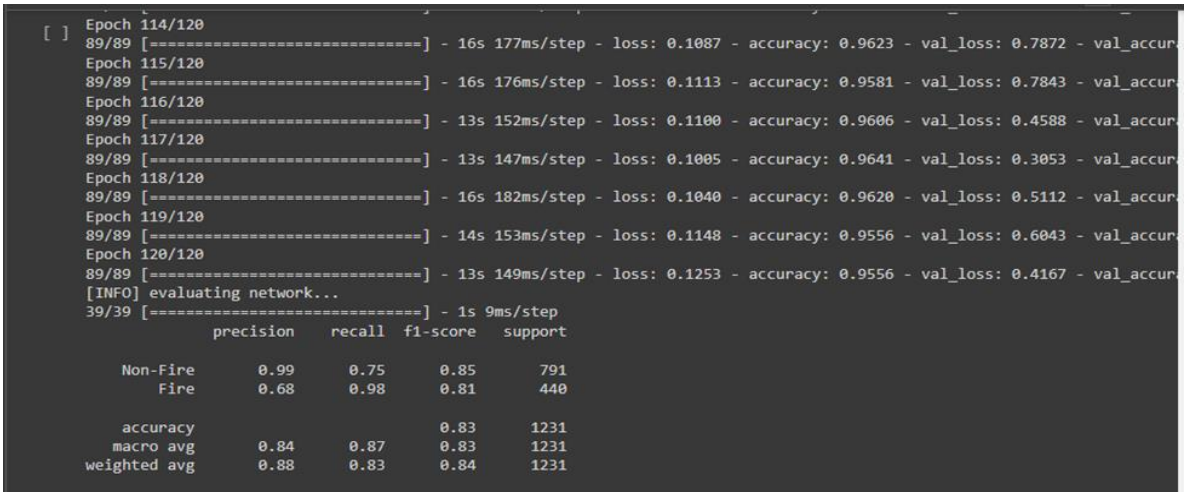
Weekly Progress Report

➢ **Tasks Performed in the week:**

This week We trained our model CNN using Keras. Before jumping directly to model we manually inspected the generated learning rate plot, i.e., the optimal learning rate we determined by analysing the plot.
For training the data, we load and pre-process the image just as in training, make predictions and grab the highest probability label, Annotate the label in the top corner of the image, Save the output image to disk.
In the model that we created we changed the learning rates and epochs quite a few times to see the effect it had on the result.

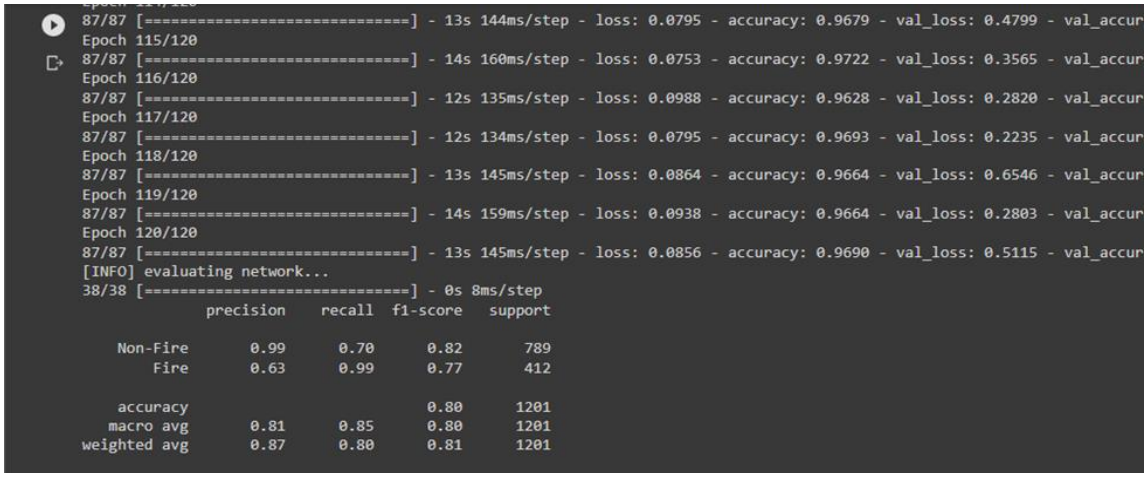


Here We tried to train our model using 50 epochs, it can be seen it is not much accurate right now.



Here We changed the epoch number to 120, and the change can be seen in the accuracy.

Here We kept the epoch same but we changed the learning rate to see the effect it has on the result.



```
87/87 [==============================] - 13s 144ms/step - loss: 0.0795 - accuracy: 0.9679 - val_loss: 0.4799 - val_accur
Epoch 115/120
87/87 [==============================] - 14s 160ms/step - loss: 0.0753 - accuracy: 0.9722 - val_loss: 0.3565 - val_accur
Epoch 116/120
87/87 [==============================] - 12s 135ms/step - loss: 0.0988 - accuracy: 0.9628 - val_loss: 0.2820 - val_accur
Epoch 117/120
87/87 [==============================] - 12s 134ms/step - loss: 0.0795 - accuracy: 0.9693 - val_loss: 0.2235 - val_accur
Epoch 118/120
87/87 [==============================] - 13s 145ms/step - loss: 0.0864 - accuracy: 0.9664 - val_loss: 0.6546 - val_accur
Epoch 119/120
87/87 [==============================] - 14s 159ms/step - loss: 0.0938 - accuracy: 0.9664 - val_loss: 0.2803 - val_accur
Epoch 120/120
87/87 [==============================] - 13s 145ms/step - loss: 0.0856 - accuracy: 0.9690 - val_loss: 0.5115 - val_accur
[INFO] evaluating network...
38/38 [==============================] - 0s 8ms/step
              precision    recall  f1-score   support

    Non-Fire       0.99      0.70      0.82       789
        Fire       0.63      0.99      0.77       412

    accuracy                           0.80      1201
   macro avg       0.81      0.85      0.80      1201
weighted avg       0.87      0.80      0.81      1201
```

➢ Outcome of the task performed:

This week, we made progress by training the model. There are many parameters on which the accuracy depends, including the learning rate, epoch, and loss function. We recorded the time taken to train the model, as well as any changes made to the hardware or software to improve training speed. We also discussed the next steps for improving the model's accuracy, such as fine-tuning, data augmentation, or adjusting hyperparameters, which can provide us with better accuracy.

➢ Tasks to be performed in the upcoming week:

- We wont settle for this accuracy we'll try to augment the data which can help us to improve the accuracy