

# Deep Learning Model (ENF1)

Sir, I found that there are many models working on deepfake detection, but when I ran this model(**ENF1**) on videos, it produced very good results. I trained this model for only 10 epochs, even though the dataset is huge, with more than 3,000 videos. Below are the results. Moreover, the model's weight is just 24MB, whereas existing models are much heavier, ranging from 110MB to 220MB. Despite being lightweight, this model's architecture performs well, as both the training loss and validation accuracy decrease and increase linearly, indicating that the model is not overfitted. We can achieve higher accuracy and better results by increasing the number of epochs and adding more neural network layers.

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Cancel Run

Code

Draft Session (39m)

GPU T4 x2 On

```
plt.subplot(1, 2, 2)
plt.plot(range(1, len(val_accuracies) + 1), val_accuracies, marker='o', linestyle='solid')
plt.xlabel('Epochs')
plt.ylabel('Validation Accuracy')
plt.title('Validation Accuracy Over Epochs')

plt.show()
```

✔ Dataset CSV saved to: /kaggle/working/deepfake\_dataset.csv

/usr/local/lib/python3.10/dist-packages/torchvision/models/\_utils.py:208: UserWarning: The attribute 'weights' of 'EfficientNet\_B0' is deprecated since 0.13 and may be removed in the future, please use 'weights' instead.

/usr/local/lib/python3.10/dist-packages/torchvision/models/\_utils.py:223: UserWarning: Argument 'weights' of 'EfficientNet\_B0' is deprecated since 0.13 and may be removed in the future, please use 'weights' instead.

Epoch 1/10 - accuracy: 63.1739 - loss: 0.6433 - val\_accuracy: 65.2504 - val\_loss: 0.6029  
Epoch 2/10 - accuracy: 67.7677 - loss: 0.6089 - val\_accuracy: 69.1958 - val\_loss: 0.5734  
Epoch 3/10 - accuracy: 69.5520 - loss: 0.5800 - val\_accuracy: 74.8103 - val\_loss: 0.5489  
Epoch 4/10 - accuracy: 72.3235 - loss: 0.5569 - val\_accuracy: 72.8376 - val\_loss: 0.5435  
Epoch 5/10 - accuracy: 73.8041 - loss: 0.5326 - val\_accuracy: 74.9621 - val\_loss: 0.5332  
Epoch 6/10 - accuracy: 75.4366 - loss: 0.5162 - val\_accuracy: 72.9894 - val\_loss: 0.5386  
Epoch 7/10 - accuracy: 74.1458 - loss: 0.5151 - val\_accuracy: 76.0243 - val\_loss: 0.4937  
Epoch 8/10 - accuracy: 78.7775 - loss: 0.4691 - val\_accuracy: 73.7481 - val\_loss: 0.5963

Draft Session

GPU T4 x2 On

Session 39m 12 hours

Disk 2.3GiB Max 57.6GiB

CPU 198.00%

RAM 2.5GiB Max 29GiB

GPU 100.00%

GPU Memory 4.6GiB Max 15GiB

GPU 0.00%

GPU Memory 3MiB Max 15GiB

Notebook

Input

+ Add Input

📄 Upload

DATASETS

real-and-fake-video-dataset

DFDC\_FAKE\_Face\_only\_data-20250327T0

DFDC\_REAL\_Face\_only\_data-20250327T0

DFDC\_REAL\_Face\_only\_data

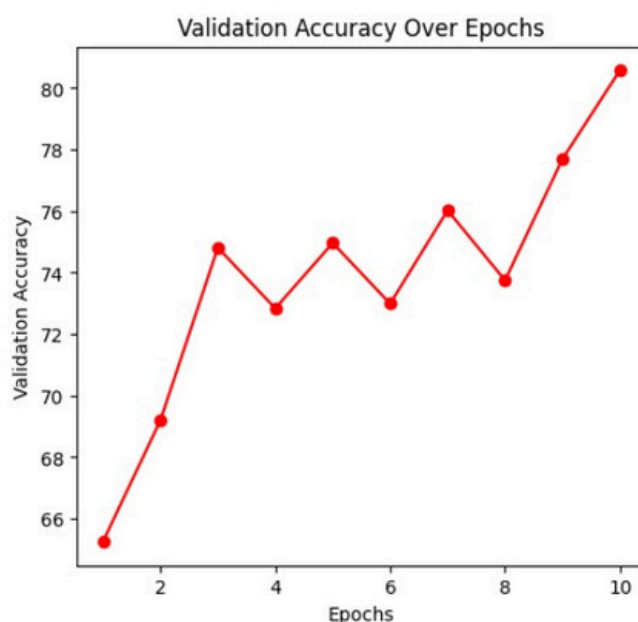
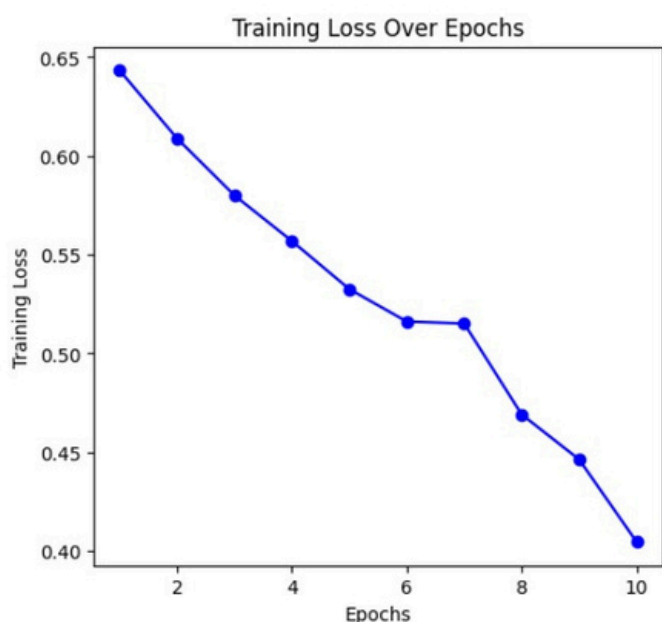
Output (568KiB / 19.5GiB)

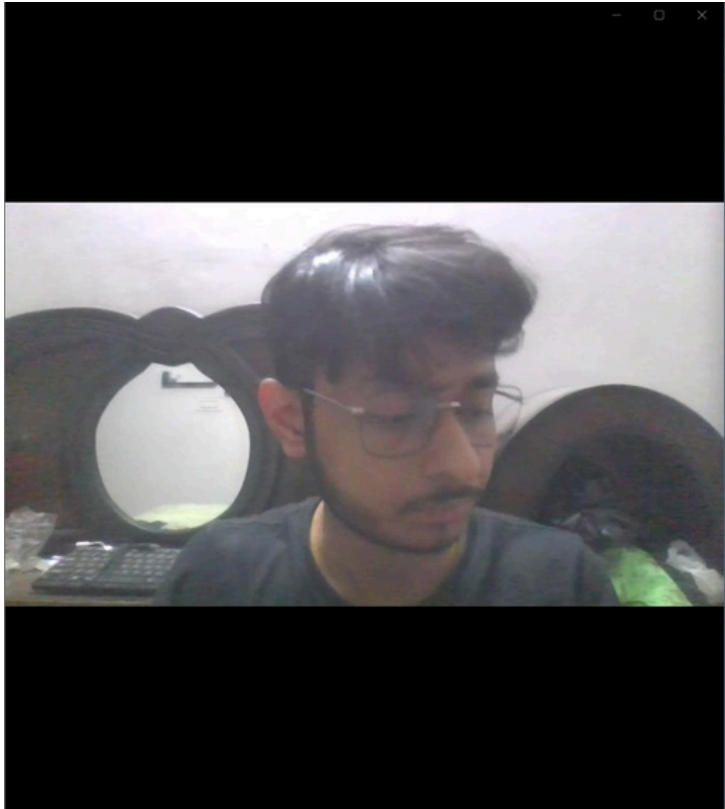
/kaggle/working

deepfake\_dataset.csv

output.csv

Table of contents





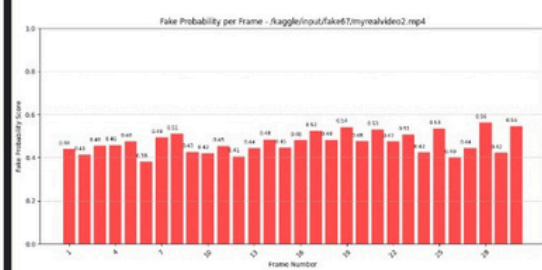
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Draft saved

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+ Run All ...

Frame 30: 0.5468



0.4688948174317678  
Prediction: Real

+ Code + Markdown

abhqmggsqu.m... X

Draft Session (11m)

# Working with 300 frames

notebookfe44cac923

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+ Run All Code

cap.release()

# Ensure we return exactly max\_frames (either crop or pad)  
while len(frames) < max\_frames:  
 frames.append(torch.zeros(3, 224, 224)) # Pad with black frames  
return torch.stack(frames) # Shape: (max\_frames, 3, 224, 224)

test\_video\_path = "/kaggle/input/fakev6/myrealvideo.mp4"  
prediction = predict\_video(test\_video\_path, model)  
print(f"🤖 Prediction: {prediction}")

Total Frames Processed: 300

🤖 Fake Probability per Frame:  
Frame 1: 0.5546  
Frame 2: 0.5722  
Frame 3: 0.3678  
Frame 4: 0.6468  
Frame 5: 0.5730  
Frame 6: 0.4832  
Frame 7: 0.6247  
Frame 8: 0.5318  
Frame 9: 0.6534

abhqmggsqu.m... X

Draft Session

No Accelerator

Session 2m  
12 hours

Disk 2.3GiB  
Max 57.6GiB

CPU 199.00%  
RAM 863.2MiB  
Max 30GiB

deepfakev3

FakefromMobile.mp4

fakev1

kagglefakevideo.mp4

fakev4

fake-agotmizucf-1.mp4

fakev5

fakev6

myrealvideo.mp4

real-and-fake-video-dataset

DFDC\_FAKE\_Face\_only\_data-20250327T0

DFDC\_REAL\_Face\_only\_data-20250327T0

MODELS

DeepFakeDetection - default - V1

NOTEBOOKS

Intro to Deep Fakes, Videos and Metadata ED

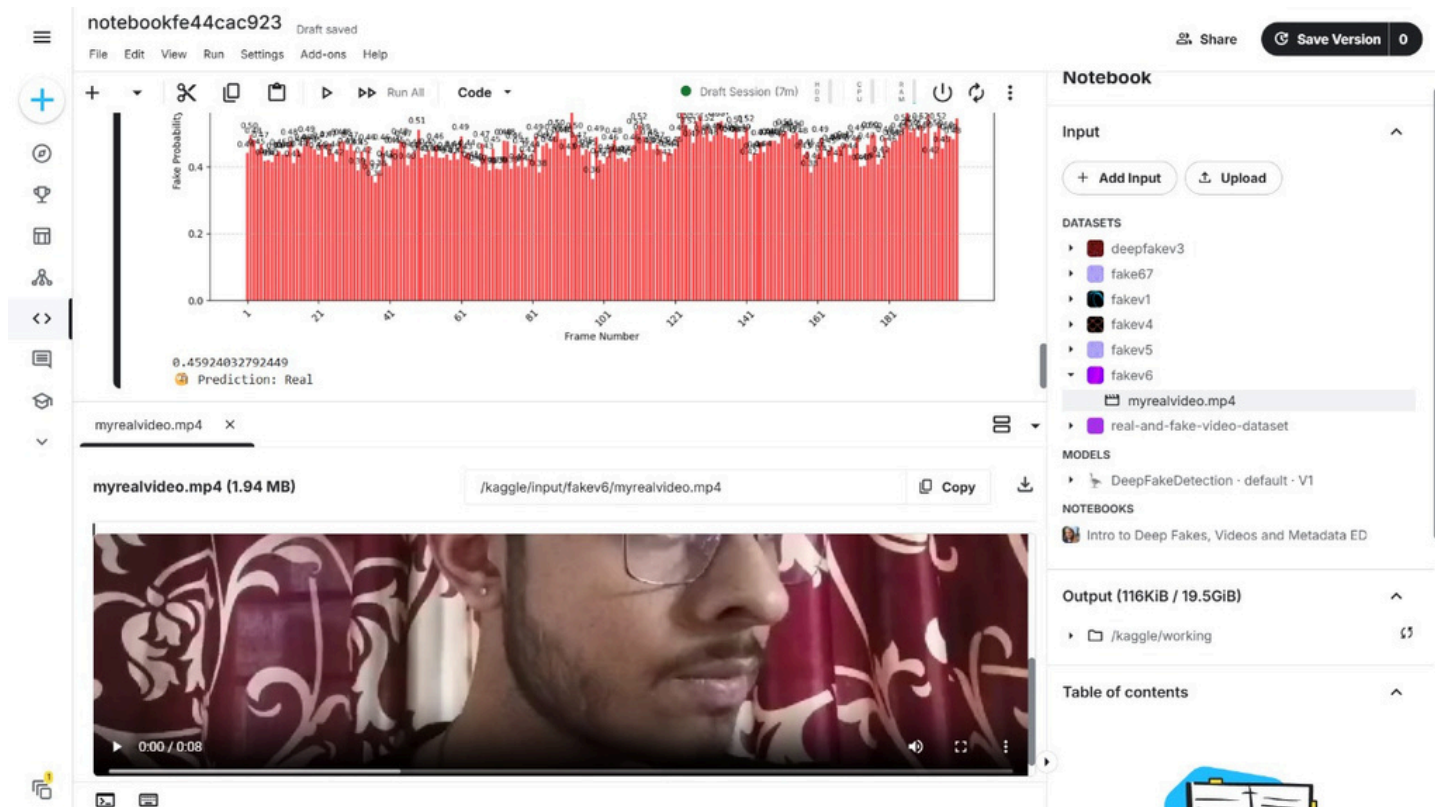
Output (112KiB / 19.5GiB)

/kaggle/working

Table of contents

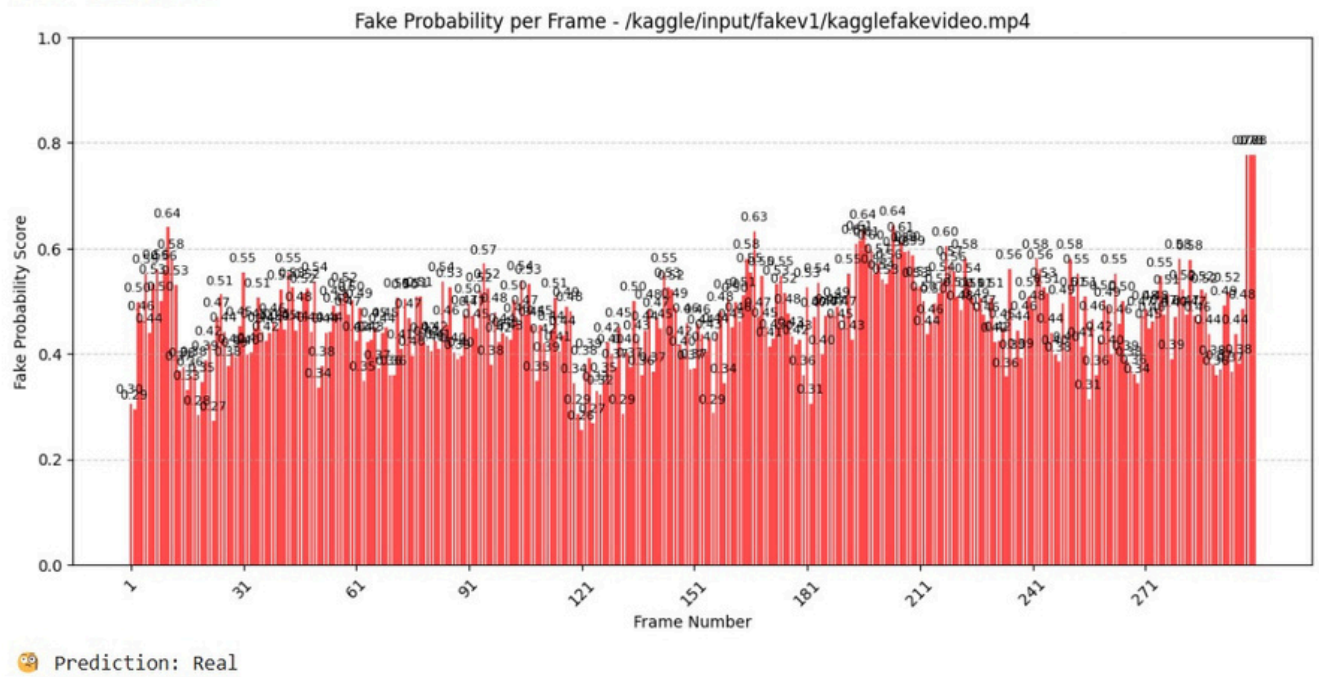
Session options

ACCELERATOR



Here model shows some hallucinations in below image, but we can make it more accurate by increasing the dataset and applying various improvement techniques.

Frame 298: 0.7779  
Frame 299: 0.7779  
Frame 300: 0.7779



- **ENF1** is a deepfake detection model developed by **CDI** to protect you and your family from deepfake threats.