```
D:\DeepFake\pythonProject1\.venv\Scripts\python.exe D:\DeepFake\pythonProject1\Main\main.py
2025-09-27 23:06:00.151644: I tensorflow/core/util/port.cc:153] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable `TF_ENABLE_ONEDNN_OPTS=0`.
2025-09-27 23:06:03.901529: I tensorflow/core/util/port.cc:153] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable `TF_ENABLE_ONEDNN_OPTS=0`.
Using TensorFlow 2.19.0
Config: {
  "model_name": "efficientnetb7",
  "data_dir": "D:/DeepFake/pythonProject1/Frames/FF/FF 600",
  "epochs": 10,
  "batch_size": 32,
  "seed": 42,
  "base_trainable_at": -40,
  "warmup_epochs": 3,
  "learning_rate": 0.001,
  "fine_tune_lr": 2e-05,
  "use_class_weights": false,
  "mixed_precision": false,
  "output_dir": "D:/DeepFake/pythonProject1/Main/FF/efficientnetb7_1a"
}
Found 60796 images belonging to 2 classes.
Found 13032 images belonging to 2 classes.
Found 13030 images belonging to 2 classes.
2025-09-27 23:06:16.325871: I tensorflow/core/platform/cpu_feature_guard.cc:210] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.
To enable the following instructions: SSE3 SSE4.1 SSE4.2 AVX AVX2 AVX_VNNI FMA, in other operations, rebuild TensorFlow with the appropriate compiler
```

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23 flags.
24 D:\DeepFake\pythonProject1\.venv\Lib\site-packages\
   keras\src\trainers\data_adapters\py_dataset_adapter.
   py:121: UserWarning: Your `PyDataset` class should
   call `super().__init__(**kwargs)` in its constructor
   . `**kwargs` can include `workers`, `
   use_multiprocessing`, `max_queue_size`. Do not pass
   these arguments to `fit()`, as they will be ignored.
25   self._warn_if_super_not_called()
26 Epoch 1/3
27 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 33s/step - accuracy
   : 0.8764 - loss: 0.3817
28 Epoch 1: val_accuracy improved from -inf to 0.87953,
   saving model to D:/DeepFake/pythonProject1/Main/FF/
   efficientnetb7_1a\best_warmup.keras
29 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 71128s 37s/step -
   accuracy: 0.8764 - loss: 0.3817 - val_accuracy: 0.
   8795 - val_loss: 0.3593 - learning_rate: 0.0010
30 Epoch 2/3
31 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 21s/step - accuracy
   : 0.8791 - loss: 0.3684
32 Epoch 2: val_accuracy improved from 0.87953 to 0.
   87983, saving model to D:/DeepFake/pythonProject1/
   Main/FF/efficientnetb7_1a\best_warmup.keras
33 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 47464s 25s/step -
   accuracy: 0.8791 - loss: 0.3684 - val_accuracy: 0.
   8798 - val_loss: 0.3601 - learning_rate: 0.0010
34 Epoch 3/3
35 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 26s/step - accuracy
   : 0.8816 - loss: 0.3650
36 Epoch 3: val_accuracy did not improve from 0.87983
37 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 56661s 30s/step -
   accuracy: 0.8816 - loss: 0.3650 - val_accuracy: 0.
   8793 - val_loss: 0.3595 - learning_rate: 0.0010
38 Epoch 1/10
39 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 23s/step - accuracy
   : 0.8689 - loss: 0.3784
40 Epoch 1: val_accuracy improved from -inf to 0.88613,
   saving model to D:/DeepFake/pythonProject1/Main/FF/
   efficientnetb7_1a\best_finetune.keras
41 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 52571s 28s/step -
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41 accuracy: 0.8689 - loss: 0.3784 - val_accuracy: 0.
   8861 - val_loss: 0.3168 - learning_rate: 2.0000e-05
42 Epoch 2/10
43 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 25s/step - accuracy
   : 0.8855 - loss: 0.3216
44 Epoch 2: val_accuracy improved from 0.88613 to 0.
   89925, saving model to D:/DeepFake/pythonProject1/
   Main/FF/efficientnetb7_1a\best_finetune.keras
45 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 54618s 29s/step -
   accuracy: 0.8855 - loss: 0.3216 - val_accuracy: 0.
   8992 - val_loss: 0.2816 - learning_rate: 2.0000e-05
46 Epoch 3/10
47 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 29s/step - accuracy
   : 0.8927 - loss: 0.2967
48 Epoch 3: val_accuracy improved from 0.89925 to 0.
   90531, saving model to D:/DeepFake/pythonProject1/
   Main/FF/efficientnetb7_1a\best_finetune.keras
49 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 64457s 34s/step -
   accuracy: 0.8927 - loss: 0.2967 - val_accuracy: 0.
   9053 - val_loss: 0.2594 - learning_rate: 2.0000e-05
50 Epoch 4/10
51 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 24s/step - accuracy
   : 0.8972 - loss: 0.2771
52 Epoch 4: val_accuracy improved from 0.90531 to 0.
   90961, saving model to D:/DeepFake/pythonProject1/
   Main/FF/efficientnetb7_1a\best_finetune.keras
53 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 53521s 28s/step -
   accuracy: 0.8972 - loss: 0.2771 - val_accuracy: 0.
   9096 - val_loss: 0.2431 - learning_rate: 2.0000e-05
54 Epoch 5/10
55 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 27s/step - accuracy
   : 0.9038 - loss: 0.2634
56 Epoch 5: val_accuracy improved from 0.90961 to 0.
   91759, saving model to D:/DeepFake/pythonProject1/
   Main/FF/efficientnetb7_1a\best_finetune.keras
57 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 58547s 31s/step -
   accuracy: 0.9038 - loss: 0.2634 - val_accuracy: 0.
   9176 - val_loss: 0.2264 - learning_rate: 2.0000e-05
58 Epoch 6/10
59 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 30s/step - accuracy
   : 0.9052 - loss: 0.2562
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Epoch 6: val_accuracy did not improve from 0.91759
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 64217s 34s/step -
   accuracy: 0.9052 - loss: 0.2562 - val_accuracy: 0.
   9076 - val_loss: 0.2410 - learning_rate: 2.0000e-05
Epoch 7/10
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 24s/step -
   accuracy: 0.9106 - loss: 0.2432
Epoch 7: val_accuracy did not improve from 0.91759
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 54888s 29s/step -
   accuracy: 0.9106 - loss: 0.2432 - val_accuracy: 0.
   9138 - val_loss: 0.2267 - learning_rate: 2.0000e-05
Epoch 8/10
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 26s/step -
   accuracy: 0.9119 - loss: 0.2353
Epoch 8: val_accuracy improved from 0.91759 to 0.
   92511, saving model to D:/DeepFake/pythonProject1/
   Main/FF/efficientnetb7_1a\best_finetune.keras
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 57448s 30s/step -
   accuracy: 0.9119 - loss: 0.2353 - val_accuracy: 0.
   9251 - val_loss: 0.2047 - learning_rate: 2.0000e-05
Epoch 9/10
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 24s/step -
   accuracy: 0.9124 - loss: 0.2310
Epoch 9: val_accuracy did not improve from 0.92511
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 52410s 28s/step -
   accuracy: 0.9124 - loss: 0.2310 - val_accuracy: 0.
   9208 - val_loss: 0.2095 - learning_rate: 2.0000e-05
Epoch 10/10
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 28s/step -
   accuracy: 0.9159 - loss: 0.2233
Epoch 10: val_accuracy did not improve from 0.92511
1900/1900 ━━━━━━━━━━━━━━━━━━━━ 61963s 33s/step -
   accuracy: 0.9159 - loss: 0.2233 - val_accuracy: 0.
   9144 - val_loss: 0.2231 - learning_rate: 2.0000e-05
Saved final model to: D:/DeepFake/pythonProject1/
   Main/FF/efficientnetb7_1a\efficientnetb7.keras
Evaluating on test set...
408/408 ━━━━━━━━━━━━━━━━━━━━ 13725s 34s/step -
   accuracy: 0.9804 - loss: 0.1044
Test accuracy: 0.9266 | Test loss: 0.2009
408/408 ━━━━━━━━━━━━━━━━━━━━ 9854s 24s/step
```

```
 83
 84 Classification Report:
 85
 86               precision    recall  f1-score
    support
 87
 88           df       0.94      0.98      0.96
    11428
 89         real       0.79      0.55      0.65
    1602
 90
 91     accuracy                           0.93
    13030
 92    macro avg       0.87      0.76      0.80
    13030
 93 weighted avg       0.92      0.93      0.92
    13030
 94
 95 Confusion Matrix:
 96  [[11200   228]
 97  [  728   874]]
 98
 99 Process finished with exit code 0
100
```