```
 1 D:\DeepFake\pythonProject1\.venv\Scripts\python.exe D
   :\DeepFake\pythonProject1\Main\main.py
 2 2025-09-24 22:16:55.488167: 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`.
 3 2025-09-24 22:16:58.856160: 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`.
 4 Using TensorFlow 2.19.0
 5 Config: {
 6   "model_name": "mobilenetv3",
 7   "data_dir": "D:/DeepFake/pythonProject1/Frames/FF/
   FF 224",
 8   "epochs": 20,
 9   "batch_size": 32,
10   "seed": 42,
11   "base_trainable_at": -40,
12   "warmup_epochs": 3,
13   "learning_rate": 0.001,
14   "fine_tune_lr": 2e-05,
15   "use_class_weights": false,
16   "mixed_precision": false,
17   "output_dir": "D:/DeepFake/pythonProject1/Main/FF/
   mobilenetv3_1a"
18 }
19 Found 60796 images belonging to 2 classes.
20 Found 13032 images belonging to 2 classes.
21 Found 13030 images belonging to 2 classes.
22 2025-09-24 22:17:11.252724: I tensorflow/core/
   platform/cpu_feature_guard.cc:210] This TensorFlow
   binary is optimized to use available CPU instructions
    in performance-critical operations.
23 To enable the following instructions: SSE3 SSE4.1
   SSE4.2 AVX AVX2 AVX_VNNI FMA, in other operations,
   rebuild TensorFlow with the appropriate compiler
```

```
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 470ms/step -
   accuracy: 0.8641 - loss: 0.4214
28 Epoch 1: val_accuracy improved from -inf to 0.87845,
   saving model to D:/DeepFake/pythonProject1/Main/FF/
   mobilenetv3_1a\best_warmup.keras
29 1900/1900 ━━━━━━━━━━━━━━━━━━━━━━━ 1022s 535ms/step -
   accuracy: 0.8641 - loss: 0.4214 - val_accuracy: 0.
   8785 - val_loss: 0.3679 - learning_rate: 0.0010
30 Epoch 2/3
31 1900/1900 ━━━━━━━━━━━━━━━━━━━━━━━ 0s 450ms/step -
   accuracy: 0.8768 - loss: 0.3819
32 Epoch 2: val_accuracy did not improve from 0.87845
33 1900/1900 ━━━━━━━━━━━━━━━━━━━━━━━ 975s 513ms/step -
   accuracy: 0.8768 - loss: 0.3819 - val_accuracy: 0.
   8768 - val_loss: 0.3656 - learning_rate: 0.0010
34 Epoch 3/3
35 1900/1900 ━━━━━━━━━━━━━━━━━━━━━━━ 0s 441ms/step -
   accuracy: 0.8761 - loss: 0.3799
36 Epoch 3: val_accuracy did not improve from 0.87845
37 1900/1900 ━━━━━━━━━━━━━━━━━━━━━━━ 958s 504ms/step -
   accuracy: 0.8761 - loss: 0.3799 - val_accuracy: 0.
   8768 - val_loss: 0.3685 - learning_rate: 0.0010
38 Epoch 1/20
39 1900/1900 ━━━━━━━━━━━━━━━━━━━━━━━ 0s 513ms/step -
   accuracy: 0.8756 - loss: 0.3791
40 Epoch 1: val_accuracy improved from -inf to 0.87922,
   saving model to D:/DeepFake/pythonProject1/Main/FF/
   mobilenetv3_1a\best_finetune.keras
41 1900/1900 ━━━━━━━━━━━━━━━━━━━━━━━ 1109s 579ms/step -
   accuracy: 0.8756 - loss: 0.3791 - val_accuracy: 0.
   8792 - val_loss: 0.3564 - learning_rate: 2.0000e-05
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42 Epoch 2/20
43 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 506ms/step -
   accuracy: 0.8805 - loss: 0.3562
44 Epoch 2: val_accuracy improved from 0.87922 to 0.
   88091, saving model to D:/DeepFake/pythonProject1/
   Main/FF/mobilenetv3_1a\best_finetune.keras
45 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1085s 571ms/step -
   accuracy: 0.8805 - loss: 0.3562 - val_accuracy: 0.
   8809 - val_loss: 0.3470 - learning_rate: 2.0000e-05
46 Epoch 3/20
47 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 498ms/step -
   accuracy: 0.8810 - loss: 0.3486
48 Epoch 3: val_accuracy improved from 0.88091 to 0.
   88145, saving model to D:/DeepFake/pythonProject1/
   Main/FF/mobilenetv3_1a\best_finetune.keras
49 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1068s 562ms/step -
   accuracy: 0.8810 - loss: 0.3486 - val_accuracy: 0.
   8814 - val_loss: 0.3422 - learning_rate: 2.0000e-05
50 Epoch 4/20
51 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 500ms/step -
   accuracy: 0.8827 - loss: 0.3414
52 Epoch 4: val_accuracy did not improve from 0.88145
53 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1066s 561ms/step -
   accuracy: 0.8827 - loss: 0.3414 - val_accuracy: 0.
   8812 - val_loss: 0.3380 - learning_rate: 2.0000e-05
54 Epoch 5/20
55 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 509ms/step -
   accuracy: 0.8852 - loss: 0.3289
56 Epoch 5: val_accuracy improved from 0.88145 to 0.
   88367, saving model to D:/DeepFake/pythonProject1/
   Main/FF/mobilenetv3_1a\best_finetune.keras
57 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1091s 574ms/step -
   accuracy: 0.8852 - loss: 0.3289 - val_accuracy: 0.
   8837 - val_loss: 0.3327 - learning_rate: 2.0000e-05
58 Epoch 6/20
59 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 497ms/step -
   accuracy: 0.8847 - loss: 0.3302
60 Epoch 6: val_accuracy did not improve from 0.88367
61 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1067s 562ms/step -
   accuracy: 0.8847 - loss: 0.3302 - val_accuracy: 0.
   8830 - val_loss: 0.3320 - learning_rate: 2.0000e-05
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62 Epoch 7/20
63 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 477ms/step -
   accuracy: 0.8848 - loss: 0.3262
64 Epoch 7: val_accuracy improved from 0.88367 to 0.
   88421, saving model to D:/DeepFake/pythonProject1/
   Main/FF/mobilenetv3_1a\best_finetune.keras
65 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1029s 542ms/step -
   accuracy: 0.8848 - loss: 0.3262 - val_accuracy: 0.
   8842 - val_loss: 0.3281 - learning_rate: 2.0000e-05
66 Epoch 8/20
67 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 509ms/step -
   accuracy: 0.8863 - loss: 0.3197
68 Epoch 8: val_accuracy did not improve from 0.88421
69 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1088s 573ms/step -
   accuracy: 0.8863 - loss: 0.3197 - val_accuracy: 0.
   8842 - val_loss: 0.3247 - learning_rate: 2.0000e-05
70 Epoch 9/20
71 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 503ms/step -
   accuracy: 0.8869 - loss: 0.3166
72 Epoch 9: val_accuracy did not improve from 0.88421
73 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1075s 566ms/step -
   accuracy: 0.8869 - loss: 0.3166 - val_accuracy: 0.
   8837 - val_loss: 0.3235 - learning_rate: 2.0000e-05
74 Epoch 10/20
75 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 497ms/step -
   accuracy: 0.8886 - loss: 0.3110
76 Epoch 10: val_accuracy did not improve from 0.88421
77 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1066s 561ms/step -
   accuracy: 0.8886 - loss: 0.3110 - val_accuracy: 0.
   8780 - val_loss: 0.3336 - learning_rate: 2.0000e-05
78 Epoch 11/20
79 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 495ms/step -
   accuracy: 0.8909 - loss: 0.3041
80 Epoch 11: val_accuracy did not improve from 0.88421
81 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 1061s 558ms/step -
   accuracy: 0.8908 - loss: 0.3041 - val_accuracy: 0.
   8811 - val_loss: 0.3326 - learning_rate: 2.0000e-05
82 Epoch 12/20
83 1900/1900 ━━━━━━━━━━━━━━━━━━━━ 0s 506ms/step -
   accuracy: 0.8901 - loss: 0.3090
84 Epoch 12: val_accuracy did not improve from 0.88421
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 85 1900/1900 ━━━━━━━━━━━━━━━━━━ 1082s 570ms/step -
    accuracy: 0.8901 - loss: 0.3090 - val_accuracy: 0.
    8834 - val_loss: 0.3246 - learning_rate: 2.0000e-05
 86 Epoch 13/20
 87 1900/1900 ━━━━━━━━━━━━━━━━━━ 0s 495ms/step -
    accuracy: 0.8908 - loss: 0.3025
 88 Epoch 13: val_accuracy did not improve from 0.88421
 89 1900/1900 ━━━━━━━━━━━━━━━━━━ 1057s 556ms/step -
    accuracy: 0.8908 - loss: 0.3025 - val_accuracy: 0.
    8794 - val_loss: 0.3350 - learning_rate: 1.0000e-05
 90 Saved final model to: D:/DeepFake/pythonProject1/
    Main/FF/mobilenetv3_1a\mobilenetv3.keras
 91 Evaluating on test set...
 92 408/408 ━━━━━━━━━━━━━━━━━━ 122s 299ms/step -
    accuracy: 0.9844 - loss: 0.1452
 93 Test accuracy: 0.8848 | Test loss: 0.3271
 94 408/408 ━━━━━━━━━━━━━━━━━━ 120s 292ms/step
 95
 96 Classification Report:
 97
 98                 precision    recall  f1-score
    support
 99
100            df       0.89      0.99      0.94
    11428
101          real       0.62      0.17      0.26
    1602
102
103      accuracy                           0.88
    13030
104     macro avg       0.75      0.58      0.60
    13030
105  weighted avg       0.86      0.88      0.85
    13030
106
107 Confusion Matrix:
108  [[11259    169]
109  [ 1332    270]]
110
111 Process finished with exit code 0
112
```