```
C:\Users\User\PycharmProjects\OpenCV1\.venv\Scripts\python.exe C:\Users\User\PycharmProjects\OpenCV1\.venv\train.py
2025-02-16 18:20:22.509360: 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`.
2025-02-16 18:20:23.205274: 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`.
Found 612 files belonging to 6 classes.
2025-02-16 18:20:25.215598: 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: AVX2 AVX_VNNI FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.
Epoch 1/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 4s 233ms/step - accuracy: 0.1732 - loss: 2.6935
Epoch 2/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 1s 206ms/step - accuracy: 0.3392 - loss: 1.7799
Epoch 3/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 375ms/step - accuracy: 0.5296 - loss: 1.1827
Epoch 4/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 410ms/step - accuracy: 0.6601 - loss: 0.9197
Epoch 5/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 389ms/step - accuracy: 0.6923 - loss: 0.8058
Epoch 6/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 361ms/step - accuracy: 0.7317 - loss: 0.7013
```

```
Epoch 7/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 357ms/step - accuracy: 0.7983 - loss: 0.5859
Epoch 8/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 315ms/step - accuracy: 0.7887 - loss: 0.5436
Epoch 9/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 352ms/step - accuracy: 0.8320 - loss: 0.5090
Epoch 10/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 341ms/step - accuracy: 0.8403 - loss: 0.4384
Epoch 11/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 324ms/step - accuracy: 0.8420 - loss: 0.4076
Epoch 12/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 319ms/step - accuracy: 0.8512 - loss: 0.3853
Epoch 13/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 314ms/step - accuracy: 0.8753 - loss: 0.3710
Epoch 14/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 349ms/step - accuracy: 0.8838 - loss: 0.3315
Epoch 15/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 326ms/step - accuracy: 0.9017 - loss: 0.2883
Epoch 16/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 331ms/step - accuracy: 0.8801 - loss: 0.2956
Epoch 17/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 311ms/step - accuracy: 0.8940 - loss: 0.2804
Epoch 18/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 327ms/step - accuracy: 0.9034 - loss: 0.2543
Epoch 19/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 303ms/step - accuracy: 0.9247 - loss: 0.2473
Epoch 20/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 305ms/step - accuracy: 0.
```

```
46 9195 - loss: 0.2503
47 Epoch 21/100
48 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 307ms/step - accuracy: 0.
   9308 - loss: 0.2231
49 Epoch 22/100
50 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 338ms/step - accuracy: 0.
   9389 - loss: 0.2097
51 Epoch 23/100
52 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 313ms/step - accuracy: 0.
   9336 - loss: 0.2056
53 Epoch 24/100
54 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 320ms/step - accuracy: 0.
   9336 - loss: 0.2028
55 Epoch 25/100
56 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 356ms/step - accuracy: 0.
   9323 - loss: 0.2048
57 Epoch 26/100
58 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 306ms/step - accuracy: 0.
   9469 - loss: 0.1627
59 Epoch 27/100
60 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 296ms/step - accuracy: 0.
   9552 - loss: 0.1721
61 Epoch 28/100
62 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 319ms/step - accuracy: 0.
   9410 - loss: 0.1824
63 Epoch 29/100
64 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 325ms/step - accuracy: 0.
   9521 - loss: 0.1588
65 Epoch 30/100
66 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 315ms/step - accuracy: 0.
   9439 - loss: 0.1567
67 Epoch 31/100
68 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 356ms/step - accuracy: 0.
   9476 - loss: 0.1519
69 Epoch 32/100
70 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 329ms/step - accuracy: 0.
   9528 - loss: 0.1450
71 Epoch 33/100
72 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 317ms/step - accuracy: 0.
   9595 - loss: 0.1434
73 Epoch 34/100
```

```
 74 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 312ms/step - accuracy: 0
    .9574 - loss: 0.1381
 75 Epoch 35/100
 76 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 311ms/step - accuracy: 0
    .9617 - loss: 0.1301
 77 Epoch 36/100
 78 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 326ms/step - accuracy: 0
    .9495 - loss: 0.1406
 79 Epoch 37/100
 80 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 311ms/step - accuracy: 0
    .9630 - loss: 0.1347
 81 Epoch 38/100
 82 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 332ms/step - accuracy: 0
    .9693 - loss: 0.1187
 83 Epoch 39/100
 84 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 319ms/step - accuracy: 0
    .9574 - loss: 0.1299
 85 Epoch 40/100
 86 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 314ms/step - accuracy: 0
    .9719 - loss: 0.1098
 87 Epoch 41/100
 88 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 312ms/step - accuracy: 0
    .9689 - loss: 0.1113
 89 Epoch 42/100
 90 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 310ms/step - accuracy: 0
    .9891 - loss: 0.0941
 91 Epoch 43/100
 92 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 308ms/step - accuracy: 0
    .9793 - loss: 0.0946
 93 Epoch 44/100
 94 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 329ms/step - accuracy: 0
    .9769 - loss: 0.0938
 95 Epoch 45/100
 96 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 323ms/step - accuracy: 0
    .9776 - loss: 0.0944
 97 Epoch 46/100
 98 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 310ms/step - accuracy: 0
    .9793 - loss: 0.0893
 99 Epoch 47/100
100 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 327ms/step - accuracy: 0
    .9745 - loss: 0.0937
```

```
Epoch 48/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 453ms/step - accuracy: 0
    .9750 - loss: 0.0951
Epoch 49/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 399ms/step - accuracy: 0
    .9832 - loss: 0.0911
Epoch 50/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 391ms/step - accuracy: 0
    .9826 - loss: 0.0809
Epoch 51/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 429ms/step - accuracy: 0
    .9763 - loss: 0.0859
Epoch 52/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 392ms/step - accuracy: 0
    .9798 - loss: 0.0911
Epoch 53/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 3s 411ms/step - accuracy: 0
    .9913 - loss: 0.0694
Epoch 54/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 431ms/step - accuracy: 0
    .9761 - loss: 0.0774
Epoch 55/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 398ms/step - accuracy: 0
    .9891 - loss: 0.0679
Epoch 56/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 386ms/step - accuracy: 0
    .9896 - loss: 0.0580
Epoch 57/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 388ms/step - accuracy: 0
    .9793 - loss: 0.0735
Epoch 58/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 418ms/step - accuracy: 0
    .9867 - loss: 0.0666
Epoch 59/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 351ms/step - accuracy: 0
    .9839 - loss: 0.0704
Epoch 60/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 380ms/step - accuracy: 0
    .9930 - loss: 0.0645
Epoch 61/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 354ms/step - accuracy: 0
```

```
128 .9878 - loss: 0.0696
129 Epoch 62/100
130 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 362ms/step - accuracy: 0
    .9943 - loss: 0.0535
131 Epoch 63/100
132 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 365ms/step - accuracy: 0
    .9902 - loss: 0.0533
133 Epoch 64/100
134 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 388ms/step - accuracy: 0
    .9850 - loss: 0.0574
135 Epoch 65/100
136 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 319ms/step - accuracy: 0
    .9850 - loss: 0.0597
137 Epoch 66/100
138 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 329ms/step - accuracy: 0
    .9809 - loss: 0.0634
139 Epoch 67/100
140 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 308ms/step - accuracy: 0
    .9943 - loss: 0.0453
141 Epoch 68/100
142 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 308ms/step - accuracy: 0
    .9902 - loss: 0.0504
143 Epoch 69/100
144 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 306ms/step - accuracy: 0
    .9954 - loss: 0.0525
145 Epoch 70/100
146 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 321ms/step - accuracy: 0
    .9843 - loss: 0.0563
147 Epoch 71/100
148 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 309ms/step - accuracy: 0
    .9930 - loss: 0.0444
149 Epoch 72/100
150 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 304ms/step - accuracy: 0
    .9948 - loss: 0.0487
151 Epoch 73/100
152 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 312ms/step - accuracy: 0
    .9948 - loss: 0.0395
153 Epoch 74/100
154 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 319ms/step - accuracy: 0
    .9850 - loss: 0.0594
155 Epoch 75/100
```

```
156 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 389ms/step - accuracy: 0
    .9913 - loss: 0.0438
157 Epoch 76/100
158 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 316ms/step - accuracy: 0
    .9965 - loss: 0.0421
159 Epoch 77/100
160 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 328ms/step - accuracy: 0
    .9885 - loss: 0.0508
161 Epoch 78/100
162 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 336ms/step - accuracy: 0
    .9913 - loss: 0.0388
163 Epoch 79/100
164 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 348ms/step - accuracy: 0
    .9965 - loss: 0.0343
165 Epoch 80/100
166 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 320ms/step - accuracy: 0
    .9902 - loss: 0.0413
167 Epoch 81/100
168 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 313ms/step - accuracy: 0
    .9930 - loss: 0.0432
169 Epoch 82/100
170 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 310ms/step - accuracy: 0
    .9948 - loss: 0.0397
171 Epoch 83/100
172 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 310ms/step - accuracy: 0
    .9948 - loss: 0.0408
173 Epoch 84/100
174 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 312ms/step - accuracy: 0
    .9913 - loss: 0.0399
175 Epoch 85/100
176 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 319ms/step - accuracy: 0
    .9898 - loss: 0.0387
177 Epoch 86/100
178 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 324ms/step - accuracy: 0
    .9965 - loss: 0.0305
179 Epoch 87/100
180 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 310ms/step - accuracy: 0
    .9919 - loss: 0.0447
181 Epoch 88/100
182 2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 323ms/step - accuracy: 0
    .9948 - loss: 0.0336
```

```
Epoch 89/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 359ms/step - accuracy: 0.9954 - loss: 0.0326
Epoch 90/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 313ms/step - accuracy: 0.9896 - loss: 0.0413
Epoch 91/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 308ms/step - accuracy: 0.9937 - loss: 0.0348
Epoch 92/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 342ms/step - accuracy: 0.9835 - loss: 0.0507
Epoch 93/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 355ms/step - accuracy: 0.9965 - loss: 0.0360
Epoch 94/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 303ms/step - accuracy: 1.0000 - loss: 0.0300
Epoch 95/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 307ms/step - accuracy: 0.9948 - loss: 0.0363
Epoch 96/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 313ms/step - accuracy: 0.9965 - loss: 0.0326
Epoch 97/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 332ms/step - accuracy: 0.9948 - loss: 0.0305
Epoch 98/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 330ms/step - accuracy: 0.9961 - loss: 0.0324
Epoch 99/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 334ms/step - accuracy: 0.9983 - loss: 0.0331
Epoch 100/100
2/2 ━━━━━━━━━━━━━━━━━━━━ 2s 314ms/step - accuracy: 0.9930 - loss: 0.0322
WARNING:absl:You are saving your model as an HDF5 file via `model.save()` or `keras.saving.save_model(model)`. This file format is considered legacy. We recommend using instead the native Keras format, e.g. `model.save('my_model.keras')` or `keras.saving.
```

```
save_model(model, 'my_model.keras')`.
□□□□□□ finger_count_mobilenetv2.h5

Process finished with exit code 0

```