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1 /usr/local/bin/python3.8 "/Users/surajvaddi/Desktop/TarPrint Full Journey/Machine Learning Code/Neural-Network-NO-test.py"
2 2020-09-04 00:43:27.979576: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX2 FMA
3 To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
4 2020-09-04 00:43:27.989052: I tensorflow/compiler/xla/service/service.cc:168] XLA service 0x7fa8abfed110 initialized for platform Host (this does not guarantee that XLA will be used). Devices:
5 2020-09-04 00:43:27.989062: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor device (0): Host, Default Version
6 Epoch 1/500
7 136/136 [=====] - 0s 584us /step - loss: 1.4455 - accuracy: 0.4324
8 Epoch 2/500
9 136/136 [=====] - 0s 546us /step - loss: 1.0106 - accuracy: 0.6471
10 Epoch 3/500
11 136/136 [=====] - 0s 576us /step - loss: 0.7541 - accuracy: 0.7436
12 Epoch 4/500
13 136/136 [=====] - 0s 545us /step - loss: 0.6646 - accuracy: 0.7642
14 Epoch 5/500
15 136/136 [=====] - 0s 543us /step - loss: 0.6125 - accuracy: 0.7721
16 Epoch 6/500
17 136/136 [=====] - 0s 574us /step - loss: 0.5946 - accuracy: 0.7868
18 Epoch 7/500
19 136/136 [=====] - 0s 598us /step - loss: 0.5832 - accuracy: 0.7833
20 Epoch 8/500
21 136/136 [=====] - 0s 541us /step - loss: 0.5724 - accuracy: 0.8000
22 Epoch 9/500
23 136/136 [=====] - 0s 609us
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23 /step - loss: 0.5534 - accuracy: 0.8034
24 Epoch 10/500
25 136/136 [=====] - 0s 588us
    /step - loss: 0.5525 - accuracy: 0.7985
26 Epoch 11/500
27 136/136 [=====] - 0s 566us
    /step - loss: 0.5506 - accuracy: 0.8103
28 Epoch 12/500
29 136/136 [=====] - 0s 809us
    /step - loss: 0.5474 - accuracy: 0.8034
30 Epoch 13/500
31 136/136 [=====] - 0s 617us
    /step - loss: 0.5355 - accuracy: 0.8029
32 Epoch 14/500
33 136/136 [=====] - 0s 596us
    /step - loss: 0.5247 - accuracy: 0.8074
34 Epoch 15/500
35 136/136 [=====] - 0s 576us
    /step - loss: 0.5173 - accuracy: 0.8147
36 Epoch 16/500
37 136/136 [=====] - 0s 537us
    /step - loss: 0.5203 - accuracy: 0.8074
38 Epoch 17/500
39 136/136 [=====] - 0s 564us
    /step - loss: 0.5018 - accuracy: 0.8152
40 Epoch 18/500
41 136/136 [=====] - 0s 625us
    /step - loss: 0.4960 - accuracy: 0.8127
42 Epoch 19/500
43 136/136 [=====] - 0s 565us
    /step - loss: 0.4993 - accuracy: 0.8221
44 Epoch 20/500
45 136/136 [=====] - 0s 589us
    /step - loss: 0.4894 - accuracy: 0.8196
46 Epoch 21/500
47 136/136 [=====] - 0s 602us
    /step - loss: 0.4856 - accuracy: 0.8289
48 Epoch 22/500
49 136/136 [=====] - 0s 539us
    /step - loss: 0.4750 - accuracy: 0.8314
50 Epoch 23/500
51 136/136 [=====] - 0s 624us
    /step - loss: 0.4684 - accuracy: 0.8255
52 Epoch 24/500
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53 136/136 [=====] - 0s 567us
  /step - loss: 0.4819 - accuracy: 0.8314
54 Epoch 25/500
55 136/136 [=====] - 0s 569us
  /step - loss: 0.4638 - accuracy: 0.8333
56 Epoch 26/500
57 136/136 [=====] - 0s 625us
  /step - loss: 0.4616 - accuracy: 0.8333
58 Epoch 27/500
59 136/136 [=====] - 0s 568us
  /step - loss: 0.4572 - accuracy: 0.8373
60 Epoch 28/500
61 136/136 [=====] - 0s 542us
  /step - loss: 0.4520 - accuracy: 0.8377
62 Epoch 29/500
63 136/136 [=====] - 0s 621us
  /step - loss: 0.4504 - accuracy: 0.8382
64 Epoch 30/500
65 136/136 [=====] - 0s 574us
  /step - loss: 0.4523 - accuracy: 0.8373
66 Epoch 31/500
67 136/136 [=====] - 0s 562us
  /step - loss: 0.4535 - accuracy: 0.8343
68 Epoch 32/500
69 136/136 [=====] - 0s 623us
  /step - loss: 0.4479 - accuracy: 0.8446
70 Epoch 33/500
71 136/136 [=====] - 0s 570us
  /step - loss: 0.4276 - accuracy: 0.8471
72 Epoch 34/500
73 136/136 [=====] - 0s 539us
  /step - loss: 0.4329 - accuracy: 0.8431
74 Epoch 35/500
75 136/136 [=====] - 0s 620us
  /step - loss: 0.4358 - accuracy: 0.8456
76 Epoch 36/500
77 136/136 [=====] - 0s 566us
  /step - loss: 0.4349 - accuracy: 0.8422
78 Epoch 37/500
79 136/136 [=====] - 0s 539us
  /step - loss: 0.4332 - accuracy: 0.8475
80 Epoch 38/500
81 136/136 [=====] - 0s 646us
  /step - loss: 0.4429 - accuracy: 0.8387
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82 Epoch 39/500
83 136/136 [=====] - 0s
    567us/step - loss: 0.4278 - accuracy: 0.8451
84 Epoch 40/500
85 136/136 [=====] - 0s
    535us/step - loss: 0.4276 - accuracy: 0.8407
86 Epoch 41/500
87 136/136 [=====] - 0s
    608us/step - loss: 0.4333 - accuracy: 0.8368
88 Epoch 42/500
89 136/136 [=====] - 0s
    579us/step - loss: 0.4415 - accuracy: 0.8392
90 Epoch 43/500
91 136/136 [=====] - 0s
    546us/step - loss: 0.4272 - accuracy: 0.8446
92 Epoch 44/500
93 136/136 [=====] - 0s
    639us/step - loss: 0.4079 - accuracy: 0.8549
94 Epoch 45/500
95 136/136 [=====] - 0s
    572us/step - loss: 0.4141 - accuracy: 0.8475
96 Epoch 46/500
97 136/136 [=====] - 0s
    540us/step - loss: 0.4096 - accuracy: 0.8510
98 Epoch 47/500
99 136/136 [=====] - 0s
    627us/step - loss: 0.4146 - accuracy: 0.8431
100 Epoch 48/500
101 136/136 [=====] - 0s
    572us/step - loss: 0.4190 - accuracy: 0.8392
102 Epoch 49/500
103 136/136 [=====] - 0s
    541us/step - loss: 0.4076 - accuracy: 0.8598
104 Epoch 50/500
105 136/136 [=====] - 0s
    658us/step - loss: 0.3996 - accuracy: 0.8578
106 Epoch 51/500
107 136/136 [=====] - 0s
    571us/step - loss: 0.4094 - accuracy: 0.8495
108 Epoch 52/500
109 136/136 [=====] - 0s
    536us/step - loss: 0.4023 - accuracy: 0.8475
110 Epoch 53/500
111 136/136 [=====] - 0s
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111 648us/step - loss: 0.3990 - accuracy: 0.8534
112 Epoch 54/500
113 136/136 [=====] - 0s
    566us/step - loss: 0.4223 - accuracy: 0.8422
114 Epoch 55/500
115 136/136 [=====] - 0s
    540us/step - loss: 0.3946 - accuracy: 0.8534
116 Epoch 56/500
117 136/136 [=====] - 0s
    671us/step - loss: 0.4097 - accuracy: 0.8471
118 Epoch 57/500
119 136/136 [=====] - 0s
    567us/step - loss: 0.4084 - accuracy: 0.8534
120 Epoch 58/500
121 136/136 [=====] - 0s
    542us/step - loss: 0.3972 - accuracy: 0.8574
122 Epoch 59/500
123 136/136 [=====] - 0s
    630us/step - loss: 0.3927 - accuracy: 0.8525
124 Epoch 60/500
125 136/136 [=====] - 0s
    563us/step - loss: 0.3939 - accuracy: 0.8549
126 Epoch 61/500
127 136/136 [=====] - 0s
    539us/step - loss: 0.3887 - accuracy: 0.8564
128 Epoch 62/500
129 136/136 [=====] - 0s
    638us/step - loss: 0.3913 - accuracy: 0.8529
130 Epoch 63/500
131 136/136 [=====] - 0s
    573us/step - loss: 0.4031 - accuracy: 0.8544
132 Epoch 64/500
133 136/136 [=====] - 0s
    535us/step - loss: 0.3877 - accuracy: 0.8515
134 Epoch 65/500
135 136/136 [=====] - 0s
    624us/step - loss: 0.4015 - accuracy: 0.8490
136 Epoch 66/500
137 136/136 [=====] - 0s
    581us/step - loss: 0.3797 - accuracy: 0.8672
138 Epoch 67/500
139 136/136 [=====] - 0s
    538us/step - loss: 0.3866 - accuracy: 0.8598
140 Epoch 68/500
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141 136/136 [=====] - 0s
    624us/step - loss: 0.3831 - accuracy: 0.8632
142 Epoch 69/500
143 136/136 [=====] - 0s
    606us/step - loss: 0.3886 - accuracy: 0.8544
144 Epoch 70/500
145 136/136 [=====] - 0s
    539us/step - loss: 0.3877 - accuracy: 0.8598
146 Epoch 71/500
147 136/136 [=====] - 0s
    632us/step - loss: 0.4100 - accuracy: 0.8480
148 Epoch 72/500
149 136/136 [=====] - 0s
    562us/step - loss: 0.3821 - accuracy: 0.8544
150 Epoch 73/500
151 136/136 [=====] - 0s
    541us/step - loss: 0.3856 - accuracy: 0.8618
152 Epoch 74/500
153 136/136 [=====] - 0s
    627us/step - loss: 0.3833 - accuracy: 0.8623
154 Epoch 75/500
155 136/136 [=====] - 0s
    592us/step - loss: 0.3833 - accuracy: 0.8569
156 Epoch 76/500
157 136/136 [=====] - 0s
    538us/step - loss: 0.3698 - accuracy: 0.8618
158 Epoch 77/500
159 136/136 [=====] - 0s
    620us/step - loss: 0.3757 - accuracy: 0.8667
160 Epoch 78/500
161 136/136 [=====] - 0s
    572us/step - loss: 0.3754 - accuracy: 0.8647
162 Epoch 79/500
163 136/136 [=====] - 0s
    538us/step - loss: 0.3756 - accuracy: 0.8603
164 Epoch 80/500
165 136/136 [=====] - 0s
    628us/step - loss: 0.3746 - accuracy: 0.8598
166 Epoch 81/500
167 136/136 [=====] - 0s
    585us/step - loss: 0.3782 - accuracy: 0.8637
168 Epoch 82/500
169 136/136 [=====] - 0s
    536us/step - loss: 0.3678 - accuracy: 0.8613
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170 Epoch 83/500
171 136/136 [=====] - 0s
    631us/step - loss: 0.3667 - accuracy: 0.8623
172 Epoch 84/500
173 136/136 [=====] - 0s
    566us/step - loss: 0.3747 - accuracy: 0.8632
174 Epoch 85/500
175 136/136 [=====] - 0s
    537us/step - loss: 0.3705 - accuracy: 0.8623
176 Epoch 86/500
177 136/136 [=====] - 0s
    626us/step - loss: 0.3649 - accuracy: 0.8681
178 Epoch 87/500
179 136/136 [=====] - 0s
    589us/step - loss: 0.3735 - accuracy: 0.8608
180 Epoch 88/500
181 136/136 [=====] - 0s
    544us/step - loss: 0.3741 - accuracy: 0.8627
182 Epoch 89/500
183 136/136 [=====] - 0s
    630us/step - loss: 0.3706 - accuracy: 0.8603
184 Epoch 90/500
185 136/136 [=====] - 0s
    561us/step - loss: 0.3631 - accuracy: 0.8676
186 Epoch 91/500
187 136/136 [=====] - 0s
    537us/step - loss: 0.3620 - accuracy: 0.8667
188 Epoch 92/500
189 136/136 [=====] - 0s
    623us/step - loss: 0.3689 - accuracy: 0.8662
190 Epoch 93/500
191 136/136 [=====] - 0s
    569us/step - loss: 0.3676 - accuracy: 0.8667
192 Epoch 94/500
193 136/136 [=====] - 0s
    566us/step - loss: 0.3588 - accuracy: 0.8730
194 Epoch 95/500
195 136/136 [=====] - 0s
    627us/step - loss: 0.3557 - accuracy: 0.8623
196 Epoch 96/500
197 136/136 [=====] - 0s
    565us/step - loss: 0.3618 - accuracy: 0.8691
198 Epoch 97/500
199 136/136 [=====] - 0s
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199 538us/step - loss: 0.3629 - accuracy: 0.8647
200 Epoch 98/500
201 136/136 [=====] - 0s
    616us/step - loss: 0.3704 - accuracy: 0.8598
202 Epoch 99/500
203 136/136 [=====] - 0s
    556us/step - loss: 0.3567 - accuracy: 0.8676
204 Epoch 100/500
205 136/136 [=====] - 0s
    572us/step - loss: 0.3611 - accuracy: 0.8637
206 Epoch 101/500
207 136/136 [=====] - 0s
    631us/step - loss: 0.3573 - accuracy: 0.8681
208 Epoch 102/500
209 136/136 [=====] - 0s
    563us/step - loss: 0.3634 - accuracy: 0.8623
210 Epoch 103/500
211 136/136 [=====] - 0s
    538us/step - loss: 0.3566 - accuracy: 0.8730
212 Epoch 104/500
213 136/136 [=====] - 0s
    627us/step - loss: 0.3516 - accuracy: 0.8691
214 Epoch 105/500
215 136/136 [=====] - 0s
    565us/step - loss: 0.3728 - accuracy: 0.8632
216 Epoch 106/500
217 136/136 [=====] - 0s
    564us/step - loss: 0.3535 - accuracy: 0.8735
218 Epoch 107/500
219 136/136 [=====] - 0s
    631us/step - loss: 0.3435 - accuracy: 0.8716
220 Epoch 108/500
221 136/136 [=====] - 0s
    567us/step - loss: 0.3496 - accuracy: 0.8740
222 Epoch 109/500
223 136/136 [=====] - 0s
    531us/step - loss: 0.3506 - accuracy: 0.8730
224 Epoch 110/500
225 136/136 [=====] - 0s
    617us/step - loss: 0.3598 - accuracy: 0.8623
226 Epoch 111/500
227 136/136 [=====] - 0s
    586us/step - loss: 0.3503 - accuracy: 0.8657
228 Epoch 112/500
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229 136/136 [=====] - 0s
    566us/step - loss: 0.3519 - accuracy: 0.8676
230 Epoch 113/500
231 136/136 [=====] - 0s
    626us/step - loss: 0.3411 - accuracy: 0.8784
232 Epoch 114/500
233 136/136 [=====] - 0s
    570us/step - loss: 0.3474 - accuracy: 0.8750
234 Epoch 115/500
235 136/136 [=====] - 0s
    539us/step - loss: 0.3576 - accuracy: 0.8637
236 Epoch 116/500
237 136/136 [=====] - 0s
    623us/step - loss: 0.3538 - accuracy: 0.8667
238 Epoch 117/500
239 136/136 [=====] - 0s
    565us/step - loss: 0.3431 - accuracy: 0.8784
240 Epoch 118/500
241 136/136 [=====] - 0s
    538us/step - loss: 0.3487 - accuracy: 0.8691
242 Epoch 119/500
243 136/136 [=====] - 0s
    650us/step - loss: 0.3497 - accuracy: 0.8701
244 Epoch 120/500
245 136/136 [=====] - 0s
    576us/step - loss: 0.3481 - accuracy: 0.8745
246 Epoch 121/500
247 136/136 [=====] - 0s
    537us/step - loss: 0.3431 - accuracy: 0.8730
248 Epoch 122/500
249 136/136 [=====] - 0s
    625us/step - loss: 0.3452 - accuracy: 0.8686
250 Epoch 123/500
251 136/136 [=====] - 0s
    566us/step - loss: 0.3402 - accuracy: 0.8760
252 Epoch 124/500
253 136/136 [=====] - 0s
    536us/step - loss: 0.3362 - accuracy: 0.8819
254 Epoch 125/500
255 136/136 [=====] - 0s
    648us/step - loss: 0.3433 - accuracy: 0.8711
256 Epoch 126/500
257 136/136 [=====] - 0s
    575us/step - loss: 0.3380 - accuracy: 0.8701
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258 Epoch 127/500
259 136/136 [=====] - 0s
      551us/step - loss: 0.3396 - accuracy: 0.8755
260 Epoch 128/500
261 136/136 [=====] - 0s
      630us/step - loss: 0.3420 - accuracy: 0.8735
262 Epoch 129/500
263 136/136 [=====] - 0s
      569us/step - loss: 0.3453 - accuracy: 0.8681
264 Epoch 130/500
265 136/136 [=====] - 0s
      536us/step - loss: 0.3397 - accuracy: 0.8725
266 Epoch 131/500
267 136/136 [=====] - 0s
      639us/step - loss: 0.3400 - accuracy: 0.8794
268 Epoch 132/500
269 136/136 [=====] - 0s
      574us/step - loss: 0.3379 - accuracy: 0.8735
270 Epoch 133/500
271 136/136 [=====] - 0s
      535us/step - loss: 0.3486 - accuracy: 0.8686
272 Epoch 134/500
273 136/136 [=====] - 0s
      627us/step - loss: 0.3454 - accuracy: 0.8691
274 Epoch 135/500
275 136/136 [=====] - 0s
      566us/step - loss: 0.3425 - accuracy: 0.8686
276 Epoch 136/500
277 136/136 [=====] - 0s
      538us/step - loss: 0.3328 - accuracy: 0.8779
278 Epoch 137/500
279 136/136 [=====] - 0s
      647us/step - loss: 0.3408 - accuracy: 0.8775
280 Epoch 138/500
281 136/136 [=====] - 0s
      576us/step - loss: 0.3346 - accuracy: 0.8745
282 Epoch 139/500
283 136/136 [=====] - 0s
      535us/step - loss: 0.3326 - accuracy: 0.8794
284 Epoch 140/500
285 136/136 [=====] - 0s
      628us/step - loss: 0.3448 - accuracy: 0.8745
286 Epoch 141/500
287 136/136 [=====] - 0s
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287 569us/step - loss: 0.3315 - accuracy: 0.8745
288 Epoch 142/500
289 136/136 [=====] - 0s
    537us/step - loss: 0.3470 - accuracy: 0.8775
290 Epoch 143/500
291 136/136 [=====] - 0s
    649us/step - loss: 0.3325 - accuracy: 0.8799
292 Epoch 144/500
293 136/136 [=====] - 0s
    575us/step - loss: 0.3365 - accuracy: 0.8755
294 Epoch 145/500
295 136/136 [=====] - 0s
    536us/step - loss: 0.3416 - accuracy: 0.8804
296 Epoch 146/500
297 136/136 [=====] - 0s
    637us/step - loss: 0.3306 - accuracy: 0.8775
298 Epoch 147/500
299 136/136 [=====] - 0s
    565us/step - loss: 0.3252 - accuracy: 0.8765
300 Epoch 148/500
301 136/136 [=====] - 0s
    537us/step - loss: 0.3333 - accuracy: 0.8725
302 Epoch 149/500
303 136/136 [=====] - 0s
    632us/step - loss: 0.3256 - accuracy: 0.8755
304 Epoch 150/500
305 136/136 [=====] - 0s
    590us/step - loss: 0.3356 - accuracy: 0.8721
306 Epoch 151/500
307 136/136 [=====] - 0s
    539us/step - loss: 0.3324 - accuracy: 0.8765
308 Epoch 152/500
309 136/136 [=====] - 0s
    630us/step - loss: 0.3304 - accuracy: 0.8725
310 Epoch 153/500
311 136/136 [=====] - 0s
    561us/step - loss: 0.3288 - accuracy: 0.8794
312 Epoch 154/500
313 136/136 [=====] - 0s
    537us/step - loss: 0.3295 - accuracy: 0.8745
314 Epoch 155/500
315 136/136 [=====] - 0s
    628us/step - loss: 0.3398 - accuracy: 0.8711
316 Epoch 156/500
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317 136/136 [=====] - 0s
    591us/step - loss: 0.3267 - accuracy: 0.8779
318 Epoch 157/500
319 136/136 [=====] - 0s
    537us/step - loss: 0.3269 - accuracy: 0.8838
320 Epoch 158/500
321 136/136 [=====] - 0s
    627us/step - loss: 0.3251 - accuracy: 0.8809
322 Epoch 159/500
323 136/136 [=====] - 0s
    564us/step - loss: 0.3173 - accuracy: 0.8765
324 Epoch 160/500
325 136/136 [=====] - 0s
    535us/step - loss: 0.3217 - accuracy: 0.8799
326 Epoch 161/500
327 136/136 [=====] - 0s
    609us/step - loss: 0.3170 - accuracy: 0.8784
328 Epoch 162/500
329 136/136 [=====] - 0s
    605us/step - loss: 0.3257 - accuracy: 0.8819
330 Epoch 163/500
331 136/136 [=====] - 0s
    540us/step - loss: 0.3234 - accuracy: 0.8843
332 Epoch 164/500
333 136/136 [=====] - 0s
    622us/step - loss: 0.3185 - accuracy: 0.8819
334 Epoch 165/500
335 136/136 [=====] - 0s
    565us/step - loss: 0.3203 - accuracy: 0.8775
336 Epoch 166/500
337 136/136 [=====] - 0s
    536us/step - loss: 0.3309 - accuracy: 0.8848
338 Epoch 167/500
339 136/136 [=====] - 0s
    627us/step - loss: 0.3242 - accuracy: 0.8843
340 Epoch 168/500
341 136/136 [=====] - 0s
    595us/step - loss: 0.3145 - accuracy: 0.8809
342 Epoch 169/500
343 136/136 [=====] - 0s
    542us/step - loss: 0.3312 - accuracy: 0.8779
344 Epoch 170/500
345 136/136 [=====] - 0s
    625us/step - loss: 0.3156 - accuracy: 0.8824
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346 Epoch 171/500
347 136/136 [=====] - 0s
      565us/step - loss: 0.3314 - accuracy: 0.8760
348 Epoch 172/500
349 136/136 [=====] - 0s
      539us/step - loss: 0.3196 - accuracy: 0.8784
350 Epoch 173/500
351 136/136 [=====] - 0s
      625us/step - loss: 0.3089 - accuracy: 0.8873
352 Epoch 174/500
353 136/136 [=====] - 0s
      562us/step - loss: 0.3250 - accuracy: 0.8784
354 Epoch 175/500
355 136/136 [=====] - 0s
      558us/step - loss: 0.3279 - accuracy: 0.8779
356 Epoch 176/500
357 136/136 [=====] - 0s
      675us/step - loss: 0.3298 - accuracy: 0.8775
358 Epoch 177/500
359 136/136 [=====] - 0s
      585us/step - loss: 0.3179 - accuracy: 0.8819
360 Epoch 178/500
361 136/136 [=====] - 0s
      535us/step - loss: 0.3119 - accuracy: 0.8809
362 Epoch 179/500
363 136/136 [=====] - 0s
      626us/step - loss: 0.3102 - accuracy: 0.8868
364 Epoch 180/500
365 136/136 [=====] - 0s
      562us/step - loss: 0.3069 - accuracy: 0.8863
366 Epoch 181/500
367 136/136 [=====] - 0s
      546us/step - loss: 0.3105 - accuracy: 0.8858
368 Epoch 182/500
369 136/136 [=====] - 0s
      624us/step - loss: 0.3249 - accuracy: 0.8804
370 Epoch 183/500
371 136/136 [=====] - 0s
      580us/step - loss: 0.3106 - accuracy: 0.8833
372 Epoch 184/500
373 136/136 [=====] - 0s
      532us/step - loss: 0.3238 - accuracy: 0.8814
374 Epoch 185/500
375 136/136 [=====] - 0s
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375 619us/step - loss: 0.3186 - accuracy: 0.8779
376 Epoch 186/500
377 136/136 [=====] - 0s
    574us/step - loss: 0.3020 - accuracy: 0.8863
378 Epoch 187/500
379 136/136 [=====] - 0s
    563us/step - loss: 0.3128 - accuracy: 0.8824
380 Epoch 188/500
381 136/136 [=====] - 0s
    628us/step - loss: 0.3200 - accuracy: 0.8794
382 Epoch 189/500
383 136/136 [=====] - 0s
    563us/step - loss: 0.3196 - accuracy: 0.8770
384 Epoch 190/500
385 136/136 [=====] - 0s
    541us/step - loss: 0.3183 - accuracy: 0.8804
386 Epoch 191/500
387 136/136 [=====] - 0s
    629us/step - loss: 0.3029 - accuracy: 0.8843
388 Epoch 192/500
389 136/136 [=====] - 0s
    566us/step - loss: 0.3211 - accuracy: 0.8819
390 Epoch 193/500
391 136/136 [=====] - 0s
    556us/step - loss: 0.3026 - accuracy: 0.8868
392 Epoch 194/500
393 136/136 [=====] - 0s
    626us/step - loss: 0.3060 - accuracy: 0.8833
394 Epoch 195/500
395 136/136 [=====] - 0s
    565us/step - loss: 0.3150 - accuracy: 0.8824
396 Epoch 196/500
397 136/136 [=====] - 0s
    538us/step - loss: 0.3030 - accuracy: 0.8843
398 Epoch 197/500
399 136/136 [=====] - 0s
    624us/step - loss: 0.3107 - accuracy: 0.8858
400 Epoch 198/500
401 136/136 [=====] - 0s
    570us/step - loss: 0.3006 - accuracy: 0.8838
402 Epoch 199/500
403 136/136 [=====] - 0s
    535us/step - loss: 0.3054 - accuracy: 0.8819
404 Epoch 200/500
```

```
405 136/136 [=====] - 0s
    650us/step - loss: 0.3105 - accuracy: 0.8833
406 Epoch 201/500
407 136/136 [=====] - 0s
    579us/step - loss: 0.2973 - accuracy: 0.8819
408 Epoch 202/500
409 136/136 [=====] - 0s
    535us/step - loss: 0.3071 - accuracy: 0.8809
410 Epoch 203/500
411 136/136 [=====] - 0s
    627us/step - loss: 0.3039 - accuracy: 0.8848
412 Epoch 204/500
413 136/136 [=====] - 0s
    564us/step - loss: 0.2942 - accuracy: 0.8863
414 Epoch 205/500
415 136/136 [=====] - 0s
    538us/step - loss: 0.3148 - accuracy: 0.8804
416 Epoch 206/500
417 136/136 [=====] - 0s
    654us/step - loss: 0.2982 - accuracy: 0.8907
418 Epoch 207/500
419 136/136 [=====] - 0s
    564us/step - loss: 0.3049 - accuracy: 0.8828
420 Epoch 208/500
421 136/136 [=====] - 0s
    539us/step - loss: 0.2952 - accuracy: 0.8848
422 Epoch 209/500
423 136/136 [=====] - 0s
    628us/step - loss: 0.3026 - accuracy: 0.8877
424 Epoch 210/500
425 136/136 [=====] - 0s
    567us/step - loss: 0.2973 - accuracy: 0.8892
426 Epoch 211/500
427 136/136 [=====] - 0s
    538us/step - loss: 0.3077 - accuracy: 0.8887
428 Epoch 212/500
429 136/136 [=====] - 0s
    662us/step - loss: 0.3025 - accuracy: 0.8814
430 Epoch 213/500
431 136/136 [=====] - 0s
    565us/step - loss: 0.2920 - accuracy: 0.8907
432 Epoch 214/500
433 136/136 [=====] - 0s
    536us/step - loss: 0.2966 - accuracy: 0.8931
```

```
434 Epoch 215/500
435 136/136 [=====] - 0s
    627us/step - loss: 0.3054 - accuracy: 0.8828
436 Epoch 216/500
437 136/136 [=====] - 0s
    556us/step - loss: 0.2999 - accuracy: 0.8838
438 Epoch 217/500
439 136/136 [=====] - 0s
    524us/step - loss: 0.3002 - accuracy: 0.8966
440 Epoch 218/500
441 136/136 [=====] - 0s
    651us/step - loss: 0.3025 - accuracy: 0.8877
442 Epoch 219/500
443 136/136 [=====] - 0s
    583us/step - loss: 0.3020 - accuracy: 0.8848
444 Epoch 220/500
445 136/136 [=====] - 0s
    538us/step - loss: 0.2946 - accuracy: 0.8868
446 Epoch 221/500
447 136/136 [=====] - 0s
    627us/step - loss: 0.2978 - accuracy: 0.8858
448 Epoch 222/500
449 136/136 [=====] - 0s
    567us/step - loss: 0.2952 - accuracy: 0.8887
450 Epoch 223/500
451 136/136 [=====] - 0s
    534us/step - loss: 0.2933 - accuracy: 0.8843
452 Epoch 224/500
453 136/136 [=====] - 0s
    629us/step - loss: 0.2885 - accuracy: 0.8956
454 Epoch 225/500
455 136/136 [=====] - 0s
    594us/step - loss: 0.2991 - accuracy: 0.8907
456 Epoch 226/500
457 136/136 [=====] - 0s
    531us/step - loss: 0.3077 - accuracy: 0.8873
458 Epoch 227/500
459 136/136 [=====] - 0s
    628us/step - loss: 0.2866 - accuracy: 0.8956
460 Epoch 228/500
461 136/136 [=====] - 0s
    562us/step - loss: 0.2867 - accuracy: 0.8936
462 Epoch 229/500
463 136/136 [=====] - 0s
```

```
463 537us/step - loss: 0.2947 - accuracy: 0.8897
464 Epoch 230/500
465 136/136 [=====] - 0s
    624us/step - loss: 0.2897 - accuracy: 0.8966
466 Epoch 231/500
467 136/136 [=====] - 0s
    598us/step - loss: 0.2929 - accuracy: 0.8882
468 Epoch 232/500
469 136/136 [=====] - 0s
    540us/step - loss: 0.3018 - accuracy: 0.8833
470 Epoch 233/500
471 136/136 [=====] - 0s
    626us/step - loss: 0.2925 - accuracy: 0.8853
472 Epoch 234/500
473 136/136 [=====] - 0s
    568us/step - loss: 0.3072 - accuracy: 0.8892
474 Epoch 235/500
475 136/136 [=====] - 0s
    537us/step - loss: 0.2939 - accuracy: 0.8873
476 Epoch 236/500
477 136/136 [=====] - 0s
    625us/step - loss: 0.2940 - accuracy: 0.8912
478 Epoch 237/500
479 136/136 [=====] - 0s
    589us/step - loss: 0.2913 - accuracy: 0.8907
480 Epoch 238/500
481 136/136 [=====] - 0s
    529us/step - loss: 0.2871 - accuracy: 0.8936
482 Epoch 239/500
483 136/136 [=====] - 0s
    611us/step - loss: 0.3073 - accuracy: 0.8887
484 Epoch 240/500
485 136/136 [=====] - 0s
    583us/step - loss: 0.2904 - accuracy: 0.8926
486 Epoch 241/500
487 136/136 [=====] - 0s
    547us/step - loss: 0.2823 - accuracy: 0.8926
488 Epoch 242/500
489 136/136 [=====] - 0s
    683us/step - loss: 0.2782 - accuracy: 0.8961
490 Epoch 243/500
491 136/136 [=====] - 0s
    596us/step - loss: 0.2785 - accuracy: 0.8975
492 Epoch 244/500
```

```
493 136/136 [=====] - 0s
    538us/step - loss: 0.2881 - accuracy: 0.8897
494 Epoch 245/500
495 136/136 [=====] - 0s
    679us/step - loss: 0.2840 - accuracy: 0.8941
496 Epoch 246/500
497 136/136 [=====] - 0s
    545us/step - loss: 0.3001 - accuracy: 0.8892
498 Epoch 247/500
499 136/136 [=====] - 0s
    537us/step - loss: 0.2953 - accuracy: 0.8912
500 Epoch 248/500
501 136/136 [=====] - 0s
    629us/step - loss: 0.2804 - accuracy: 0.8941
502 Epoch 249/500
503 136/136 [=====] - 0s
    585us/step - loss: 0.2791 - accuracy: 0.8990
504 Epoch 250/500
505 136/136 [=====] - 0s
    537us/step - loss: 0.2744 - accuracy: 0.8941
506 Epoch 251/500
507 136/136 [=====] - 0s
    624us/step - loss: 0.2919 - accuracy: 0.8882
508 Epoch 252/500
509 136/136 [=====] - 0s
    566us/step - loss: 0.2810 - accuracy: 0.8971
510 Epoch 253/500
511 136/136 [=====] - 0s
    535us/step - loss: 0.2847 - accuracy: 0.8941
512 Epoch 254/500
513 136/136 [=====] - 0s
    622us/step - loss: 0.2793 - accuracy: 0.9010
514 Epoch 255/500
515 136/136 [=====] - 0s
    570us/step - loss: 0.2839 - accuracy: 0.8922
516 Epoch 256/500
517 136/136 [=====] - 0s
    536us/step - loss: 0.2940 - accuracy: 0.8907
518 Epoch 257/500
519 136/136 [=====] - 0s
    656us/step - loss: 0.2824 - accuracy: 0.8892
520 Epoch 258/500
521 136/136 [=====] - 0s
    578us/step - loss: 0.2788 - accuracy: 0.8941
```

```
522 Epoch 259/500
523 136/136 [=====] - 0s
    535us/step - loss: 0.2791 - accuracy: 0.8931
524 Epoch 260/500
525 136/136 [=====] - 0s
    629us/step - loss: 0.2764 - accuracy: 0.8926
526 Epoch 261/500
527 136/136 [=====] - 0s
    568us/step - loss: 0.2824 - accuracy: 0.8961
528 Epoch 262/500
529 136/136 [=====] - 0s
    560us/step - loss: 0.2669 - accuracy: 0.8990
530 Epoch 263/500
531 136/136 [=====] - 0s
    618us/step - loss: 0.2813 - accuracy: 0.8936
532 Epoch 264/500
533 136/136 [=====] - 0s
    569us/step - loss: 0.2804 - accuracy: 0.8956
534 Epoch 265/500
535 136/136 [=====] - 0s
    536us/step - loss: 0.2847 - accuracy: 0.8926
536 Epoch 266/500
537 136/136 [=====] - 0s
    621us/step - loss: 0.2762 - accuracy: 0.8980
538 Epoch 267/500
539 136/136 [=====] - 0s
    566us/step - loss: 0.2804 - accuracy: 0.8975
540 Epoch 268/500
541 136/136 [=====] - 0s
    565us/step - loss: 0.2802 - accuracy: 0.8956
542 Epoch 269/500
543 136/136 [=====] - 0s
    674us/step - loss: 0.2777 - accuracy: 0.8951
544 Epoch 270/500
545 136/136 [=====] - 0s
    600us/step - loss: 0.2723 - accuracy: 0.8990
546 Epoch 271/500
547 136/136 [=====] - 0s
    556us/step - loss: 0.2773 - accuracy: 0.8995
548 Epoch 272/500
549 136/136 [=====] - 0s
    746us/step - loss: 0.2654 - accuracy: 0.9020
550 Epoch 273/500
551 136/136 [=====] - 0s
```

```
551 550us/step - loss: 0.2763 - accuracy: 0.8966
552 Epoch 274/500
553 136/136 [=====] - 0s
    564us/step - loss: 0.2726 - accuracy: 0.8956
554 Epoch 275/500
555 136/136 [=====] - 0s
    603us/step - loss: 0.2736 - accuracy: 0.8941
556 Epoch 276/500
557 136/136 [=====] - 0s
    538us/step - loss: 0.2690 - accuracy: 0.8946
558 Epoch 277/500
559 136/136 [=====] - 0s
    580us/step - loss: 0.2786 - accuracy: 0.8966
560 Epoch 278/500
561 136/136 [=====] - 0s
    611us/step - loss: 0.2693 - accuracy: 0.9020
562 Epoch 279/500
563 136/136 [=====] - 0s
    536us/step - loss: 0.2715 - accuracy: 0.8912
564 Epoch 280/500
565 136/136 [=====] - 0s
    656us/step - loss: 0.2714 - accuracy: 0.8975
566 Epoch 281/500
567 136/136 [=====] - 0s
    579us/step - loss: 0.2649 - accuracy: 0.8985
568 Epoch 282/500
569 136/136 [=====] - 0s
    542us/step - loss: 0.2745 - accuracy: 0.8995
570 Epoch 283/500
571 136/136 [=====] - 0s
    633us/step - loss: 0.2748 - accuracy: 0.8956
572 Epoch 284/500
573 136/136 [=====] - 0s
    561us/step - loss: 0.2699 - accuracy: 0.9010
574 Epoch 285/500
575 136/136 [=====] - 0s
    539us/step - loss: 0.2747 - accuracy: 0.8936
576 Epoch 286/500
577 136/136 [=====] - 0s
    654us/step - loss: 0.2769 - accuracy: 0.9015
578 Epoch 287/500
579 136/136 [=====] - 0s
    586us/step - loss: 0.2726 - accuracy: 0.8971
580 Epoch 288/500
```

```
581 136/136 [=====] - 0s
    540us/step - loss: 0.2643 - accuracy: 0.9118
582 Epoch 289/500
583 136/136 [=====] - 0s
    633us/step - loss: 0.2744 - accuracy: 0.8936
584 Epoch 290/500
585 136/136 [=====] - 0s
    573us/step - loss: 0.2622 - accuracy: 0.8995
586 Epoch 291/500
587 136/136 [=====] - 0s
    540us/step - loss: 0.2668 - accuracy: 0.8995
588 Epoch 292/500
589 136/136 [=====] - 0s
    647us/step - loss: 0.2668 - accuracy: 0.8995
590 Epoch 293/500
591 136/136 [=====] - 0s
    586us/step - loss: 0.2647 - accuracy: 0.8995
592 Epoch 294/500
593 136/136 [=====] - 0s
    541us/step - loss: 0.2888 - accuracy: 0.8951
594 Epoch 295/500
595 136/136 [=====] - 0s
    629us/step - loss: 0.2726 - accuracy: 0.8966
596 Epoch 296/500
597 136/136 [=====] - 0s
    567us/step - loss: 0.2573 - accuracy: 0.8966
598 Epoch 297/500
599 136/136 [=====] - 0s
    531us/step - loss: 0.2619 - accuracy: 0.9054
600 Epoch 298/500
601 136/136 [=====] - 0s
    614us/step - loss: 0.2803 - accuracy: 0.8975
602 Epoch 299/500
603 136/136 [=====] - 0s
    605us/step - loss: 0.2862 - accuracy: 0.8897
604 Epoch 300/500
605 136/136 [=====] - 0s
    541us/step - loss: 0.2628 - accuracy: 0.9113
606 Epoch 301/500
607 136/136 [=====] - 0s
    622us/step - loss: 0.2553 - accuracy: 0.9029
608 Epoch 302/500
609 136/136 [=====] - 0s
    567us/step - loss: 0.2587 - accuracy: 0.9020
```

```
610 Epoch 303/500
611 136/136 [=====] - 0s
    541us/step - loss: 0.2564 - accuracy: 0.9020
612 Epoch 304/500
613 136/136 [=====] - 0s
    626us/step - loss: 0.2633 - accuracy: 0.8936
614 Epoch 305/500
615 136/136 [=====] - 0s
    590us/step - loss: 0.2609 - accuracy: 0.9034
616 Epoch 306/500
617 136/136 [=====] - 0s
    544us/step - loss: 0.2571 - accuracy: 0.9039
618 Epoch 307/500
619 136/136 [=====] - 0s
    630us/step - loss: 0.2549 - accuracy: 0.9054
620 Epoch 308/500
621 136/136 [=====] - 0s
    566us/step - loss: 0.2616 - accuracy: 0.8995
622 Epoch 309/500
623 136/136 [=====] - 0s
    543us/step - loss: 0.2640 - accuracy: 0.9059
624 Epoch 310/500
625 136/136 [=====] - 0s
    636us/step - loss: 0.2635 - accuracy: 0.9025
626 Epoch 311/500
627 136/136 [=====] - 0s
    584us/step - loss: 0.2546 - accuracy: 0.9049
628 Epoch 312/500
629 136/136 [=====] - 0s
    541us/step - loss: 0.2668 - accuracy: 0.8971
630 Epoch 313/500
631 136/136 [=====] - 0s
    615us/step - loss: 0.2571 - accuracy: 0.9054
632 Epoch 314/500
633 136/136 [=====] - 0s
    576us/step - loss: 0.2619 - accuracy: 0.8990
634 Epoch 315/500
635 136/136 [=====] - 0s
    556us/step - loss: 0.2578 - accuracy: 0.9044
636 Epoch 316/500
637 136/136 [=====] - 0s
    629us/step - loss: 0.2607 - accuracy: 0.8917
638 Epoch 317/500
639 136/136 [=====] - 0s
```

```
639 587us/step - loss: 0.2592 - accuracy: 0.9005
640 Epoch 318/500
641 136/136 [=====] - 0s
  545us/step - loss: 0.2618 - accuracy: 0.8990
642 Epoch 319/500
643 136/136 [=====] - 0s
  627us/step - loss: 0.2626 - accuracy: 0.9025
644 Epoch 320/500
645 136/136 [=====] - 0s
  571us/step - loss: 0.2600 - accuracy: 0.8990
646 Epoch 321/500
647 136/136 [=====] - 0s
  544us/step - loss: 0.2493 - accuracy: 0.9049
648 Epoch 322/500
649 136/136 [=====] - 0s
  621us/step - loss: 0.2600 - accuracy: 0.9010
650 Epoch 323/500
651 136/136 [=====] - 0s
  572us/step - loss: 0.2644 - accuracy: 0.9010
652 Epoch 324/500
653 136/136 [=====] - 0s
  565us/step - loss: 0.2548 - accuracy: 0.9020
654 Epoch 325/500
655 136/136 [=====] - 0s
  662us/step - loss: 0.2479 - accuracy: 0.9064
656 Epoch 326/500
657 136/136 [=====] - 0s
  561us/step - loss: 0.2596 - accuracy: 0.8995
658 Epoch 327/500
659 136/136 [=====] - 0s
  543us/step - loss: 0.2565 - accuracy: 0.9010
660 Epoch 328/500
661 136/136 [=====] - 0s
  629us/step - loss: 0.2566 - accuracy: 0.9039
662 Epoch 329/500
663 136/136 [=====] - 0s
  572us/step - loss: 0.2482 - accuracy: 0.9064
664 Epoch 330/500
665 136/136 [=====] - 0s
  566us/step - loss: 0.2514 - accuracy: 0.9059
666 Epoch 331/500
667 136/136 [=====] - 0s
  621us/step - loss: 0.2506 - accuracy: 0.9064
668 Epoch 332/500
```

```
669 136/136 [=====] - 0s
    565us/step - loss: 0.2455 - accuracy: 0.9098
670 Epoch 333/500
671 136/136 [=====] - 0s
    554us/step - loss: 0.2550 - accuracy: 0.9078
672 Epoch 334/500
673 136/136 [=====] - 0s
    633us/step - loss: 0.2467 - accuracy: 0.9088
674 Epoch 335/500
675 136/136 [=====] - 0s
    569us/step - loss: 0.2526 - accuracy: 0.9039
676 Epoch 336/500
677 136/136 [=====] - 0s
    565us/step - loss: 0.2462 - accuracy: 0.9142
678 Epoch 337/500
679 136/136 [=====] - 0s
    687us/step - loss: 0.2538 - accuracy: 0.9054
680 Epoch 338/500
681 136/136 [=====] - 0s
    569us/step - loss: 0.2585 - accuracy: 0.8995
682 Epoch 339/500
683 136/136 [=====] - 0s
    541us/step - loss: 0.2554 - accuracy: 0.8990
684 Epoch 340/500
685 136/136 [=====] - 0s
    633us/step - loss: 0.2528 - accuracy: 0.9025
686 Epoch 341/500
687 136/136 [=====] - 0s
    564us/step - loss: 0.2522 - accuracy: 0.9020
688 Epoch 342/500
689 136/136 [=====] - 0s
    568us/step - loss: 0.2590 - accuracy: 0.9078
690 Epoch 343/500
691 136/136 [=====] - 0s
    624us/step - loss: 0.2760 - accuracy: 0.8951
692 Epoch 344/500
693 136/136 [=====] - 0s
    570us/step - loss: 0.2518 - accuracy: 0.9059
694 Epoch 345/500
695 136/136 [=====] - 0s
    543us/step - loss: 0.2541 - accuracy: 0.9029
696 Epoch 346/500
697 136/136 [=====] - 0s
    625us/step - loss: 0.2491 - accuracy: 0.9064
```

```
698 Epoch 347/500
699 136/136 [=====] - 0s
    575us/step - loss: 0.2503 - accuracy: 0.9059
700 Epoch 348/500
701 136/136 [=====] - 0s
    564us/step - loss: 0.2574 - accuracy: 0.8980
702 Epoch 349/500
703 136/136 [=====] - 0s
    628us/step - loss: 0.2413 - accuracy: 0.9098
704 Epoch 350/500
705 136/136 [=====] - 0s
    568us/step - loss: 0.2459 - accuracy: 0.9074
706 Epoch 351/500
707 136/136 [=====] - 0s
    546us/step - loss: 0.2501 - accuracy: 0.9078
708 Epoch 352/500
709 136/136 [=====] - 0s
    624us/step - loss: 0.2454 - accuracy: 0.9059
710 Epoch 353/500
711 136/136 [=====] - 0s
    565us/step - loss: 0.2570 - accuracy: 0.9010
712 Epoch 354/500
713 136/136 [=====] - 0s
    548us/step - loss: 0.2558 - accuracy: 0.9020
714 Epoch 355/500
715 136/136 [=====] - 0s
    669us/step - loss: 0.2419 - accuracy: 0.9069
716 Epoch 356/500
717 136/136 [=====] - 0s
    571us/step - loss: 0.2611 - accuracy: 0.9000
718 Epoch 357/500
719 136/136 [=====] - 0s
    555us/step - loss: 0.2404 - accuracy: 0.9078
720 Epoch 358/500
721 136/136 [=====] - 0s
    672us/step - loss: 0.2399 - accuracy: 0.9127
722 Epoch 359/500
723 136/136 [=====] - 0s
    559us/step - loss: 0.2505 - accuracy: 0.9044
724 Epoch 360/500
725 136/136 [=====] - 0s
    538us/step - loss: 0.2433 - accuracy: 0.9093
726 Epoch 361/500
727 136/136 [=====] - 0s
```

```
727 693us/step - loss: 0.2446 - accuracy: 0.9015
728 Epoch 362/500
729 136/136 [=====] - 0s
    557us/step - loss: 0.2402 - accuracy: 0.9113
730 Epoch 363/500
731 136/136 [=====] - 0s
    542us/step - loss: 0.2396 - accuracy: 0.9069
732 Epoch 364/500
733 136/136 [=====] - 0s
    633us/step - loss: 0.2444 - accuracy: 0.9059
734 Epoch 365/500
735 136/136 [=====] - 0s
    568us/step - loss: 0.2499 - accuracy: 0.9010
736 Epoch 366/500
737 136/136 [=====] - 0s
    545us/step - loss: 0.2379 - accuracy: 0.9132
738 Epoch 367/500
739 136/136 [=====] - 0s
    652us/step - loss: 0.2395 - accuracy: 0.9108
740 Epoch 368/500
741 136/136 [=====] - 0s
    570us/step - loss: 0.2444 - accuracy: 0.9098
742 Epoch 369/500
743 136/136 [=====] - 0s
    542us/step - loss: 0.2473 - accuracy: 0.9064
744 Epoch 370/500
745 136/136 [=====] - 0s
    631us/step - loss: 0.2496 - accuracy: 0.9034
746 Epoch 371/500
747 136/136 [=====] - 0s
    564us/step - loss: 0.2403 - accuracy: 0.9074
748 Epoch 372/500
749 136/136 [=====] - 0s
    543us/step - loss: 0.2424 - accuracy: 0.9049
750 Epoch 373/500
751 136/136 [=====] - 0s
    656us/step - loss: 0.2424 - accuracy: 0.9098
752 Epoch 374/500
753 136/136 [=====] - 0s
    574us/step - loss: 0.2470 - accuracy: 0.9049
754 Epoch 375/500
755 136/136 [=====] - 0s
    545us/step - loss: 0.2480 - accuracy: 0.9069
756 Epoch 376/500
```

```
757 136/136 [=====] - 0s
    629us/step - loss: 0.2442 - accuracy: 0.9103
758 Epoch 377/500
759 136/136 [=====] - 0s
    568us/step - loss: 0.2447 - accuracy: 0.9074
760 Epoch 378/500
761 136/136 [=====] - 0s
    537us/step - loss: 0.2537 - accuracy: 0.8980
762 Epoch 379/500
763 136/136 [=====] - 0s
    657us/step - loss: 0.2383 - accuracy: 0.9127
764 Epoch 380/500
765 136/136 [=====] - 0s
    582us/step - loss: 0.2410 - accuracy: 0.9078
766 Epoch 381/500
767 136/136 [=====] - 0s
    544us/step - loss: 0.2380 - accuracy: 0.9098
768 Epoch 382/500
769 136/136 [=====] - 0s
    660us/step - loss: 0.2402 - accuracy: 0.9118
770 Epoch 383/500
771 136/136 [=====] - 0s
    567us/step - loss: 0.2454 - accuracy: 0.9093
772 Epoch 384/500
773 136/136 [=====] - 0s
    545us/step - loss: 0.2392 - accuracy: 0.9054
774 Epoch 385/500
775 136/136 [=====] - 0s
    647us/step - loss: 0.2290 - accuracy: 0.9191
776 Epoch 386/500
777 136/136 [=====] - 0s
    581us/step - loss: 0.2389 - accuracy: 0.9127
778 Epoch 387/500
779 136/136 [=====] - 0s
    545us/step - loss: 0.2431 - accuracy: 0.9113
780 Epoch 388/500
781 136/136 [=====] - 0s
    633us/step - loss: 0.2418 - accuracy: 0.9059
782 Epoch 389/500
783 136/136 [=====] - 0s
    570us/step - loss: 0.2269 - accuracy: 0.9162
784 Epoch 390/500
785 136/136 [=====] - 0s
    545us/step - loss: 0.2460 - accuracy: 0.9069
```

```
786 Epoch 391/500
787 136/136 [=====] - 0s
    634us/step - loss: 0.2369 - accuracy: 0.9137
788 Epoch 392/500
789 136/136 [=====] - 0s
    592us/step - loss: 0.2298 - accuracy: 0.9132
790 Epoch 393/500
791 136/136 [=====] - 0s
    546us/step - loss: 0.2370 - accuracy: 0.9118
792 Epoch 394/500
793 136/136 [=====] - 0s
    630us/step - loss: 0.2253 - accuracy: 0.9157
794 Epoch 395/500
795 136/136 [=====] - 0s
    569us/step - loss: 0.2341 - accuracy: 0.9103
796 Epoch 396/500
797 136/136 [=====] - 0s
    542us/step - loss: 0.2392 - accuracy: 0.9088
798 Epoch 397/500
799 136/136 [=====] - 0s
    652us/step - loss: 0.2397 - accuracy: 0.9098
800 Epoch 398/500
801 136/136 [=====] - 0s
    606us/step - loss: 0.2291 - accuracy: 0.9132
802 Epoch 399/500
803 136/136 [=====] - 0s
    540us/step - loss: 0.2310 - accuracy: 0.9186
804 Epoch 400/500
805 136/136 [=====] - 0s
    629us/step - loss: 0.2346 - accuracy: 0.9157
806 Epoch 401/500
807 136/136 [=====] - 0s
    549us/step - loss: 0.2365 - accuracy: 0.9142
808 Epoch 402/500
809 136/136 [=====] - 0s
    548us/step - loss: 0.2257 - accuracy: 0.9113
810 Epoch 403/500
811 136/136 [=====] - 0s
    624us/step - loss: 0.2253 - accuracy: 0.9157
812 Epoch 404/500
813 136/136 [=====] - 0s
    594us/step - loss: 0.2251 - accuracy: 0.9206
814 Epoch 405/500
815 136/136 [=====] - 0s
```

```
815 543us/step - loss: 0.2287 - accuracy: 0.9191
816 Epoch 406/500
817 136/136 [=====] - 0s
    628us/step - loss: 0.2303 - accuracy: 0.9142
818 Epoch 407/500
819 136/136 [=====] - 0s
    564us/step - loss: 0.2381 - accuracy: 0.9078
820 Epoch 408/500
821 136/136 [=====] - 0s
    540us/step - loss: 0.2267 - accuracy: 0.9132
822 Epoch 409/500
823 136/136 [=====] - 0s
    630us/step - loss: 0.2216 - accuracy: 0.9132
824 Epoch 410/500
825 136/136 [=====] - 0s
    594us/step - loss: 0.2444 - accuracy: 0.9029
826 Epoch 411/500
827 136/136 [=====] - 0s
    544us/step - loss: 0.2284 - accuracy: 0.9147
828 Epoch 412/500
829 136/136 [=====] - 0s
    634us/step - loss: 0.2260 - accuracy: 0.9113
830 Epoch 413/500
831 136/136 [=====] - 0s
    572us/step - loss: 0.2275 - accuracy: 0.9167
832 Epoch 414/500
833 136/136 [=====] - 0s
    543us/step - loss: 0.2335 - accuracy: 0.9147
834 Epoch 415/500
835 136/136 [=====] - 0s
    631us/step - loss: 0.2241 - accuracy: 0.9216
836 Epoch 416/500
837 136/136 [=====] - 0s
    594us/step - loss: 0.2242 - accuracy: 0.9172
838 Epoch 417/500
839 136/136 [=====] - 0s
    548us/step - loss: 0.2148 - accuracy: 0.9221
840 Epoch 418/500
841 136/136 [=====] - 0s
    629us/step - loss: 0.2254 - accuracy: 0.9137
842 Epoch 419/500
843 136/136 [=====] - 0s
    561us/step - loss: 0.2350 - accuracy: 0.9103
844 Epoch 420/500
```

```
845 136/136 [=====] - 0s
    536us/step - loss: 0.2238 - accuracy: 0.9181
846 Epoch 421/500
847 136/136 [=====] - 0s
    635us/step - loss: 0.2274 - accuracy: 0.9147
848 Epoch 422/500
849 136/136 [=====] - 0s
    568us/step - loss: 0.2265 - accuracy: 0.9108
850 Epoch 423/500
851 136/136 [=====] - 0s
    563us/step - loss: 0.2179 - accuracy: 0.9167
852 Epoch 424/500
853 136/136 [=====] - 0s
    628us/step - loss: 0.2311 - accuracy: 0.9132
854 Epoch 425/500
855 136/136 [=====] - 0s
    566us/step - loss: 0.2172 - accuracy: 0.9167
856 Epoch 426/500
857 136/136 [=====] - 0s
    544us/step - loss: 0.2340 - accuracy: 0.9157
858 Epoch 427/500
859 136/136 [=====] - 0s
    625us/step - loss: 0.2223 - accuracy: 0.9167
860 Epoch 428/500
861 136/136 [=====] - 0s
    564us/step - loss: 0.2232 - accuracy: 0.9167
862 Epoch 429/500
863 136/136 [=====] - 0s
    555us/step - loss: 0.2268 - accuracy: 0.9211
864 Epoch 430/500
865 136/136 [=====] - 0s
    605us/step - loss: 0.2279 - accuracy: 0.9167
866 Epoch 431/500
867 136/136 [=====] - 0s
    548us/step - loss: 0.2255 - accuracy: 0.9162
868 Epoch 432/500
869 136/136 [=====] - 0s
    531us/step - loss: 0.2292 - accuracy: 0.9186
870 Epoch 433/500
871 136/136 [=====] - 0s
    630us/step - loss: 0.2143 - accuracy: 0.9186
872 Epoch 434/500
873 136/136 [=====] - 0s
    588us/step - loss: 0.2242 - accuracy: 0.9152
```

```
874 Epoch 435/500
875 136/136 [=====] - 0s
      565us/step - loss: 0.2354 - accuracy: 0.9113
876 Epoch 436/500
877 136/136 [=====] - 0s
      627us/step - loss: 0.2180 - accuracy: 0.9167
878 Epoch 437/500
879 136/136 [=====] - 0s
      571us/step - loss: 0.2175 - accuracy: 0.9201
880 Epoch 438/500
881 136/136 [=====] - 0s
      544us/step - loss: 0.2283 - accuracy: 0.9142
882 Epoch 439/500
883 136/136 [=====] - 0s
      633us/step - loss: 0.2079 - accuracy: 0.9240
884 Epoch 440/500
885 136/136 [=====] - 0s
      570us/step - loss: 0.2216 - accuracy: 0.9157
886 Epoch 441/500
887 136/136 [=====] - 0s
      551us/step - loss: 0.2170 - accuracy: 0.9245
888 Epoch 442/500
889 136/136 [=====] - 0s
      630us/step - loss: 0.2171 - accuracy: 0.9176
890 Epoch 443/500
891 136/136 [=====] - 0s
      598us/step - loss: 0.2211 - accuracy: 0.9176
892 Epoch 444/500
893 136/136 [=====] - 0s
      543us/step - loss: 0.2219 - accuracy: 0.9147
894 Epoch 445/500
895 136/136 [=====] - 0s
      630us/step - loss: 0.2082 - accuracy: 0.9230
896 Epoch 446/500
897 136/136 [=====] - 0s
      571us/step - loss: 0.2468 - accuracy: 0.9064
898 Epoch 447/500
899 136/136 [=====] - 0s
      542us/step - loss: 0.2180 - accuracy: 0.9230
900 Epoch 448/500
901 136/136 [=====] - 0s
      651us/step - loss: 0.2275 - accuracy: 0.9167
902 Epoch 449/500
903 136/136 [=====] - 0s
```

```
903 572us/step - loss: 0.2142 - accuracy: 0.9201
904 Epoch 450/500
905 136/136 [=====] - 0s
543us/step - loss: 0.2209 - accuracy: 0.9196
906 Epoch 451/500
907 136/136 [=====] - 0s
626us/step - loss: 0.2112 - accuracy: 0.9191
908 Epoch 452/500
909 136/136 [=====] - 0s
578us/step - loss: 0.2170 - accuracy: 0.9196
910 Epoch 453/500
911 136/136 [=====] - 0s
544us/step - loss: 0.2235 - accuracy: 0.9152
912 Epoch 454/500
913 136/136 [=====] - 0s
662us/step - loss: 0.2146 - accuracy: 0.9167
914 Epoch 455/500
915 136/136 [=====] - 0s
563us/step - loss: 0.2145 - accuracy: 0.9196
916 Epoch 456/500
917 136/136 [=====] - 0s
544us/step - loss: 0.2226 - accuracy: 0.9196
918 Epoch 457/500
919 136/136 [=====] - 0s
638us/step - loss: 0.2149 - accuracy: 0.9152
920 Epoch 458/500
921 136/136 [=====] - 0s
572us/step - loss: 0.2260 - accuracy: 0.9162
922 Epoch 459/500
923 136/136 [=====] - 0s
550us/step - loss: 0.2115 - accuracy: 0.9255
924 Epoch 460/500
925 136/136 [=====] - 0s
672us/step - loss: 0.2083 - accuracy: 0.9270
926 Epoch 461/500
927 136/136 [=====] - 0s
569us/step - loss: 0.2155 - accuracy: 0.9162
928 Epoch 462/500
929 136/136 [=====] - 0s
538us/step - loss: 0.2034 - accuracy: 0.9196
930 Epoch 463/500
931 136/136 [=====] - 0s
630us/step - loss: 0.2115 - accuracy: 0.9240
932 Epoch 464/500
```

```
933 136/136 [=====] - 0s
    571us/step - loss: 0.2144 - accuracy: 0.9230
934 Epoch 465/500
935 136/136 [=====] - 0s
    543us/step - loss: 0.2248 - accuracy: 0.9191
936 Epoch 466/500
937 136/136 [=====] - 0s
    668us/step - loss: 0.2155 - accuracy: 0.9186
938 Epoch 467/500
939 136/136 [=====] - 0s
    576us/step - loss: 0.2174 - accuracy: 0.9181
940 Epoch 468/500
941 136/136 [=====] - 0s
    542us/step - loss: 0.2130 - accuracy: 0.9157
942 Epoch 469/500
943 136/136 [=====] - 0s
    631us/step - loss: 0.2238 - accuracy: 0.9162
944 Epoch 470/500
945 136/136 [=====] - 0s
    565us/step - loss: 0.2148 - accuracy: 0.9245
946 Epoch 471/500
947 136/136 [=====] - 0s
    536us/step - loss: 0.2088 - accuracy: 0.9240
948 Epoch 472/500
949 136/136 [=====] - 0s
    695us/step - loss: 0.2102 - accuracy: 0.9206
950 Epoch 473/500
951 136/136 [=====] - 0s
    575us/step - loss: 0.2268 - accuracy: 0.9157
952 Epoch 474/500
953 136/136 [=====] - 0s
    540us/step - loss: 0.2182 - accuracy: 0.9147
954 Epoch 475/500
955 136/136 [=====] - 0s
    604us/step - loss: 0.2188 - accuracy: 0.9132
956 Epoch 476/500
957 136/136 [=====] - 0s
    541us/step - loss: 0.2103 - accuracy: 0.9230
958 Epoch 477/500
959 136/136 [=====] - 0s
    596us/step - loss: 0.2059 - accuracy: 0.9279
960 Epoch 478/500
961 136/136 [=====] - 0s
    626us/step - loss: 0.2058 - accuracy: 0.9230
```

```
962 Epoch 479/500
963 136/136 [=====] - 0s
      542us/step - loss: 0.2157 - accuracy: 0.9186
964 Epoch 480/500
965 136/136 [=====] - 0s
      697us/step - loss: 0.2098 - accuracy: 0.9235
966 Epoch 481/500
967 136/136 [=====] - 0s
      575us/step - loss: 0.2049 - accuracy: 0.9245
968 Epoch 482/500
969 136/136 [=====] - 0s
      540us/step - loss: 0.2167 - accuracy: 0.9221
970 Epoch 483/500
971 136/136 [=====] - 0s
      701us/step - loss: 0.2089 - accuracy: 0.9191
972 Epoch 484/500
973 136/136 [=====] - 0s
      591us/step - loss: 0.2035 - accuracy: 0.9250
974 Epoch 485/500
975 136/136 [=====] - 0s
      550us/step - loss: 0.1991 - accuracy: 0.9358
976 Epoch 486/500
977 136/136 [=====] - 0s
      767us/step - loss: 0.2033 - accuracy: 0.9284
978 Epoch 487/500
979 136/136 [=====] - 0s
      563us/step - loss: 0.2036 - accuracy: 0.9270
980 Epoch 488/500
981 136/136 [=====] - 0s
      629us/step - loss: 0.1978 - accuracy: 0.9255
982 Epoch 489/500
983 136/136 [=====] - 0s
      580us/step - loss: 0.1960 - accuracy: 0.9284
984 Epoch 490/500
985 136/136 [=====] - 0s
      588us/step - loss: 0.1961 - accuracy: 0.9289
986 Epoch 491/500
987 136/136 [=====] - 0s
      622us/step - loss: 0.2167 - accuracy: 0.9221
988 Epoch 492/500
989 136/136 [=====] - 0s
      571us/step - loss: 0.2121 - accuracy: 0.9225
990 Epoch 493/500
991 136/136 [=====] - 0s
```

```
991 543us/step - loss: 0.2086 - accuracy: 0.9191
992 Epoch 494/500
993 136/136 [=====] - 0s
    632us/step - loss: 0.2010 - accuracy: 0.9235
994 Epoch 495/500
995 136/136 [=====] - 0s
    569us/step - loss: 0.1995 - accuracy: 0.9279
996 Epoch 496/500
997 136/136 [=====] - 0s
    559us/step - loss: 0.2014 - accuracy: 0.9230
998 Epoch 497/500
999 136/136 [=====] - 0s
    637us/step - loss: 0.2051 - accuracy: 0.9225
1000 Epoch 498/500
1001 136/136 [=====] - 0s
    569us/step - loss: 0.1952 - accuracy: 0.9314
1002 Epoch 499/500
1003 136/136 [=====] - 0s
    541us/step - loss: 0.2122 - accuracy: 0.9225
1004 Epoch 500/500
1005 136/136 [=====] - 0s
    679us/step - loss: 0.2122 - accuracy: 0.9250
1006 WARNING:tensorflow:From /Library/Frameworks/
Python.framework/Versions/3.8/lib/python3.8/site-
packages/tensorflow/python/training/tracking/
tracking.py:111: Model.state_updates (from
tensorflow.python.keras.engine.training) is
deprecated and will be removed in a future
version.
1007 Instructions for updating:
1008 This property should not be used in TensorFlow 2.
0, as updates are applied automatically.
1009 2020-09-04 00:44:08.818355: W tensorflow/python/
util/util.cc:348] Sets are not currently
considered sequences, but this may change in the
future, so consider avoiding using them.
1010 WARNING:tensorflow:From /Library/Frameworks/
Python.framework/Versions/3.8/lib/python3.8/site-
packages/tensorflow/python/training/tracking/
tracking.py:111: Layer.updates (from tensorflow.
python.keras.engine.base_layer) is deprecated and
will be removed in a future version.
1011 Instructions for updating:
1012 This property should not be used in TensorFlow 2.
```

```
1012 0, as updates are applied automatically.  
1013  
1014 Process finished with exit code 0  
1015
```