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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 ['norm_imperVIOUS' 'tan_imperVIOUS' '
norm_imperVIOUS' ...]
3 ['norm_imperVIOUS' 'dry_pervious' 'norm_pervious']
4 [2 5 2 ... 2 0 3]
5 2020-09-03 19:27:34.957541: 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
6 To enable them in other operations, rebuild
TensorFlow with the appropriate compiler flags.
7 2020-09-03 19:27:34.967117: I tensorflow/compiler/
xla/service/service.cc:168] XLA service
0x7fea89714080 initialized for platform Host (this
does not guarantee that XLA will be used). Devices:
8 2020-09-03 19:27:34.967127: I tensorflow/compiler/
xla/service/service.cc:176] StreamExecutor device
(0): Host, Default Version
9 [[0.30362644 0.32236881 0.29612949 ... 0.37484746 0
.38234441 0.32236881]
10 [0.38498641 0.33609925 0.26582395 ... 0.35748738 0
.32998835 0.25665761]
11 [0.32926562 0.33627127 0.29774019 ... 0.37830518 0
.381808 0.31875714]
12 ...
13 [0.31306804 0.32338897 0.28554558 ... 0.40251605 0
.40595636 0.35435174]
14 [0.42824723 0.39255996 0.27955027 ... 0.26765452 0
.28549815 0.19925392]
15 [0.21592634 0.31118796 0.19052324 ... 0.38739725 0
.450905 0.28578486]]
16 (2138, 9)
17 (2138, 7)
18 Epoch 1/350
19 143/143 [=====] - 0s 674us
/step - loss: 0.4036 - accuracy: 0.3157
20 Epoch 2/350
21 143/143 [=====] - 0s 630us
/step - loss: 0.3285 - accuracy: 0.4570
22 Epoch 3/350

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23 143/143 [=====] - 0s 691us
  /step - loss: 0.2342 - accuracy: 0.6679
24 Epoch 4/350
25 143/143 [=====] - 0s 621us
  /step - loss: 0.1931 - accuracy: 0.7236
26 Epoch 5/350
27 143/143 [=====] - 0s 647us
  /step - loss: 0.1724 - accuracy: 0.7516
28 Epoch 6/350
29 143/143 [=====] - 0s 743us
  /step - loss: 0.1588 - accuracy: 0.7689
30 Epoch 7/350
31 143/143 [=====] - 0s 659us
  /step - loss: 0.1510 - accuracy: 0.7811
32 Epoch 8/350
33 143/143 [=====] - 0s 823us
  /step - loss: 0.1436 - accuracy: 0.7919
34 Epoch 9/350
35 143/143 [=====] - 0s 869us
  /step - loss: 0.1396 - accuracy: 0.7956
36 Epoch 10/350
37 143/143 [=====] - 0s 715us
  /step - loss: 0.1363 - accuracy: 0.8012
38 Epoch 11/350
39 143/143 [=====] - 0s 628us
  /step - loss: 0.1377 - accuracy: 0.8012
40 Epoch 12/350
41 143/143 [=====] - 0s 658us
  /step - loss: 0.1346 - accuracy: 0.8026
42 Epoch 13/350
43 143/143 [=====] - 0s 663us
  /step - loss: 0.1324 - accuracy: 0.8073
44 Epoch 14/350
45 143/143 [=====] - 0s 624us
  /step - loss: 0.1299 - accuracy: 0.8223
46 Epoch 15/350
47 143/143 [=====] - 0s 756us
  /step - loss: 0.1290 - accuracy: 0.8101
48 Epoch 16/350
49 143/143 [=====] - 0s 643us
  /step - loss: 0.1270 - accuracy: 0.8227
50 Epoch 17/350
51 143/143 [=====] - 0s 662us
  /step - loss: 0.1259 - accuracy: 0.8237
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52 Epoch 18/350
53 143/143 [=====] - 0s 647us
    /step - loss: 0.1277 - accuracy: 0.8171
54 Epoch 19/350
55 143/143 [=====] - 0s 674us
    /step - loss: 0.1253 - accuracy: 0.8269
56 Epoch 20/350
57 143/143 [=====] - 0s 711us
    /step - loss: 0.1195 - accuracy: 0.8340
58 Epoch 21/350
59 143/143 [=====] - 0s 650us
    /step - loss: 0.1261 - accuracy: 0.8293
60 Epoch 22/350
61 143/143 [=====] - 0s 751us
    /step - loss: 0.1219 - accuracy: 0.8246
62 Epoch 23/350
63 143/143 [=====] - 0s 623us
    /step - loss: 0.1162 - accuracy: 0.8377
64 Epoch 24/350
65 143/143 [=====] - 0s 664us
    /step - loss: 0.1199 - accuracy: 0.8358
66 Epoch 25/350
67 143/143 [=====] - 0s 662us
    /step - loss: 0.1185 - accuracy: 0.8358
68 Epoch 26/350
69 143/143 [=====] - 0s 694us
    /step - loss: 0.1176 - accuracy: 0.8335
70 Epoch 27/350
71 143/143 [=====] - 0s 665us
    /step - loss: 0.1149 - accuracy: 0.8447
72 Epoch 28/350
73 143/143 [=====] - 0s 624us
    /step - loss: 0.1137 - accuracy: 0.8405
74 Epoch 29/350
75 143/143 [=====] - 0s 748us
    /step - loss: 0.1150 - accuracy: 0.8424
76 Epoch 30/350
77 143/143 [=====] - 0s 627us
    /step - loss: 0.1145 - accuracy: 0.8433
78 Epoch 31/350
79 143/143 [=====] - 0s 689us
    /step - loss: 0.1137 - accuracy: 0.8447
80 Epoch 32/350
81 143/143 [=====] - 0s 658us
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81 /step - loss: 0.1144 - accuracy: 0.8396
82 Epoch 33/350
83 143/143 [=====] - 0s
    621us/step - loss: 0.1136 - accuracy: 0.8424
84 Epoch 34/350
85 143/143 [=====] - 0s
    743us/step - loss: 0.1098 - accuracy: 0.8494
86 Epoch 35/350
87 143/143 [=====] - 0s
    661us/step - loss: 0.1112 - accuracy: 0.8457
88 Epoch 36/350
89 143/143 [=====] - 0s
    693us/step - loss: 0.1140 - accuracy: 0.8442
90 Epoch 37/350
91 143/143 [=====] - 0s
    657us/step - loss: 0.1097 - accuracy: 0.8480
92 Epoch 38/350
93 143/143 [=====] - 0s
    662us/step - loss: 0.1092 - accuracy: 0.8536
94 Epoch 39/350
95 143/143 [=====] - 0s
    667us/step - loss: 0.1101 - accuracy: 0.8438
96 Epoch 40/350
97 143/143 [=====] - 0s
    612us/step - loss: 0.1095 - accuracy: 0.8522
98 Epoch 41/350
99 143/143 [=====] - 0s
    800us/step - loss: 0.1076 - accuracy: 0.8494
100 Epoch 42/350
101 143/143 [=====] - 0s
    662us/step - loss: 0.1088 - accuracy: 0.8517
102 Epoch 43/350
103 143/143 [=====] - 0s
    662us/step - loss: 0.1079 - accuracy: 0.8499
104 Epoch 44/350
105 143/143 [=====] - 0s
    664us/step - loss: 0.1072 - accuracy: 0.8457
106 Epoch 45/350
107 143/143 [=====] - 0s
    663us/step - loss: 0.1050 - accuracy: 0.8616
108 Epoch 46/350
109 143/143 [=====] - 0s
    696us/step - loss: 0.1072 - accuracy: 0.8508
110 Epoch 47/350
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111 143/143 [=====] - 0s
    629us/step - loss: 0.1061 - accuracy: 0.8541
112 Epoch 48/350
113 143/143 [=====] - 0s
    752us/step - loss: 0.1039 - accuracy: 0.8569
114 Epoch 49/350
115 143/143 [=====] - 0s
    629us/step - loss: 0.1029 - accuracy: 0.8578
116 Epoch 50/350
117 143/143 [=====] - 0s
    652us/step - loss: 0.1061 - accuracy: 0.8461
118 Epoch 51/350
119 143/143 [=====] - 0s
    701us/step - loss: 0.1031 - accuracy: 0.8559
120 Epoch 52/350
121 143/143 [=====] - 0s
    663us/step - loss: 0.1010 - accuracy: 0.8601
122 Epoch 53/350
123 143/143 [=====] - 0s
    747us/step - loss: 0.1006 - accuracy: 0.8583
124 Epoch 54/350
125 143/143 [=====] - 0s
    625us/step - loss: 0.0998 - accuracy: 0.8616
126 Epoch 55/350
127 143/143 [=====] - 0s
    665us/step - loss: 0.1021 - accuracy: 0.8578
128 Epoch 56/350
129 143/143 [=====] - 0s
    687us/step - loss: 0.1013 - accuracy: 0.8550
130 Epoch 57/350
131 143/143 [=====] - 0s
    623us/step - loss: 0.1034 - accuracy: 0.8545
132 Epoch 58/350
133 143/143 [=====] - 0s
    755us/step - loss: 0.1001 - accuracy: 0.8644
134 Epoch 59/350
135 143/143 [=====] - 0s
    625us/step - loss: 0.0992 - accuracy: 0.8616
136 Epoch 60/350
137 143/143 [=====] - 0s
    659us/step - loss: 0.0999 - accuracy: 0.8601
138 Epoch 61/350
139 143/143 [=====] - 0s
    662us/step - loss: 0.0978 - accuracy: 0.8587
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140 Epoch 62/350
141 143/143 [=====] - 0s
    648us/step - loss: 0.0981 - accuracy: 0.8606
142 Epoch 63/350
143 143/143 [=====] - 0s
    757us/step - loss: 0.0967 - accuracy: 0.8644
144 Epoch 64/350
145 143/143 [=====] - 0s
    626us/step - loss: 0.0980 - accuracy: 0.8690
146 Epoch 65/350
147 143/143 [=====] - 0s
    658us/step - loss: 0.0987 - accuracy: 0.8587
148 Epoch 66/350
149 143/143 [=====] - 0s
    642us/step - loss: 0.1000 - accuracy: 0.8597
150 Epoch 67/350
151 143/143 [=====] - 0s
    701us/step - loss: 0.0974 - accuracy: 0.8644
152 Epoch 68/350
153 143/143 [=====] - 0s
    759us/step - loss: 0.0976 - accuracy: 0.8658
154 Epoch 69/350
155 143/143 [=====] - 0s
    627us/step - loss: 0.0990 - accuracy: 0.8587
156 Epoch 70/350
157 143/143 [=====] - 0s
    663us/step - loss: 0.0973 - accuracy: 0.8634
158 Epoch 71/350
159 143/143 [=====] - 0s
    662us/step - loss: 0.0953 - accuracy: 0.8704
160 Epoch 72/350
161 143/143 [=====] - 0s
    651us/step - loss: 0.0990 - accuracy: 0.8606
162 Epoch 73/350
163 143/143 [=====] - 0s
    749us/step - loss: 0.0947 - accuracy: 0.8601
164 Epoch 74/350
165 143/143 [=====] - 0s
    625us/step - loss: 0.0947 - accuracy: 0.8658
166 Epoch 75/350
167 143/143 [=====] - 0s
    660us/step - loss: 0.0989 - accuracy: 0.8606
168 Epoch 76/350
169 143/143 [=====] - 0s
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169 660us/step - loss: 0.0965 - accuracy: 0.8630
170 Epoch 77/350
171 143/143 [=====] - 0s
    653us/step - loss: 0.0929 - accuracy: 0.8709
172 Epoch 78/350
173 143/143 [=====] - 0s
    759us/step - loss: 0.0953 - accuracy: 0.8620
174 Epoch 79/350
175 143/143 [=====] - 0s
    626us/step - loss: 0.0936 - accuracy: 0.8681
176 Epoch 80/350
177 143/143 [=====] - 0s
    658us/step - loss: 0.0943 - accuracy: 0.8658
178 Epoch 81/350
179 143/143 [=====] - 0s
    666us/step - loss: 0.0951 - accuracy: 0.8639
180 Epoch 82/350
181 143/143 [=====] - 0s
    656us/step - loss: 0.0911 - accuracy: 0.8686
182 Epoch 83/350
183 143/143 [=====] - 0s
    751us/step - loss: 0.0921 - accuracy: 0.8695
184 Epoch 84/350
185 143/143 [=====] - 0s
    615us/step - loss: 0.0932 - accuracy: 0.8681
186 Epoch 85/350
187 143/143 [=====] - 0s
    710us/step - loss: 0.0928 - accuracy: 0.8681
188 Epoch 86/350
189 143/143 [=====] - 0s
    671us/step - loss: 0.0914 - accuracy: 0.8709
190 Epoch 87/350
191 143/143 [=====] - 0s
    650us/step - loss: 0.0932 - accuracy: 0.8662
192 Epoch 88/350
193 143/143 [=====] - 0s
    745us/step - loss: 0.0918 - accuracy: 0.8686
194 Epoch 89/350
195 143/143 [=====] - 0s
    627us/step - loss: 0.0930 - accuracy: 0.8718
196 Epoch 90/350
197 143/143 [=====] - 0s
    661us/step - loss: 0.0901 - accuracy: 0.8751
198 Epoch 91/350
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199 143/143 [=====] - 0s
    662us/step - loss: 0.0962 - accuracy: 0.8653
200 Epoch 92/350
201 143/143 [=====] - 0s
    651us/step - loss: 0.0912 - accuracy: 0.8700
202 Epoch 93/350
203 143/143 [=====] - 0s
    740us/step - loss: 0.0927 - accuracy: 0.8751
204 Epoch 94/350
205 143/143 [=====] - 0s
    630us/step - loss: 0.0947 - accuracy: 0.8667
206 Epoch 95/350
207 143/143 [=====] - 0s
    651us/step - loss: 0.0915 - accuracy: 0.8653
208 Epoch 96/350
209 143/143 [=====] - 0s
    676us/step - loss: 0.0899 - accuracy: 0.8765
210 Epoch 97/350
211 143/143 [=====] - 0s
    666us/step - loss: 0.0887 - accuracy: 0.8746
212 Epoch 98/350
213 143/143 [=====] - 0s
    752us/step - loss: 0.0909 - accuracy: 0.8704
214 Epoch 99/350
215 143/143 [=====] - 0s
    604us/step - loss: 0.0916 - accuracy: 0.8700
216 Epoch 100/350
217 143/143 [=====] - 0s
    706us/step - loss: 0.0926 - accuracy: 0.8709
218 Epoch 101/350
219 143/143 [=====] - 0s
    704us/step - loss: 0.0876 - accuracy: 0.8756
220 Epoch 102/350
221 143/143 [=====] - 0s
    644us/step - loss: 0.0896 - accuracy: 0.8709
222 Epoch 103/350
223 143/143 [=====] - 0s
    797us/step - loss: 0.0892 - accuracy: 0.8732
224 Epoch 104/350
225 143/143 [=====] - 0s
    629us/step - loss: 0.0939 - accuracy: 0.8667
226 Epoch 105/350
227 143/143 [=====] - 0s
    665us/step - loss: 0.0899 - accuracy: 0.8789
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228 Epoch 106/350
229 143/143 [=====] - 0s
    663us/step - loss: 0.0869 - accuracy: 0.8751
230 Epoch 107/350
231 143/143 [=====] - 0s
    666us/step - loss: 0.0877 - accuracy: 0.8784
232 Epoch 108/350
233 143/143 [=====] - 0s
    688us/step - loss: 0.0918 - accuracy: 0.8639
234 Epoch 109/350
235 143/143 [=====] - 0s
    627us/step - loss: 0.0892 - accuracy: 0.8695
236 Epoch 110/350
237 143/143 [=====] - 0s
    742us/step - loss: 0.0856 - accuracy: 0.8817
238 Epoch 111/350
239 143/143 [=====] - 0s
    636us/step - loss: 0.0846 - accuracy: 0.8779
240 Epoch 112/350
241 143/143 [=====] - 0s
    719us/step - loss: 0.0868 - accuracy: 0.8803
242 Epoch 113/350
243 143/143 [=====] - 0s
    684us/step - loss: 0.0875 - accuracy: 0.8714
244 Epoch 114/350
245 143/143 [=====] - 0s
    632us/step - loss: 0.0862 - accuracy: 0.8765
246 Epoch 115/350
247 143/143 [=====] - 0s
    753us/step - loss: 0.0879 - accuracy: 0.8798
248 Epoch 116/350
249 143/143 [=====] - 0s
    630us/step - loss: 0.0883 - accuracy: 0.8742
250 Epoch 117/350
251 143/143 [=====] - 0s
    669us/step - loss: 0.0916 - accuracy: 0.8728
252 Epoch 118/350
253 143/143 [=====] - 0s
    733us/step - loss: 0.0861 - accuracy: 0.8812
254 Epoch 119/350
255 143/143 [=====] - 0s
    624us/step - loss: 0.0881 - accuracy: 0.8742
256 Epoch 120/350
257 143/143 [=====] - 0s
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257 777us/step - loss: 0.0854 - accuracy: 0.8826
258 Epoch 121/350
259 143/143 [=====] - 0s
    661us/step - loss: 0.0844 - accuracy: 0.8831
260 Epoch 122/350
261 143/143 [=====] - 0s
    647us/step - loss: 0.0873 - accuracy: 0.8784
262 Epoch 123/350
263 143/143 [=====] - 0s
    715us/step - loss: 0.0855 - accuracy: 0.8807
264 Epoch 124/350
265 143/143 [=====] - 0s
    669us/step - loss: 0.0842 - accuracy: 0.8812
266 Epoch 125/350
267 143/143 [=====] - 0s
    667us/step - loss: 0.0831 - accuracy: 0.8849
268 Epoch 126/350
269 143/143 [=====] - 0s
    632us/step - loss: 0.0843 - accuracy: 0.8845
270 Epoch 127/350
271 143/143 [=====] - 0s
    750us/step - loss: 0.0845 - accuracy: 0.8775
272 Epoch 128/350
273 143/143 [=====] - 0s
    662us/step - loss: 0.0824 - accuracy: 0.8840
274 Epoch 129/350
275 143/143 [=====] - 0s
    675us/step - loss: 0.0844 - accuracy: 0.8807
276 Epoch 130/350
277 143/143 [=====] - 0s
    666us/step - loss: 0.0848 - accuracy: 0.8821
278 Epoch 131/350
279 143/143 [=====] - 0s
    679us/step - loss: 0.0838 - accuracy: 0.8817
280 Epoch 132/350
281 143/143 [=====] - 0s
    648us/step - loss: 0.0855 - accuracy: 0.8737
282 Epoch 133/350
283 143/143 [=====] - 0s
    638us/step - loss: 0.0860 - accuracy: 0.8765
284 Epoch 134/350
285 143/143 [=====] - 0s
    724us/step - loss: 0.0817 - accuracy: 0.8840
286 Epoch 135/350
```

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287 143/143 [=====] - 0s
    656us/step - loss: 0.0867 - accuracy: 0.8746
288 Epoch 136/350
289 143/143 [=====] - 0s
    723us/step - loss: 0.0866 - accuracy: 0.8775
290 Epoch 137/350
291 143/143 [=====] - 0s
    665us/step - loss: 0.0828 - accuracy: 0.8826
292 Epoch 138/350
293 143/143 [=====] - 0s
    689us/step - loss: 0.0839 - accuracy: 0.8849
294 Epoch 139/350
295 143/143 [=====] - 0s
    661us/step - loss: 0.0846 - accuracy: 0.8845
296 Epoch 140/350
297 143/143 [=====] - 0s
    665us/step - loss: 0.0820 - accuracy: 0.8863
298 Epoch 141/350
299 143/143 [=====] - 0s
    670us/step - loss: 0.0812 - accuracy: 0.8877
300 Epoch 142/350
301 143/143 [=====] - 0s
    633us/step - loss: 0.0829 - accuracy: 0.8789
302 Epoch 143/350
303 143/143 [=====] - 0s
    790us/step - loss: 0.0828 - accuracy: 0.8854
304 Epoch 144/350
305 143/143 [=====] - 0s
    637us/step - loss: 0.0797 - accuracy: 0.8831
306 Epoch 145/350
307 143/143 [=====] - 0s
    665us/step - loss: 0.0818 - accuracy: 0.8854
308 Epoch 146/350
309 143/143 [=====] - 0s
    646us/step - loss: 0.0826 - accuracy: 0.8868
310 Epoch 147/350
311 143/143 [=====] - 0s
    690us/step - loss: 0.0806 - accuracy: 0.8920
312 Epoch 148/350
313 143/143 [=====] - 0s
    714us/step - loss: 0.0800 - accuracy: 0.8901
314 Epoch 149/350
315 143/143 [=====] - 0s
    626us/step - loss: 0.0829 - accuracy: 0.8798
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316 Epoch 150/350
317 143/143 [=====] - 0s
    761us/step - loss: 0.0814 - accuracy: 0.8854
318 Epoch 151/350
319 143/143 [=====] - 0s
    626us/step - loss: 0.0818 - accuracy: 0.8859
320 Epoch 152/350
321 143/143 [=====] - 0s
    663us/step - loss: 0.0830 - accuracy: 0.8877
322 Epoch 153/350
323 143/143 [=====] - 0s
    693us/step - loss: 0.0804 - accuracy: 0.8887
324 Epoch 154/350
325 143/143 [=====] - 0s
    628us/step - loss: 0.0833 - accuracy: 0.8845
326 Epoch 155/350
327 143/143 [=====] - 0s
    750us/step - loss: 0.0809 - accuracy: 0.8845
328 Epoch 156/350
329 143/143 [=====] - 0s
    628us/step - loss: 0.0803 - accuracy: 0.8863
330 Epoch 157/350
331 143/143 [=====] - 0s
    653us/step - loss: 0.0800 - accuracy: 0.8835
332 Epoch 158/350
333 143/143 [=====] - 0s
    652us/step - loss: 0.0809 - accuracy: 0.8807
334 Epoch 159/350
335 143/143 [=====] - 0s
    732us/step - loss: 0.0788 - accuracy: 0.8896
336 Epoch 160/350
337 143/143 [=====] - 0s
    665us/step - loss: 0.0824 - accuracy: 0.8812
338 Epoch 161/350
339 143/143 [=====] - 0s
    616us/step - loss: 0.0779 - accuracy: 0.8887
340 Epoch 162/350
341 143/143 [=====] - 0s
    756us/step - loss: 0.0778 - accuracy: 0.8882
342 Epoch 163/350
343 143/143 [=====] - 0s
    693us/step - loss: 0.0768 - accuracy: 0.8920
344 Epoch 164/350
345 143/143 [=====] - 0s
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345 727us/step - loss: 0.0797 - accuracy: 0.8863
346 Epoch 165/350
347 143/143 [=====] - 0s
    647us/step - loss: 0.0781 - accuracy: 0.8976
348 Epoch 166/350
349 143/143 [=====] - 0s
    660us/step - loss: 0.0781 - accuracy: 0.8924
350 Epoch 167/350
351 143/143 [=====] - 0s
    667us/step - loss: 0.0792 - accuracy: 0.8924
352 Epoch 168/350
353 143/143 [=====] - 0s
    629us/step - loss: 0.0783 - accuracy: 0.8920
354 Epoch 169/350
355 143/143 [=====] - 0s
    764us/step - loss: 0.0792 - accuracy: 0.8920
356 Epoch 170/350
357 143/143 [=====] - 0s
    635us/step - loss: 0.0779 - accuracy: 0.8910
358 Epoch 171/350
359 143/143 [=====] - 0s
    665us/step - loss: 0.0765 - accuracy: 0.8948
360 Epoch 172/350
361 143/143 [=====] - 0s
    666us/step - loss: 0.0760 - accuracy: 0.8943
362 Epoch 173/350
363 143/143 [=====] - 0s
    664us/step - loss: 0.0777 - accuracy: 0.8924
364 Epoch 174/350
365 143/143 [=====] - 0s
    683us/step - loss: 0.0764 - accuracy: 0.8920
366 Epoch 175/350
367 143/143 [=====] - 0s
    623us/step - loss: 0.0749 - accuracy: 0.8934
368 Epoch 176/350
369 143/143 [=====] - 0s
    752us/step - loss: 0.0765 - accuracy: 0.8994
370 Epoch 177/350
371 143/143 [=====] - 0s
    626us/step - loss: 0.0767 - accuracy: 0.8929
372 Epoch 178/350
373 143/143 [=====] - 0s
    663us/step - loss: 0.0773 - accuracy: 0.8924
374 Epoch 179/350
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375 143/143 [=====] - 0s
    691us/step - loss: 0.0784 - accuracy: 0.8882
376 Epoch 180/350
377 143/143 [=====] - 0s
    626us/step - loss: 0.0771 - accuracy: 0.8929
378 Epoch 181/350
379 143/143 [=====] - 0s
    761us/step - loss: 0.0793 - accuracy: 0.8887
380 Epoch 182/350
381 143/143 [=====] - 0s
    628us/step - loss: 0.0775 - accuracy: 0.8938
382 Epoch 183/350
383 143/143 [=====] - 0s
    697us/step - loss: 0.0761 - accuracy: 0.8943
384 Epoch 184/350
385 143/143 [=====] - 0s
    736us/step - loss: 0.0759 - accuracy: 0.8920
386 Epoch 185/350
387 143/143 [=====] - 0s
    653us/step - loss: 0.0789 - accuracy: 0.8920
388 Epoch 186/350
389 143/143 [=====] - 0s
    716us/step - loss: 0.0778 - accuracy: 0.8943
390 Epoch 187/350
391 143/143 [=====] - 0s
    644us/step - loss: 0.0738 - accuracy: 0.9013
392 Epoch 188/350
393 143/143 [=====] - 0s
    760us/step - loss: 0.0744 - accuracy: 0.8934
394 Epoch 189/350
395 143/143 [=====] - 0s
    655us/step - loss: 0.0752 - accuracy: 0.8966
396 Epoch 190/350
397 143/143 [=====] - 0s
    658us/step - loss: 0.0746 - accuracy: 0.8962
398 Epoch 191/350
399 143/143 [=====] - 0s
    662us/step - loss: 0.0738 - accuracy: 0.9008
400 Epoch 192/350
401 143/143 [=====] - 0s
    664us/step - loss: 0.0736 - accuracy: 0.8980
402 Epoch 193/350
403 143/143 [=====] - 0s
    663us/step - loss: 0.0746 - accuracy: 0.8938
```

```
404 Epoch 194/350
405 143/143 [=====] - 0s
    659us/step - loss: 0.0751 - accuracy: 0.8952
406 Epoch 195/350
407 143/143 [=====] - 0s
    788us/step - loss: 0.0751 - accuracy: 0.9004
408 Epoch 196/350
409 143/143 [=====] - 0s
    627us/step - loss: 0.0763 - accuracy: 0.8966
410 Epoch 197/350
411 143/143 [=====] - 0s
    662us/step - loss: 0.0730 - accuracy: 0.9004
412 Epoch 198/350
413 143/143 [=====] - 0s
    664us/step - loss: 0.0723 - accuracy: 0.9041
414 Epoch 199/350
415 143/143 [=====] - 0s
    676us/step - loss: 0.0751 - accuracy: 0.8934
416 Epoch 200/350
417 143/143 [=====] - 0s
    659us/step - loss: 0.0747 - accuracy: 0.9004
418 Epoch 201/350
419 143/143 [=====] - 0s
    608us/step - loss: 0.0756 - accuracy: 0.8868
420 Epoch 202/350
421 143/143 [=====] - 0s
    774us/step - loss: 0.0756 - accuracy: 0.8980
422 Epoch 203/350
423 143/143 [=====] - 0s
    646us/step - loss: 0.0736 - accuracy: 0.8999
424 Epoch 204/350
425 143/143 [=====] - 0s
    682us/step - loss: 0.0753 - accuracy: 0.8990
426 Epoch 205/350
427 143/143 [=====] - 0s
    640us/step - loss: 0.0707 - accuracy: 0.9046
428 Epoch 206/350
429 143/143 [=====] - 0s
    728us/step - loss: 0.0739 - accuracy: 0.8962
430 Epoch 207/350
431 143/143 [=====] - 0s
    676us/step - loss: 0.0716 - accuracy: 0.9046
432 Epoch 208/350
433 143/143 [=====] - 0s
```

```
433 629us/step - loss: 0.0704 - accuracy: 0.9046
434 Epoch 209/350
435 143/143 [=====] - 0s
    778us/step - loss: 0.0725 - accuracy: 0.9013
436 Epoch 210/350
437 143/143 [=====] - 0s
    626us/step - loss: 0.0732 - accuracy: 0.8976
438 Epoch 211/350
439 143/143 [=====] - 0s
    658us/step - loss: 0.0715 - accuracy: 0.8976
440 Epoch 212/350
441 143/143 [=====] - 0s
    661us/step - loss: 0.0718 - accuracy: 0.8962
442 Epoch 213/350
443 143/143 [=====] - 0s
    659us/step - loss: 0.0705 - accuracy: 0.9032
444 Epoch 214/350
445 143/143 [=====] - 0s
    661us/step - loss: 0.0708 - accuracy: 0.9041
446 Epoch 215/350
447 143/143 [=====] - 0s
    660us/step - loss: 0.0722 - accuracy: 0.9032
448 Epoch 216/350
449 143/143 [=====] - 0s
    760us/step - loss: 0.0768 - accuracy: 0.8957
450 Epoch 217/350
451 143/143 [=====] - 0s
    633us/step - loss: 0.0714 - accuracy: 0.9004
452 Epoch 218/350
453 143/143 [=====] - 0s
    682us/step - loss: 0.0738 - accuracy: 0.9022
454 Epoch 219/350
455 143/143 [=====] - 0s
    692us/step - loss: 0.0700 - accuracy: 0.9004
456 Epoch 220/350
457 143/143 [=====] - 0s
    650us/step - loss: 0.0720 - accuracy: 0.9032
458 Epoch 221/350
459 143/143 [=====] - 0s
    760us/step - loss: 0.0686 - accuracy: 0.9060
460 Epoch 222/350
461 143/143 [=====] - 0s
    625us/step - loss: 0.0722 - accuracy: 0.8999
462 Epoch 223/350
```

```
463 143/143 [=====] - 0s
    666us/step - loss: 0.0728 - accuracy: 0.8976
464 Epoch 224/350
465 143/143 [=====] - 0s
    661us/step - loss: 0.0729 - accuracy: 0.8994
466 Epoch 225/350
467 143/143 [=====] - 0s
    660us/step - loss: 0.0717 - accuracy: 0.9046
468 Epoch 226/350
469 143/143 [=====] - 0s
    747us/step - loss: 0.0715 - accuracy: 0.8971
470 Epoch 227/350
471 143/143 [=====] - 0s
    633us/step - loss: 0.0716 - accuracy: 0.9022
472 Epoch 228/350
473 143/143 [=====] - 0s
    709us/step - loss: 0.0719 - accuracy: 0.9022
474 Epoch 229/350
475 143/143 [=====] - 0s
    663us/step - loss: 0.0740 - accuracy: 0.8985
476 Epoch 230/350
477 143/143 [=====] - 0s
    653us/step - loss: 0.0682 - accuracy: 0.9051
478 Epoch 231/350
479 143/143 [=====] - 0s
    796us/step - loss: 0.0739 - accuracy: 0.8948
480 Epoch 232/350
481 143/143 [=====] - 0s
    627us/step - loss: 0.0710 - accuracy: 0.9008
482 Epoch 233/350
483 143/143 [=====] - 0s
    664us/step - loss: 0.0685 - accuracy: 0.9088
484 Epoch 234/350
485 143/143 [=====] - 0s
    661us/step - loss: 0.0707 - accuracy: 0.9022
486 Epoch 235/350
487 143/143 [=====] - 0s
    688us/step - loss: 0.0715 - accuracy: 0.9004
488 Epoch 236/350
489 143/143 [=====] - 0s
    662us/step - loss: 0.0715 - accuracy: 0.8994
490 Epoch 237/350
491 143/143 [=====] - 0s
    629us/step - loss: 0.0691 - accuracy: 0.9036
```

```
492 Epoch 238/350
493 143/143 [=====] - 0s
    753us/step - loss: 0.0682 - accuracy: 0.9116
494 Epoch 239/350
495 143/143 [=====] - 0s
    631us/step - loss: 0.0725 - accuracy: 0.9027
496 Epoch 240/350
497 143/143 [=====] - 0s
    690us/step - loss: 0.0693 - accuracy: 0.9041
498 Epoch 241/350
499 143/143 [=====] - 0s
    663us/step - loss: 0.0667 - accuracy: 0.9069
500 Epoch 242/350
501 143/143 [=====] - 0s
    662us/step - loss: 0.0686 - accuracy: 0.9065
502 Epoch 243/350
503 143/143 [=====] - 0s
    648us/step - loss: 0.0727 - accuracy: 0.9041
504 Epoch 244/350
505 143/143 [=====] - 0s
    641us/step - loss: 0.0714 - accuracy: 0.9004
506 Epoch 245/350
507 143/143 [=====] - 0s
    801us/step - loss: 0.0694 - accuracy: 0.9069
508 Epoch 246/350
509 143/143 [=====] - 0s
    623us/step - loss: 0.0680 - accuracy: 0.9111
510 Epoch 247/350
511 143/143 [=====] - 0s
    643us/step - loss: 0.0674 - accuracy: 0.9069
512 Epoch 248/350
513 143/143 [=====] - 0s
    719us/step - loss: 0.0696 - accuracy: 0.9032
514 Epoch 249/350
515 143/143 [=====] - 0s
    683us/step - loss: 0.0720 - accuracy: 0.8999
516 Epoch 250/350
517 143/143 [=====] - 0s
    681us/step - loss: 0.0648 - accuracy: 0.9153
518 Epoch 251/350
519 143/143 [=====] - 0s
    632us/step - loss: 0.0641 - accuracy: 0.9149
520 Epoch 252/350
521 143/143 [=====] - 0s
```

```
521 749us/step - loss: 0.0676 - accuracy: 0.9074
522 Epoch 253/350
523 143/143 [=====] - 0s
    628us/step - loss: 0.0670 - accuracy: 0.9065
524 Epoch 254/350
525 143/143 [=====] - 0s
    662us/step - loss: 0.0666 - accuracy: 0.9097
526 Epoch 255/350
527 143/143 [=====] - 0s
    660us/step - loss: 0.0688 - accuracy: 0.8994
528 Epoch 256/350
529 143/143 [=====] - 0s
    649us/step - loss: 0.0652 - accuracy: 0.9088
530 Epoch 257/350
531 143/143 [=====] - 0s
    755us/step - loss: 0.0684 - accuracy: 0.9036
532 Epoch 258/350
533 143/143 [=====] - 0s
    624us/step - loss: 0.0643 - accuracy: 0.9181
534 Epoch 259/350
535 143/143 [=====] - 0s
    661us/step - loss: 0.0684 - accuracy: 0.9046
536 Epoch 260/350
537 143/143 [=====] - 0s
    662us/step - loss: 0.0653 - accuracy: 0.9088
538 Epoch 261/350
539 143/143 [=====] - 0s
    688us/step - loss: 0.0697 - accuracy: 0.9088
540 Epoch 262/350
541 143/143 [=====] - 0s
    666us/step - loss: 0.0658 - accuracy: 0.9051
542 Epoch 263/350
543 143/143 [=====] - 0s
    626us/step - loss: 0.0663 - accuracy: 0.9149
544 Epoch 264/350
545 143/143 [=====] - 0s
    755us/step - loss: 0.0627 - accuracy: 0.9107
546 Epoch 265/350
547 143/143 [=====] - 0s
    629us/step - loss: 0.0693 - accuracy: 0.9065
548 Epoch 266/350
549 143/143 [=====] - 0s
    688us/step - loss: 0.0666 - accuracy: 0.9130
550 Epoch 267/350
```

```
551 143/143 [=====] - 0s
    661us/step - loss: 0.0646 - accuracy: 0.9097
552 Epoch 268/350
553 143/143 [=====] - 0s
    621us/step - loss: 0.0680 - accuracy: 0.9093
554 Epoch 269/350
555 143/143 [=====] - 0s
    744us/step - loss: 0.0650 - accuracy: 0.9130
556 Epoch 270/350
557 143/143 [=====] - 0s
    629us/step - loss: 0.0673 - accuracy: 0.9046
558 Epoch 271/350
559 143/143 [=====] - 0s
    687us/step - loss: 0.0665 - accuracy: 0.9097
560 Epoch 272/350
561 143/143 [=====] - 0s
    658us/step - loss: 0.0641 - accuracy: 0.9135
562 Epoch 273/350
563 143/143 [=====] - 0s
    618us/step - loss: 0.0647 - accuracy: 0.9135
564 Epoch 274/350
565 143/143 [=====] - 0s
    792us/step - loss: 0.0639 - accuracy: 0.9144
566 Epoch 275/350
567 143/143 [=====] - 0s
    628us/step - loss: 0.0623 - accuracy: 0.9181
568 Epoch 276/350
569 143/143 [=====] - 0s
    679us/step - loss: 0.0619 - accuracy: 0.9149
570 Epoch 277/350
571 143/143 [=====] - 0s
    663us/step - loss: 0.0624 - accuracy: 0.9149
572 Epoch 278/350
573 143/143 [=====] - 0s
    660us/step - loss: 0.0646 - accuracy: 0.9130
574 Epoch 279/350
575 143/143 [=====] - 0s
    661us/step - loss: 0.0639 - accuracy: 0.9093
576 Epoch 280/350
577 143/143 [=====] - 0s
    629us/step - loss: 0.0679 - accuracy: 0.9060
578 Epoch 281/350
579 143/143 [=====] - 0s
    784us/step - loss: 0.0621 - accuracy: 0.9191
```

```
580 Epoch 282/350
581 143/143 [=====] - 0s
    627us/step - loss: 0.0653 - accuracy: 0.9083
582 Epoch 283/350
583 143/143 [=====] - 0s
    659us/step - loss: 0.0666 - accuracy: 0.9135
584 Epoch 284/350
585 143/143 [=====] - 0s
    663us/step - loss: 0.0633 - accuracy: 0.9149
586 Epoch 285/350
587 143/143 [=====] - 0s
    658us/step - loss: 0.0634 - accuracy: 0.9135
588 Epoch 286/350
589 143/143 [=====] - 0s
    683us/step - loss: 0.0646 - accuracy: 0.9130
590 Epoch 287/350
591 143/143 [=====] - 0s
    630us/step - loss: 0.0656 - accuracy: 0.9074
592 Epoch 288/350
593 143/143 [=====] - 0s
    739us/step - loss: 0.0686 - accuracy: 0.9121
594 Epoch 289/350
595 143/143 [=====] - 0s
    622us/step - loss: 0.0648 - accuracy: 0.9111
596 Epoch 290/350
597 143/143 [=====] - 0s
    668us/step - loss: 0.0617 - accuracy: 0.9177
598 Epoch 291/350
599 143/143 [=====] - 0s
    683us/step - loss: 0.0610 - accuracy: 0.9191
600 Epoch 292/350
601 143/143 [=====] - 0s
    649us/step - loss: 0.0607 - accuracy: 0.9205
602 Epoch 293/350
603 143/143 [=====] - 0s
    749us/step - loss: 0.0609 - accuracy: 0.9149
604 Epoch 294/350
605 143/143 [=====] - 0s
    629us/step - loss: 0.0613 - accuracy: 0.9167
606 Epoch 295/350
607 143/143 [=====] - 0s
    663us/step - loss: 0.0590 - accuracy: 0.9186
608 Epoch 296/350
609 143/143 [=====] - 0s
```

```
609 663us/step - loss: 0.0644 - accuracy: 0.9121
610 Epoch 297/350
611 143/143 [=====] - 0s
    655us/step - loss: 0.0611 - accuracy: 0.9196
612 Epoch 298/350
613 143/143 [=====] - 0s
    757us/step - loss: 0.0624 - accuracy: 0.9079
614 Epoch 299/350
615 143/143 [=====] - 0s
    618us/step - loss: 0.0599 - accuracy: 0.9181
616 Epoch 300/350
617 143/143 [=====] - 0s
    656us/step - loss: 0.0643 - accuracy: 0.9111
618 Epoch 301/350
619 143/143 [=====] - 0s
    710us/step - loss: 0.0612 - accuracy: 0.9121
620 Epoch 302/350
621 143/143 [=====] - 0s
    655us/step - loss: 0.0620 - accuracy: 0.9102
622 Epoch 303/350
623 143/143 [=====] - 0s
    762us/step - loss: 0.0607 - accuracy: 0.9158
624 Epoch 304/350
625 143/143 [=====] - 0s
    622us/step - loss: 0.0582 - accuracy: 0.9158
626 Epoch 305/350
627 143/143 [=====] - 0s
    663us/step - loss: 0.0602 - accuracy: 0.9121
628 Epoch 306/350
629 143/143 [=====] - 0s
    668us/step - loss: 0.0598 - accuracy: 0.9149
630 Epoch 307/350
631 143/143 [=====] - 0s
    669us/step - loss: 0.0588 - accuracy: 0.9238
632 Epoch 308/350
633 143/143 [=====] - 0s
    677us/step - loss: 0.0590 - accuracy: 0.9153
634 Epoch 309/350
635 143/143 [=====] - 0s
    661us/step - loss: 0.0608 - accuracy: 0.9172
636 Epoch 310/350
637 143/143 [=====] - 0s
    762us/step - loss: 0.0585 - accuracy: 0.9186
638 Epoch 311/350
```

```
639 143/143 [=====] - 0s
    627us/step - loss: 0.0599 - accuracy: 0.9238
640 Epoch 312/350
641 143/143 [=====] - 0s
    681us/step - loss: 0.0571 - accuracy: 0.9219
642 Epoch 313/350
643 143/143 [=====] - 0s
    659us/step - loss: 0.0633 - accuracy: 0.9181
644 Epoch 314/350
645 143/143 [=====] - 0s
    662us/step - loss: 0.0604 - accuracy: 0.9167
646 Epoch 315/350
647 143/143 [=====] - 0s
    661us/step - loss: 0.0601 - accuracy: 0.9233
648 Epoch 316/350
649 143/143 [=====] - 0s
    622us/step - loss: 0.0576 - accuracy: 0.9205
650 Epoch 317/350
651 143/143 [=====] - 0s
    781us/step - loss: 0.0596 - accuracy: 0.9196
652 Epoch 318/350
653 143/143 [=====] - 0s
    631us/step - loss: 0.0648 - accuracy: 0.9088
654 Epoch 319/350
655 143/143 [=====] - 0s
    661us/step - loss: 0.0598 - accuracy: 0.9224
656 Epoch 320/350
657 143/143 [=====] - 0s
    662us/step - loss: 0.0605 - accuracy: 0.9177
658 Epoch 321/350
659 143/143 [=====] - 0s
    658us/step - loss: 0.0587 - accuracy: 0.9242
660 Epoch 322/350
661 143/143 [=====] - 0s
    686us/step - loss: 0.0619 - accuracy: 0.9130
662 Epoch 323/350
663 143/143 [=====] - 0s
    629us/step - loss: 0.0572 - accuracy: 0.9200
664 Epoch 324/350
665 143/143 [=====] - 0s
    748us/step - loss: 0.0583 - accuracy: 0.9200
666 Epoch 325/350
667 143/143 [=====] - 0s
    629us/step - loss: 0.0570 - accuracy: 0.9205
```

```
668 Epoch 326/350
669 143/143 [=====] - 0s
    660us/step - loss: 0.0608 - accuracy: 0.9093
670 Epoch 327/350
671 143/143 [=====] - 0s
    668us/step - loss: 0.0605 - accuracy: 0.9186
672 Epoch 328/350
673 143/143 [=====] - 0s
    652us/step - loss: 0.0573 - accuracy: 0.9181
674 Epoch 329/350
675 143/143 [=====] - 0s
    758us/step - loss: 0.0608 - accuracy: 0.9153
676 Epoch 330/350
677 143/143 [=====] - 0s
    627us/step - loss: 0.0595 - accuracy: 0.9144
678 Epoch 331/350
679 143/143 [=====] - 0s
    658us/step - loss: 0.0576 - accuracy: 0.9191
680 Epoch 332/350
681 143/143 [=====] - 0s
    652us/step - loss: 0.0608 - accuracy: 0.9167
682 Epoch 333/350
683 143/143 [=====] - 0s
    699us/step - loss: 0.0564 - accuracy: 0.9303
684 Epoch 334/350
685 143/143 [=====] - 0s
    780us/step - loss: 0.0571 - accuracy: 0.9181
686 Epoch 335/350
687 143/143 [=====] - 0s
    624us/step - loss: 0.0583 - accuracy: 0.9149
688 Epoch 336/350
689 143/143 [=====] - 0s
    666us/step - loss: 0.0591 - accuracy: 0.9121
690 Epoch 337/350
691 143/143 [=====] - 0s
    662us/step - loss: 0.0604 - accuracy: 0.9200
692 Epoch 338/350
693 143/143 [=====] - 0s
    686us/step - loss: 0.0605 - accuracy: 0.9200
694 Epoch 339/350
695 143/143 [=====] - 0s
    659us/step - loss: 0.0559 - accuracy: 0.9191
696 Epoch 340/350
697 143/143 [=====] - 0s
```

```
697 618us/step - loss: 0.0558 - accuracy: 0.9210
698 Epoch 341/350
699 143/143 [=====] - 0s
    744us/step - loss: 0.0546 - accuracy: 0.9280
700 Epoch 342/350
701 143/143 [=====] - 0s
    678us/step - loss: 0.0568 - accuracy: 0.9205
702 Epoch 343/350
703 143/143 [=====] - 0s
    673us/step - loss: 0.0646 - accuracy: 0.9079
704 Epoch 344/350
705 143/143 [=====] - 0s
    698us/step - loss: 0.0557 - accuracy: 0.9228
706 Epoch 345/350
707 143/143 [=====] - 0s
    697us/step - loss: 0.0565 - accuracy: 0.9210
708 Epoch 346/350
709 143/143 [=====] - 0s
    664us/step - loss: 0.0549 - accuracy: 0.9228
710 Epoch 347/350
711 143/143 [=====] - 0s
    658us/step - loss: 0.0576 - accuracy: 0.9242
712 Epoch 348/350
713 143/143 [=====] - 0s
    687us/step - loss: 0.0584 - accuracy: 0.9196
714 Epoch 349/350
715 143/143 [=====] - 0s
    625us/step - loss: 0.0537 - accuracy: 0.9252
716 Epoch 350/350
717 143/143 [=====] - 0s
    749us/step - loss: 0.0557 - accuracy: 0.9266
718 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
.
719 Instructions for updating:
720 This property should not be used in TensorFlow 2.0
, as updates are applied automatically.
721 2020-09-03 19:28:09.787862: W tensorflow/python/
util/util.cc:348] Sets are not currently
considered sequences, but this may change in the
```

```
721 future, so consider avoiding using them.  
722 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.  
723 Instructions for updating:  
724 This property should not be used in TensorFlow 2.0  
, as updates are applied automatically.  
725  
726 Process finished with exit code 0  
727
```