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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 18:43:05.387304: 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 18:43:05.397039: I tensorflow/compiler/
xla/service/service.cc:168] XLA service
0x7fabd46d23e0 initialized for platform Host (this
does not guarantee that XLA will be used). Devices:
8 2020-09-03 18:43:05.397068: 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 610us
/step - loss: 1.5690 - accuracy: 0.4294
20 Epoch 2/350
21 143/143 [=====] - 0s 577us
/step - loss: 0.9476 - accuracy: 0.6833
22 Epoch 3/350

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23 143/143 [=====] - 0s 614us
  /step - loss: 0.7055 - accuracy: 0.7563
24 Epoch 4/350
25 143/143 [=====] - 0s 597us
  /step - loss: 0.6445 - accuracy: 0.7689
26 Epoch 5/350
27 143/143 [=====] - 0s 611us
  /step - loss: 0.5985 - accuracy: 0.7862
28 Epoch 6/350
29 143/143 [=====] - 0s 623us
  /step - loss: 0.5861 - accuracy: 0.7947
30 Epoch 7/350
31 143/143 [=====] - 0s 572us
  /step - loss: 0.5687 - accuracy: 0.7937
32 Epoch 8/350
33 143/143 [=====] - 0s 653us
  /step - loss: 0.5818 - accuracy: 0.7905
34 Epoch 9/350
35 143/143 [=====] - 0s 614us
  /step - loss: 0.5285 - accuracy: 0.8073
36 Epoch 10/350
37 143/143 [=====] - 0s 969us
  /step - loss: 0.5509 - accuracy: 0.8022
38 Epoch 11/350
39 143/143 [=====] - 0s 591us
  /step - loss: 0.5481 - accuracy: 0.7961
40 Epoch 12/350
41 143/143 [=====] - 0s 572us
  /step - loss: 0.5125 - accuracy: 0.8138
42 Epoch 13/350
43 143/143 [=====] - 0s 636us
  /step - loss: 0.5153 - accuracy: 0.8148
44 Epoch 14/350
45 143/143 [=====] - 0s 557us
  /step - loss: 0.4978 - accuracy: 0.8199
46 Epoch 15/350
47 143/143 [=====] - 0s 707us
  /step - loss: 0.4873 - accuracy: 0.8279
48 Epoch 16/350
49 143/143 [=====] - 0s 648us
  /step - loss: 0.4739 - accuracy: 0.8316
50 Epoch 17/350
51 143/143 [=====] - 0s 604us
  /step - loss: 0.4788 - accuracy: 0.8349
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52 Epoch 18/350
53 143/143 [=====] - 0s 608us
    /step - loss: 0.4779 - accuracy: 0.8335
54 Epoch 19/350
55 143/143 [=====] - 0s 559us
    /step - loss: 0.4941 - accuracy: 0.8288
56 Epoch 20/350
57 143/143 [=====] - 0s 634us
    /step - loss: 0.4631 - accuracy: 0.8457
58 Epoch 21/350
59 143/143 [=====] - 0s 696us
    /step - loss: 0.4573 - accuracy: 0.8442
60 Epoch 22/350
61 143/143 [=====] - 0s 602us
    /step - loss: 0.4744 - accuracy: 0.8302
62 Epoch 23/350
63 143/143 [=====] - 0s 595us
    /step - loss: 0.4549 - accuracy: 0.8358
64 Epoch 24/350
65 143/143 [=====] - 0s 564us
    /step - loss: 0.4685 - accuracy: 0.8316
66 Epoch 25/350
67 143/143 [=====] - 0s 728us
    /step - loss: 0.4558 - accuracy: 0.8354
68 Epoch 26/350
69 143/143 [=====] - 0s 611us
    /step - loss: 0.4495 - accuracy: 0.8428
70 Epoch 27/350
71 143/143 [=====] - 0s 627us
    /step - loss: 0.4446 - accuracy: 0.8442
72 Epoch 28/350
73 143/143 [=====] - 0s 608us
    /step - loss: 0.4394 - accuracy: 0.8419
74 Epoch 29/350
75 143/143 [=====] - 0s 570us
    /step - loss: 0.4441 - accuracy: 0.8433
76 Epoch 30/350
77 143/143 [=====] - 0s 639us
    /step - loss: 0.4380 - accuracy: 0.8400
78 Epoch 31/350
79 143/143 [=====] - 0s 628us
    /step - loss: 0.4314 - accuracy: 0.8428
80 Epoch 32/350
81 143/143 [=====] - 0s 617us
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81 /step - loss: 0.4419 - accuracy: 0.8382
82 Epoch 33/350
83 143/143 [=====] - 0s
607us/step - loss: 0.4301 - accuracy: 0.8442
84 Epoch 34/350
85 143/143 [=====] - 0s
573us/step - loss: 0.4369 - accuracy: 0.8391
86 Epoch 35/350
87 143/143 [=====] - 0s
638us/step - loss: 0.4225 - accuracy: 0.8508
88 Epoch 36/350
89 143/143 [=====] - 0s
670us/step - loss: 0.4354 - accuracy: 0.8354
90 Epoch 37/350
91 143/143 [=====] - 0s
632us/step - loss: 0.4197 - accuracy: 0.8508
92 Epoch 38/350
93 143/143 [=====] - 0s
655us/step - loss: 0.4342 - accuracy: 0.8400
94 Epoch 39/350
95 143/143 [=====] - 0s
581us/step - loss: 0.4464 - accuracy: 0.8372
96 Epoch 40/350
97 143/143 [=====] - 0s
645us/step - loss: 0.4430 - accuracy: 0.8377
98 Epoch 41/350
99 143/143 [=====] - 0s
596us/step - loss: 0.4142 - accuracy: 0.8424
100 Epoch 42/350
101 143/143 [=====] - 0s
567us/step - loss: 0.4387 - accuracy: 0.8405
102 Epoch 43/350
103 143/143 [=====] - 0s
736us/step - loss: 0.4263 - accuracy: 0.8442
104 Epoch 44/350
105 143/143 [=====] - 0s
591us/step - loss: 0.4135 - accuracy: 0.8494
106 Epoch 45/350
107 143/143 [=====] - 0s
721us/step - loss: 0.4241 - accuracy: 0.8457
108 Epoch 46/350
109 143/143 [=====] - 0s
583us/step - loss: 0.4287 - accuracy: 0.8419
110 Epoch 47/350
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111 143/143 [=====] - 0s
    600us/step - loss: 0.4151 - accuracy: 0.8494
112 Epoch 48/350
113 143/143 [=====] - 0s
    602us/step - loss: 0.4223 - accuracy: 0.8452
114 Epoch 49/350
115 143/143 [=====] - 0s
    594us/step - loss: 0.4110 - accuracy: 0.8480
116 Epoch 50/350
117 143/143 [=====] - 0s
    667us/step - loss: 0.4085 - accuracy: 0.8466
118 Epoch 51/350
119 143/143 [=====] - 0s
    586us/step - loss: 0.4060 - accuracy: 0.8513
120 Epoch 52/350
121 143/143 [=====] - 0s
    612us/step - loss: 0.4148 - accuracy: 0.8461
122 Epoch 53/350
123 143/143 [=====] - 0s
    652us/step - loss: 0.3928 - accuracy: 0.8606
124 Epoch 54/350
125 143/143 [=====] - 0s
    585us/step - loss: 0.4046 - accuracy: 0.8527
126 Epoch 55/350
127 143/143 [=====] - 0s
    664us/step - loss: 0.4198 - accuracy: 0.8438
128 Epoch 56/350
129 143/143 [=====] - 0s
    597us/step - loss: 0.4070 - accuracy: 0.8447
130 Epoch 57/350
131 143/143 [=====] - 0s
    596us/step - loss: 0.4012 - accuracy: 0.8541
132 Epoch 58/350
133 143/143 [=====] - 0s
    605us/step - loss: 0.4033 - accuracy: 0.8522
134 Epoch 59/350
135 143/143 [=====] - 0s
    569us/step - loss: 0.3890 - accuracy: 0.8587
136 Epoch 60/350
137 143/143 [=====] - 0s
    694us/step - loss: 0.3869 - accuracy: 0.8555
138 Epoch 61/350
139 143/143 [=====] - 0s
    614us/step - loss: 0.4007 - accuracy: 0.8485
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140 Epoch 62/350
141 143/143 [=====] - 0s
    595us/step - loss: 0.3934 - accuracy: 0.8578
142 Epoch 63/350
143 143/143 [=====] - 0s
    618us/step - loss: 0.3862 - accuracy: 0.8601
144 Epoch 64/350
145 143/143 [=====] - 0s
    571us/step - loss: 0.3840 - accuracy: 0.8597
146 Epoch 65/350
147 143/143 [=====] - 0s
    643us/step - loss: 0.3935 - accuracy: 0.8513
148 Epoch 66/350
149 143/143 [=====] - 0s
    634us/step - loss: 0.4072 - accuracy: 0.8499
150 Epoch 67/350
151 143/143 [=====] - 0s
    632us/step - loss: 0.3886 - accuracy: 0.8527
152 Epoch 68/350
153 143/143 [=====] - 0s
    600us/step - loss: 0.3900 - accuracy: 0.8583
154 Epoch 69/350
155 143/143 [=====] - 0s
    576us/step - loss: 0.3768 - accuracy: 0.8564
156 Epoch 70/350
157 143/143 [=====] - 0s
    637us/step - loss: 0.3865 - accuracy: 0.8522
158 Epoch 71/350
159 143/143 [=====] - 0s
    648us/step - loss: 0.3657 - accuracy: 0.8658
160 Epoch 72/350
161 143/143 [=====] - 0s
    598us/step - loss: 0.3721 - accuracy: 0.8601
162 Epoch 73/350
163 143/143 [=====] - 0s
    606us/step - loss: 0.3931 - accuracy: 0.8564
164 Epoch 74/350
165 143/143 [=====] - 0s
    571us/step - loss: 0.3627 - accuracy: 0.8672
166 Epoch 75/350
167 143/143 [=====] - 0s
    657us/step - loss: 0.3728 - accuracy: 0.8569
168 Epoch 76/350
169 143/143 [=====] - 0s
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169 605us/step - loss: 0.3644 - accuracy: 0.8625
170 Epoch 77/350
171 143/143 [=====] - 0s
    620us/step - loss: 0.3695 - accuracy: 0.8686
172 Epoch 78/350
173 143/143 [=====] - 0s
    604us/step - loss: 0.3758 - accuracy: 0.8578
174 Epoch 79/350
175 143/143 [=====] - 0s
    572us/step - loss: 0.3763 - accuracy: 0.8583
176 Epoch 80/350
177 143/143 [=====] - 0s
    703us/step - loss: 0.3731 - accuracy: 0.8681
178 Epoch 81/350
179 143/143 [=====] - 0s
    633us/step - loss: 0.3852 - accuracy: 0.8559
180 Epoch 82/350
181 143/143 [=====] - 0s
    618us/step - loss: 0.3712 - accuracy: 0.8634
182 Epoch 83/350
183 143/143 [=====] - 0s
    595us/step - loss: 0.3525 - accuracy: 0.8681
184 Epoch 84/350
185 143/143 [=====] - 0s
    569us/step - loss: 0.3579 - accuracy: 0.8662
186 Epoch 85/350
187 143/143 [=====] - 0s
    692us/step - loss: 0.3586 - accuracy: 0.8667
188 Epoch 86/350
189 143/143 [=====] - 0s
    588us/step - loss: 0.3629 - accuracy: 0.8606
190 Epoch 87/350
191 143/143 [=====] - 0s
    587us/step - loss: 0.3665 - accuracy: 0.8587
192 Epoch 88/350
193 143/143 [=====] - 0s
    629us/step - loss: 0.3589 - accuracy: 0.8653
194 Epoch 89/350
195 143/143 [=====] - 0s
    567us/step - loss: 0.3643 - accuracy: 0.8606
196 Epoch 90/350
197 143/143 [=====] - 0s
    657us/step - loss: 0.3531 - accuracy: 0.8597
198 Epoch 91/350
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199 143/143 [=====] - 0s
    605us/step - loss: 0.3496 - accuracy: 0.8686
200 Epoch 92/350
201 143/143 [=====] - 0s
    597us/step - loss: 0.3445 - accuracy: 0.8718
202 Epoch 93/350
203 143/143 [=====] - 0s
    601us/step - loss: 0.3562 - accuracy: 0.8718
204 Epoch 94/350
205 143/143 [=====] - 0s
    600us/step - loss: 0.3719 - accuracy: 0.8601
206 Epoch 95/350
207 143/143 [=====] - 0s
    707us/step - loss: 0.3424 - accuracy: 0.8728
208 Epoch 96/350
209 143/143 [=====] - 0s
    581us/step - loss: 0.3486 - accuracy: 0.8700
210 Epoch 97/350
211 143/143 [=====] - 0s
    565us/step - loss: 0.3495 - accuracy: 0.8676
212 Epoch 98/350
213 143/143 [=====] - 0s
    608us/step - loss: 0.3458 - accuracy: 0.8704
214 Epoch 99/350
215 143/143 [=====] - 0s
    602us/step - loss: 0.3383 - accuracy: 0.8751
216 Epoch 100/350
217 143/143 [=====] - 0s
    681us/step - loss: 0.3587 - accuracy: 0.8700
218 Epoch 101/350
219 143/143 [=====] - 0s
    599us/step - loss: 0.3463 - accuracy: 0.8662
220 Epoch 102/350
221 143/143 [=====] - 0s
    597us/step - loss: 0.3504 - accuracy: 0.8644
222 Epoch 103/350
223 143/143 [=====] - 0s
    610us/step - loss: 0.3372 - accuracy: 0.8695
224 Epoch 104/350
225 143/143 [=====] - 0s
    574us/step - loss: 0.3456 - accuracy: 0.8658
226 Epoch 105/350
227 143/143 [=====] - 0s
    680us/step - loss: 0.3298 - accuracy: 0.8789
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228 Epoch 106/350
229 143/143 [=====] - 0s
      597us/step - loss: 0.3423 - accuracy: 0.8709
230 Epoch 107/350
231 143/143 [=====] - 0s
      583us/step - loss: 0.3300 - accuracy: 0.8742
232 Epoch 108/350
233 143/143 [=====] - 0s
      591us/step - loss: 0.3403 - accuracy: 0.8630
234 Epoch 109/350
235 143/143 [=====] - 0s
      556us/step - loss: 0.3330 - accuracy: 0.8779
236 Epoch 110/350
237 143/143 [=====] - 0s
      614us/step - loss: 0.3494 - accuracy: 0.8676
238 Epoch 111/350
239 143/143 [=====] - 0s
      637us/step - loss: 0.3389 - accuracy: 0.8779
240 Epoch 112/350
241 143/143 [=====] - 0s
      562us/step - loss: 0.3370 - accuracy: 0.8746
242 Epoch 113/350
243 143/143 [=====] - 0s
      650us/step - loss: 0.3226 - accuracy: 0.8798
244 Epoch 114/350
245 143/143 [=====] - 0s
      582us/step - loss: 0.3454 - accuracy: 0.8709
246 Epoch 115/350
247 143/143 [=====] - 0s
      660us/step - loss: 0.3280 - accuracy: 0.8761
248 Epoch 116/350
249 143/143 [=====] - 0s
      619us/step - loss: 0.3267 - accuracy: 0.8798
250 Epoch 117/350
251 143/143 [=====] - 0s
      605us/step - loss: 0.3337 - accuracy: 0.8718
252 Epoch 118/350
253 143/143 [=====] - 0s
      610us/step - loss: 0.3290 - accuracy: 0.8756
254 Epoch 119/350
255 143/143 [=====] - 0s
      573us/step - loss: 0.3403 - accuracy: 0.8672
256 Epoch 120/350
257 143/143 [=====] - 0s
```

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257 618us/step - loss: 0.3349 - accuracy: 0.8751
258 Epoch 121/350
259 143/143 [=====] - 0s
    653us/step - loss: 0.3249 - accuracy: 0.8737
260 Epoch 122/350
261 143/143 [=====] - 0s
    657us/step - loss: 0.3395 - accuracy: 0.8714
262 Epoch 123/350
263 143/143 [=====] - 0s
    610us/step - loss: 0.3204 - accuracy: 0.8798
264 Epoch 124/350
265 143/143 [=====] - 0s
    557us/step - loss: 0.3153 - accuracy: 0.8803
266 Epoch 125/350
267 143/143 [=====] - 0s
    657us/step - loss: 0.3248 - accuracy: 0.8775
268 Epoch 126/350
269 143/143 [=====] - 0s
    660us/step - loss: 0.3129 - accuracy: 0.8765
270 Epoch 127/350
271 143/143 [=====] - 0s
    602us/step - loss: 0.3275 - accuracy: 0.8761
272 Epoch 128/350
273 143/143 [=====] - 0s
    630us/step - loss: 0.3119 - accuracy: 0.8798
274 Epoch 129/350
275 143/143 [=====] - 0s
    576us/step - loss: 0.3252 - accuracy: 0.8746
276 Epoch 130/350
277 143/143 [=====] - 0s
    657us/step - loss: 0.3138 - accuracy: 0.8845
278 Epoch 131/350
279 143/143 [=====] - 0s
    605us/step - loss: 0.3219 - accuracy: 0.8775
280 Epoch 132/350
281 143/143 [=====] - 0s
    588us/step - loss: 0.3163 - accuracy: 0.8789
282 Epoch 133/350
283 143/143 [=====] - 0s
    612us/step - loss: 0.3045 - accuracy: 0.8821
284 Epoch 134/350
285 143/143 [=====] - 0s
    557us/step - loss: 0.3088 - accuracy: 0.8859
286 Epoch 135/350
```

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287 143/143 [=====] - 0s
    643us/step - loss: 0.3103 - accuracy: 0.8849
288 Epoch 136/350
289 143/143 [=====] - 0s
    607us/step - loss: 0.3162 - accuracy: 0.8756
290 Epoch 137/350
291 143/143 [=====] - 0s
    659us/step - loss: 0.3086 - accuracy: 0.8859
292 Epoch 138/350
293 143/143 [=====] - 0s
    611us/step - loss: 0.3324 - accuracy: 0.8775
294 Epoch 139/350
295 143/143 [=====] - 0s
    596us/step - loss: 0.3175 - accuracy: 0.8784
296 Epoch 140/350
297 143/143 [=====] - 0s
    663us/step - loss: 0.3357 - accuracy: 0.8732
298 Epoch 141/350
299 143/143 [=====] - 0s
    606us/step - loss: 0.3126 - accuracy: 0.8840
300 Epoch 142/350
301 143/143 [=====] - 0s
    600us/step - loss: 0.3104 - accuracy: 0.8812
302 Epoch 143/350
303 143/143 [=====] - 0s
    609us/step - loss: 0.3098 - accuracy: 0.8849
304 Epoch 144/350
305 143/143 [=====] - 0s
    573us/step - loss: 0.3034 - accuracy: 0.8840
306 Epoch 145/350
307 143/143 [=====] - 0s
    676us/step - loss: 0.3061 - accuracy: 0.8877
308 Epoch 146/350
309 143/143 [=====] - 0s
    605us/step - loss: 0.2985 - accuracy: 0.8859
310 Epoch 147/350
311 143/143 [=====] - 0s
    602us/step - loss: 0.3142 - accuracy: 0.8807
312 Epoch 148/350
313 143/143 [=====] - 0s
    614us/step - loss: 0.3010 - accuracy: 0.8877
314 Epoch 149/350
315 143/143 [=====] - 0s
    575us/step - loss: 0.3067 - accuracy: 0.8877
```

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316 Epoch 150/350
317 143/143 [=====] - 0s
    684us/step - loss: 0.2930 - accuracy: 0.8868
318 Epoch 151/350
319 143/143 [=====] - 0s
    619us/step - loss: 0.3057 - accuracy: 0.8859
320 Epoch 152/350
321 143/143 [=====] - 0s
    601us/step - loss: 0.3018 - accuracy: 0.8826
322 Epoch 153/350
323 143/143 [=====] - 0s
    605us/step - loss: 0.3181 - accuracy: 0.8798
324 Epoch 154/350
325 143/143 [=====] - 0s
    573us/step - loss: 0.2934 - accuracy: 0.8906
326 Epoch 155/350
327 143/143 [=====] - 0s
    662us/step - loss: 0.3047 - accuracy: 0.8840
328 Epoch 156/350
329 143/143 [=====] - 0s
    625us/step - loss: 0.2983 - accuracy: 0.8882
330 Epoch 157/350
331 143/143 [=====] - 0s
    590us/step - loss: 0.2895 - accuracy: 0.8882
332 Epoch 158/350
333 143/143 [=====] - 0s
    633us/step - loss: 0.3100 - accuracy: 0.8859
334 Epoch 159/350
335 143/143 [=====] - 0s
    590us/step - loss: 0.2878 - accuracy: 0.8887
336 Epoch 160/350
337 143/143 [=====] - 0s
    678us/step - loss: 0.2920 - accuracy: 0.8849
338 Epoch 161/350
339 143/143 [=====] - 0s
    645us/step - loss: 0.2916 - accuracy: 0.8887
340 Epoch 162/350
341 143/143 [=====] - 0s
    607us/step - loss: 0.2980 - accuracy: 0.8812
342 Epoch 163/350
343 143/143 [=====] - 0s
    604us/step - loss: 0.2962 - accuracy: 0.8896
344 Epoch 164/350
345 143/143 [=====] - 0s
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345 571us/step - loss: 0.2932 - accuracy: 0.8901
346 Epoch 165/350
347 143/143 [=====] - 0s
    666us/step - loss: 0.2941 - accuracy: 0.8887
348 Epoch 166/350
349 143/143 [=====] - 0s
    609us/step - loss: 0.2901 - accuracy: 0.8863
350 Epoch 167/350
351 143/143 [=====] - 0s
    630us/step - loss: 0.3010 - accuracy: 0.8863
352 Epoch 168/350
353 143/143 [=====] - 0s
    608us/step - loss: 0.2906 - accuracy: 0.8891
354 Epoch 169/350
355 143/143 [=====] - 0s
    574us/step - loss: 0.2891 - accuracy: 0.8901
356 Epoch 170/350
357 143/143 [=====] - 0s
    662us/step - loss: 0.2841 - accuracy: 0.8915
358 Epoch 171/350
359 143/143 [=====] - 0s
    607us/step - loss: 0.3118 - accuracy: 0.8779
360 Epoch 172/350
361 143/143 [=====] - 0s
    589us/step - loss: 0.3151 - accuracy: 0.8835
362 Epoch 173/350
363 143/143 [=====] - 0s
    651us/step - loss: 0.2915 - accuracy: 0.8882
364 Epoch 174/350
365 143/143 [=====] - 0s
    573us/step - loss: 0.2863 - accuracy: 0.8906
366 Epoch 175/350
367 143/143 [=====] - 0s
    659us/step - loss: 0.2897 - accuracy: 0.8891
368 Epoch 176/350
369 143/143 [=====] - 0s
    602us/step - loss: 0.2847 - accuracy: 0.8835
370 Epoch 177/350
371 143/143 [=====] - 0s
    602us/step - loss: 0.2802 - accuracy: 0.8910
372 Epoch 178/350
373 143/143 [=====] - 0s
    625us/step - loss: 0.2765 - accuracy: 0.8957
374 Epoch 179/350
```

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375 143/143 [=====] - 0s
    574us/step - loss: 0.2869 - accuracy: 0.8952
376 Epoch 180/350
377 143/143 [=====] - 0s
    662us/step - loss: 0.2879 - accuracy: 0.8906
378 Epoch 181/350
379 143/143 [=====] - 0s
    606us/step - loss: 0.2872 - accuracy: 0.8910
380 Epoch 182/350
381 143/143 [=====] - 0s
    604us/step - loss: 0.2752 - accuracy: 0.9018
382 Epoch 183/350
383 143/143 [=====] - 0s
    612us/step - loss: 0.2769 - accuracy: 0.8971
384 Epoch 184/350
385 143/143 [=====] - 0s
    594us/step - loss: 0.2927 - accuracy: 0.8901
386 Epoch 185/350
387 143/143 [=====] - 0s
    667us/step - loss: 0.2806 - accuracy: 0.8915
388 Epoch 186/350
389 143/143 [=====] - 0s
    608us/step - loss: 0.2738 - accuracy: 0.8980
390 Epoch 187/350
391 143/143 [=====] - 0s
    599us/step - loss: 0.2649 - accuracy: 0.8929
392 Epoch 188/350
393 143/143 [=====] - 0s
    609us/step - loss: 0.2891 - accuracy: 0.8849
394 Epoch 189/350
395 143/143 [=====] - 0s
    587us/step - loss: 0.2795 - accuracy: 0.8906
396 Epoch 190/350
397 143/143 [=====] - 0s
    666us/step - loss: 0.2789 - accuracy: 0.8999
398 Epoch 191/350
399 143/143 [=====] - 0s
    600us/step - loss: 0.2628 - accuracy: 0.9004
400 Epoch 192/350
401 143/143 [=====] - 0s
    603us/step - loss: 0.2725 - accuracy: 0.8915
402 Epoch 193/350
403 143/143 [=====] - 0s
    609us/step - loss: 0.2762 - accuracy: 0.8882
```

```
404 Epoch 194/350
405 143/143 [=====] - 0s
    558us/step - loss: 0.2613 - accuracy: 0.9069
406 Epoch 195/350
407 143/143 [=====] - 0s
    687us/step - loss: 0.2787 - accuracy: 0.8924
408 Epoch 196/350
409 143/143 [=====] - 0s
    619us/step - loss: 0.2895 - accuracy: 0.8901
410 Epoch 197/350
411 143/143 [=====] - 0s
    599us/step - loss: 0.2618 - accuracy: 0.9051
412 Epoch 198/350
413 143/143 [=====] - 0s
    603us/step - loss: 0.2804 - accuracy: 0.8934
414 Epoch 199/350
415 143/143 [=====] - 0s
    575us/step - loss: 0.2743 - accuracy: 0.8966
416 Epoch 200/350
417 143/143 [=====] - 0s
    660us/step - loss: 0.2551 - accuracy: 0.9065
418 Epoch 201/350
419 143/143 [=====] - 0s
    638us/step - loss: 0.2706 - accuracy: 0.9036
420 Epoch 202/350
421 143/143 [=====] - 0s
    605us/step - loss: 0.2679 - accuracy: 0.8952
422 Epoch 203/350
423 143/143 [=====] - 0s
    606us/step - loss: 0.2647 - accuracy: 0.9051
424 Epoch 204/350
425 143/143 [=====] - 0s
    573us/step - loss: 0.2654 - accuracy: 0.8962
426 Epoch 205/350
427 143/143 [=====] - 0s
    642us/step - loss: 0.2672 - accuracy: 0.8980
428 Epoch 206/350
429 143/143 [=====] - 0s
    642us/step - loss: 0.2713 - accuracy: 0.8924
430 Epoch 207/350
431 143/143 [=====] - 0s
    592us/step - loss: 0.2668 - accuracy: 0.9013
432 Epoch 208/350
433 143/143 [=====] - 0s
```

```
433 610us/step - loss: 0.2550 - accuracy: 0.9008
434 Epoch 209/350
435 143/143 [=====] - 0s
    573us/step - loss: 0.2494 - accuracy: 0.9111
436 Epoch 210/350
437 143/143 [=====] - 0s
    645us/step - loss: 0.2613 - accuracy: 0.8966
438 Epoch 211/350
439 143/143 [=====] - 0s
    604us/step - loss: 0.2800 - accuracy: 0.8948
440 Epoch 212/350
441 143/143 [=====] - 0s
    642us/step - loss: 0.2685 - accuracy: 0.8934
442 Epoch 213/350
443 143/143 [=====] - 0s
    627us/step - loss: 0.2721 - accuracy: 0.8929
444 Epoch 214/350
445 143/143 [=====] - 0s
    556us/step - loss: 0.2629 - accuracy: 0.8929
446 Epoch 215/350
447 143/143 [=====] - 0s
    634us/step - loss: 0.2446 - accuracy: 0.9121
448 Epoch 216/350
449 143/143 [=====] - 0s
    655us/step - loss: 0.2435 - accuracy: 0.9097
450 Epoch 217/350
451 143/143 [=====] - 0s
    634us/step - loss: 0.2546 - accuracy: 0.9060
452 Epoch 218/350
453 143/143 [=====] - 0s
    621us/step - loss: 0.2670 - accuracy: 0.9036
454 Epoch 219/350
455 143/143 [=====] - 0s
    605us/step - loss: 0.2722 - accuracy: 0.8957
456 Epoch 220/350
457 143/143 [=====] - 0s
    714us/step - loss: 0.2902 - accuracy: 0.8859
458 Epoch 221/350
459 143/143 [=====] - 0s
    622us/step - loss: 0.2499 - accuracy: 0.9036
460 Epoch 222/350
461 143/143 [=====] - 0s
    603us/step - loss: 0.2486 - accuracy: 0.9079
462 Epoch 223/350
```

```
463 143/143 [=====] - 0s
    614us/step - loss: 0.2627 - accuracy: 0.8990
464 Epoch 224/350
465 143/143 [=====] - 0s
    555us/step - loss: 0.2744 - accuracy: 0.8976
466 Epoch 225/350
467 143/143 [=====] - 0s
    641us/step - loss: 0.2570 - accuracy: 0.8994
468 Epoch 226/350
469 143/143 [=====] - 0s
    598us/step - loss: 0.2453 - accuracy: 0.9097
470 Epoch 227/350
471 143/143 [=====] - 0s
    578us/step - loss: 0.2534 - accuracy: 0.9022
472 Epoch 228/350
473 143/143 [=====] - 0s
    692us/step - loss: 0.2509 - accuracy: 0.8966
474 Epoch 229/350
475 143/143 [=====] - 0s
    581us/step - loss: 0.2444 - accuracy: 0.9088
476 Epoch 230/350
477 143/143 [=====] - 0s
    664us/step - loss: 0.2453 - accuracy: 0.9079
478 Epoch 231/350
479 143/143 [=====] - 0s
    600us/step - loss: 0.2578 - accuracy: 0.9013
480 Epoch 232/350
481 143/143 [=====] - 0s
    579us/step - loss: 0.2701 - accuracy: 0.8920
482 Epoch 233/350
483 143/143 [=====] - 0s
    623us/step - loss: 0.2390 - accuracy: 0.9102
484 Epoch 234/350
485 143/143 [=====] - 0s
    635us/step - loss: 0.2522 - accuracy: 0.8990
486 Epoch 235/350
487 143/143 [=====] - 0s
    667us/step - loss: 0.2678 - accuracy: 0.9055
488 Epoch 236/350
489 143/143 [=====] - 0s
    602us/step - loss: 0.2411 - accuracy: 0.9116
490 Epoch 237/350
491 143/143 [=====] - 0s
    600us/step - loss: 0.2330 - accuracy: 0.9111
```

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492 Epoch 238/350
493 143/143 [=====] - 0s
    611us/step - loss: 0.2446 - accuracy: 0.9055
494 Epoch 239/350
495 143/143 [=====] - 0s
    569us/step - loss: 0.2486 - accuracy: 0.9102
496 Epoch 240/350
497 143/143 [=====] - 0s
    687us/step - loss: 0.2432 - accuracy: 0.9116
498 Epoch 241/350
499 143/143 [=====] - 0s
    610us/step - loss: 0.2284 - accuracy: 0.9153
500 Epoch 242/350
501 143/143 [=====] - 0s
    600us/step - loss: 0.2377 - accuracy: 0.9060
502 Epoch 243/350
503 143/143 [=====] - 0s
    604us/step - loss: 0.2820 - accuracy: 0.8934
504 Epoch 244/350
505 143/143 [=====] - 0s
    574us/step - loss: 0.2417 - accuracy: 0.9046
506 Epoch 245/350
507 143/143 [=====] - 0s
    696us/step - loss: 0.2354 - accuracy: 0.9130
508 Epoch 246/350
509 143/143 [=====] - 0s
    620us/step - loss: 0.2420 - accuracy: 0.9055
510 Epoch 247/350
511 143/143 [=====] - 0s
    604us/step - loss: 0.2521 - accuracy: 0.9036
512 Epoch 248/350
513 143/143 [=====] - 0s
    602us/step - loss: 0.2273 - accuracy: 0.9144
514 Epoch 249/350
515 143/143 [=====] - 0s
    571us/step - loss: 0.2457 - accuracy: 0.9046
516 Epoch 250/350
517 143/143 [=====] - 0s
    649us/step - loss: 0.2467 - accuracy: 0.9116
518 Epoch 251/350
519 143/143 [=====] - 0s
    642us/step - loss: 0.2386 - accuracy: 0.9083
520 Epoch 252/350
521 143/143 [=====] - 0s
```

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521 671us/step - loss: 0.2300 - accuracy: 0.9116
522 Epoch 253/350
523 143/143 [=====] - 0s
    665us/step - loss: 0.2353 - accuracy: 0.9093
524 Epoch 254/350
525 143/143 [=====] - 0s
    601us/step - loss: 0.2262 - accuracy: 0.9116
526 Epoch 255/350
527 143/143 [=====] - 0s
    668us/step - loss: 0.2326 - accuracy: 0.9116
528 Epoch 256/350
529 143/143 [=====] - 0s
    625us/step - loss: 0.2435 - accuracy: 0.9046
530 Epoch 257/350
531 143/143 [=====] - 0s
    599us/step - loss: 0.2344 - accuracy: 0.9116
532 Epoch 258/350
533 143/143 [=====] - 0s
    608us/step - loss: 0.2268 - accuracy: 0.9135
534 Epoch 259/350
535 143/143 [=====] - 0s
    572us/step - loss: 0.2341 - accuracy: 0.9107
536 Epoch 260/350
537 143/143 [=====] - 0s
    666us/step - loss: 0.2380 - accuracy: 0.9046
538 Epoch 261/350
539 143/143 [=====] - 0s
    587us/step - loss: 0.2318 - accuracy: 0.9088
540 Epoch 262/350
541 143/143 [=====] - 0s
    647us/step - loss: 0.2267 - accuracy: 0.9065
542 Epoch 263/350
543 143/143 [=====] - 0s
    636us/step - loss: 0.2261 - accuracy: 0.9149
544 Epoch 264/350
545 143/143 [=====] - 0s
    581us/step - loss: 0.2326 - accuracy: 0.9125
546 Epoch 265/350
547 143/143 [=====] - 0s
    676us/step - loss: 0.2386 - accuracy: 0.9046
548 Epoch 266/350
549 143/143 [=====] - 0s
    607us/step - loss: 0.2367 - accuracy: 0.9093
550 Epoch 267/350
```

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551 143/143 [=====] - 0s
    627us/step - loss: 0.2285 - accuracy: 0.9107
552 Epoch 268/350
553 143/143 [=====] - 0s
    662us/step - loss: 0.2225 - accuracy: 0.9111
554 Epoch 269/350
555 143/143 [=====] - 0s
    572us/step - loss: 0.2285 - accuracy: 0.9144
556 Epoch 270/350
557 143/143 [=====] - 0s
    661us/step - loss: 0.2324 - accuracy: 0.9088
558 Epoch 271/350
559 143/143 [=====] - 0s
    604us/step - loss: 0.2186 - accuracy: 0.9167
560 Epoch 272/350
561 143/143 [=====] - 0s
    580us/step - loss: 0.2276 - accuracy: 0.9139
562 Epoch 273/350
563 143/143 [=====] - 0s
    637us/step - loss: 0.2235 - accuracy: 0.9153
564 Epoch 274/350
565 143/143 [=====] - 0s
    559us/step - loss: 0.2250 - accuracy: 0.9135
566 Epoch 275/350
567 143/143 [=====] - 0s
    704us/step - loss: 0.2124 - accuracy: 0.9158
568 Epoch 276/350
569 143/143 [=====] - 0s
    616us/step - loss: 0.2342 - accuracy: 0.9074
570 Epoch 277/350
571 143/143 [=====] - 0s
    602us/step - loss: 0.2174 - accuracy: 0.9139
572 Epoch 278/350
573 143/143 [=====] - 0s
    625us/step - loss: 0.2067 - accuracy: 0.9177
574 Epoch 279/350
575 143/143 [=====] - 0s
    572us/step - loss: 0.2161 - accuracy: 0.9121
576 Epoch 280/350
577 143/143 [=====] - 0s
    668us/step - loss: 0.2146 - accuracy: 0.9228
578 Epoch 281/350
579 143/143 [=====] - 0s
    601us/step - loss: 0.2155 - accuracy: 0.9200
```

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580 Epoch 282/350
581 143/143 [=====] - 0s
    598us/step - loss: 0.2175 - accuracy: 0.9130
582 Epoch 283/350
583 143/143 [=====] - 0s
    608us/step - loss: 0.2034 - accuracy: 0.9247
584 Epoch 284/350
585 143/143 [=====] - 0s
    594us/step - loss: 0.2238 - accuracy: 0.9158
586 Epoch 285/350
587 143/143 [=====] - 0s
    661us/step - loss: 0.2141 - accuracy: 0.9149
588 Epoch 286/350
589 143/143 [=====] - 0s
    586us/step - loss: 0.2216 - accuracy: 0.9153
590 Epoch 287/350
591 143/143 [=====] - 0s
    590us/step - loss: 0.2220 - accuracy: 0.9172
592 Epoch 288/350
593 143/143 [=====] - 0s
    648us/step - loss: 0.2258 - accuracy: 0.9107
594 Epoch 289/350
595 143/143 [=====] - 0s
    572us/step - loss: 0.2171 - accuracy: 0.9121
596 Epoch 290/350
597 143/143 [=====] - 0s
    690us/step - loss: 0.2071 - accuracy: 0.9196
598 Epoch 291/350
599 143/143 [=====] - 0s
    605us/step - loss: 0.2177 - accuracy: 0.9181
600 Epoch 292/350
601 143/143 [=====] - 0s
    597us/step - loss: 0.2016 - accuracy: 0.9196
602 Epoch 293/350
603 143/143 [=====] - 0s
    611us/step - loss: 0.2180 - accuracy: 0.9167
604 Epoch 294/350
605 143/143 [=====] - 0s
    570us/step - loss: 0.2386 - accuracy: 0.9093
606 Epoch 295/350
607 143/143 [=====] - 0s
    692us/step - loss: 0.2051 - accuracy: 0.9205
608 Epoch 296/350
609 143/143 [=====] - 0s
```

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609 620us/step - loss: 0.2147 - accuracy: 0.9153
610 Epoch 297/350
611 143/143 [=====] - 0s
    605us/step - loss: 0.2165 - accuracy: 0.9228
612 Epoch 298/350
613 143/143 [=====] - 0s
    600us/step - loss: 0.2093 - accuracy: 0.9191
614 Epoch 299/350
615 143/143 [=====] - 0s
    570us/step - loss: 0.2129 - accuracy: 0.9242
616 Epoch 300/350
617 143/143 [=====] - 0s
    651us/step - loss: 0.2076 - accuracy: 0.9172
618 Epoch 301/350
619 143/143 [=====] - 0s
    639us/step - loss: 0.2115 - accuracy: 0.9196
620 Epoch 302/350
621 143/143 [=====] - 0s
    600us/step - loss: 0.2019 - accuracy: 0.9224
622 Epoch 303/350
623 143/143 [=====] - 0s
    606us/step - loss: 0.1987 - accuracy: 0.9228
624 Epoch 304/350
625 143/143 [=====] - 0s
    560us/step - loss: 0.2131 - accuracy: 0.9172
626 Epoch 305/350
627 143/143 [=====] - 0s
    633us/step - loss: 0.2331 - accuracy: 0.9135
628 Epoch 306/350
629 143/143 [=====] - 0s
    679us/step - loss: 0.2030 - accuracy: 0.9224
630 Epoch 307/350
631 143/143 [=====] - 0s
    618us/step - loss: 0.1986 - accuracy: 0.9261
632 Epoch 308/350
633 143/143 [=====] - 0s
    604us/step - loss: 0.2079 - accuracy: 0.9167
634 Epoch 309/350
635 143/143 [=====] - 0s
    567us/step - loss: 0.1999 - accuracy: 0.9233
636 Epoch 310/350
637 143/143 [=====] - 0s
    639us/step - loss: 0.1933 - accuracy: 0.9238
638 Epoch 311/350
```

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639 143/143 [=====] - 0s
    628us/step - loss: 0.1942 - accuracy: 0.9224
640 Epoch 312/350
641 143/143 [=====] - 0s
    626us/step - loss: 0.2148 - accuracy: 0.9177
642 Epoch 313/350
643 143/143 [=====] - 0s
    602us/step - loss: 0.1952 - accuracy: 0.9261
644 Epoch 314/350
645 143/143 [=====] - 0s
    572us/step - loss: 0.2135 - accuracy: 0.9135
646 Epoch 315/350
647 143/143 [=====] - 0s
    694us/step - loss: 0.2170 - accuracy: 0.9097
648 Epoch 316/350
649 143/143 [=====] - 0s
    610us/step - loss: 0.1972 - accuracy: 0.9228
650 Epoch 317/350
651 143/143 [=====] - 0s
    641us/step - loss: 0.1969 - accuracy: 0.9214
652 Epoch 318/350
653 143/143 [=====] - 0s
    618us/step - loss: 0.1886 - accuracy: 0.9298
654 Epoch 319/350
655 143/143 [=====] - 0s
    573us/step - loss: 0.1844 - accuracy: 0.9303
656 Epoch 320/350
657 143/143 [=====] - 0s
    660us/step - loss: 0.2013 - accuracy: 0.9242
658 Epoch 321/350
659 143/143 [=====] - 0s
    589us/step - loss: 0.1988 - accuracy: 0.9266
660 Epoch 322/350
661 143/143 [=====] - 0s
    624us/step - loss: 0.2051 - accuracy: 0.9233
662 Epoch 323/350
663 143/143 [=====] - 0s
    670us/step - loss: 0.1947 - accuracy: 0.9210
664 Epoch 324/350
665 143/143 [=====] - 0s
    573us/step - loss: 0.1909 - accuracy: 0.9256
666 Epoch 325/350
667 143/143 [=====] - 0s
    682us/step - loss: 0.1886 - accuracy: 0.9256
```

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668 Epoch 326/350
669 143/143 [=====] - 0s
    604us/step - loss: 0.1966 - accuracy: 0.9280
670 Epoch 327/350
671 143/143 [=====] - 0s
    593us/step - loss: 0.1702 - accuracy: 0.9312
672 Epoch 328/350
673 143/143 [=====] - 0s
    608us/step - loss: 0.1845 - accuracy: 0.9238
674 Epoch 329/350
675 143/143 [=====] - 0s
    595us/step - loss: 0.1837 - accuracy: 0.9289
676 Epoch 330/350
677 143/143 [=====] - 0s
    707us/step - loss: 0.2085 - accuracy: 0.9144
678 Epoch 331/350
679 143/143 [=====] - 0s
    655us/step - loss: 0.1944 - accuracy: 0.9252
680 Epoch 332/350
681 143/143 [=====] - 0s
    639us/step - loss: 0.1774 - accuracy: 0.9359
682 Epoch 333/350
683 143/143 [=====] - 0s
    612us/step - loss: 0.1935 - accuracy: 0.9242
684 Epoch 334/350
685 143/143 [=====] - 0s
    599us/step - loss: 0.1855 - accuracy: 0.9284
686 Epoch 335/350
687 143/143 [=====] - 0s
    673us/step - loss: 0.1983 - accuracy: 0.9210
688 Epoch 336/350
689 143/143 [=====] - 0s
    631us/step - loss: 0.1808 - accuracy: 0.9322
690 Epoch 337/350
691 143/143 [=====] - 0s
    769us/step - loss: 0.1900 - accuracy: 0.9266
692 Epoch 338/350
693 143/143 [=====] - 0s
    596us/step - loss: 0.1903 - accuracy: 0.9256
694 Epoch 339/350
695 143/143 [=====] - 0s
    604us/step - loss: 0.1803 - accuracy: 0.9261
696 Epoch 340/350
697 143/143 [=====] - 0s
```

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697 660us/step - loss: 0.1813 - accuracy: 0.9284
698 Epoch 341/350
699 143/143 [=====] - 0s
    607us/step - loss: 0.1740 - accuracy: 0.9331
700 Epoch 342/350
701 143/143 [=====] - 0s
    599us/step - loss: 0.1796 - accuracy: 0.9298
702 Epoch 343/350
703 143/143 [=====] - 0s
    611us/step - loss: 0.1870 - accuracy: 0.9242
704 Epoch 344/350
705 143/143 [=====] - 0s
    572us/step - loss: 0.2180 - accuracy: 0.9135
706 Epoch 345/350
707 143/143 [=====] - 0s
    699us/step - loss: 0.1977 - accuracy: 0.9205
708 Epoch 346/350
709 143/143 [=====] - 0s
    607us/step - loss: 0.1785 - accuracy: 0.9350
710 Epoch 347/350
711 143/143 [=====] - 0s
    599us/step - loss: 0.1786 - accuracy: 0.9261
712 Epoch 348/350
713 143/143 [=====] - 0s
    656us/step - loss: 0.1888 - accuracy: 0.9252
714 Epoch 349/350
715 143/143 [=====] - 0s
    571us/step - loss: 0.1936 - accuracy: 0.9261
716 Epoch 350/350
717 143/143 [=====] - 0s
    680us/step - loss: 0.1896 - accuracy: 0.9256
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 18:43:37.361686: 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
```