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1 C:\Users\alexs\AppData\Local\Programs\Python\Python310\python.exe C:\Users\alexs\PycharmProjects\pythonProject\main.py
2 (1022, 10) (219, 10) (219, 10) (1022,) (219,) (219,)
3 2022-12-04 23:20:00.599131: I tensorflow/core/platform/cpu_feature_guard.cc:193] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX AVX2
4 To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
5 Epoch 1/100
6 32/32 [=====] - 1s 7ms/step
- loss: 0.7003 - accuracy: 0.5108 - val_loss: 0.7031
- val_accuracy: 0.4429
7 Epoch 2/100
8 32/32 [=====] - 0s 2ms/step
- loss: 0.6928 - accuracy: 0.5186 - val_loss: 0.6932
- val_accuracy: 0.5297
9 Epoch 3/100
10 32/32 [=====] - 0s 2ms/step
- loss: 0.6871 - accuracy: 0.5861 - val_loss: 0.6852
- val_accuracy: 0.5982
11 Epoch 4/100
12 32/32 [=====] - 0s 2ms/step
- loss: 0.6816 - accuracy: 0.6585 - val_loss: 0.6778
- val_accuracy: 0.6895
13 Epoch 5/100
14 32/32 [=====] - 0s 2ms/step
- loss: 0.6756 - accuracy: 0.7348 - val_loss: 0.6710
- val_accuracy: 0.7671
15 Epoch 6/100
16 32/32 [=====] - 0s 2ms/step
- loss: 0.6694 - accuracy: 0.7906 - val_loss: 0.6639
- val_accuracy: 0.7991
17 Epoch 7/100
18 32/32 [=====] - 0s 2ms/step
- loss: 0.6629 - accuracy: 0.8043 - val_loss: 0.6564
- val_accuracy: 0.8128
19 Epoch 8/100
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20 32/32 [=====] - 0s 2ms/step
  - loss: 0.6566 - accuracy: 0.8209 - val_loss: 0.6492
  - val_accuracy: 0.8082
21 Epoch 9/100
22 32/32 [=====] - 0s 2ms/step
  - loss: 0.6505 - accuracy: 0.8258 - val_loss: 0.6424
  - val_accuracy: 0.8265
23 Epoch 10/100
24 32/32 [=====] - 0s 2ms/step
  - loss: 0.6443 - accuracy: 0.8337 - val_loss: 0.6354
  - val_accuracy: 0.8493
25 Epoch 11/100
26 32/32 [=====] - 0s 2ms/step
  - loss: 0.6384 - accuracy: 0.8366 - val_loss: 0.6285
  - val_accuracy: 0.8630
27 Epoch 12/100
28 32/32 [=====] - 0s 2ms/step
  - loss: 0.6319 - accuracy: 0.8376 - val_loss: 0.6215
  - val_accuracy: 0.8630
29 Epoch 13/100
30 32/32 [=====] - 0s 3ms/step
  - loss: 0.6254 - accuracy: 0.8386 - val_loss: 0.6139
  - val_accuracy: 0.8676
31 Epoch 14/100
32 32/32 [=====] - 0s 2ms/step
  - loss: 0.6185 - accuracy: 0.8376 - val_loss: 0.6058
  - val_accuracy: 0.8721
33 Epoch 15/100
34 32/32 [=====] - 0s 2ms/step
  - loss: 0.6114 - accuracy: 0.8405 - val_loss: 0.5980
  - val_accuracy: 0.8721
35 Epoch 16/100
36 32/32 [=====] - 0s 2ms/step
  - loss: 0.6039 - accuracy: 0.8415 - val_loss: 0.5888
  - val_accuracy: 0.8721
37 Epoch 17/100
38 32/32 [=====] - 0s 4ms/step
  - loss: 0.5964 - accuracy: 0.8483 - val_loss: 0.5801
  - val_accuracy: 0.8767
39 Epoch 18/100
40 32/32 [=====] - 0s 3ms/step
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40  - loss: 0.5880 - accuracy: 0.8425 - val_loss: 0.5710
    - val_accuracy: 0.8721
41 Epoch 19/100
42 32/32 [=====] - 0s 3ms/step
    - loss: 0.5798 - accuracy: 0.8532 - val_loss: 0.5604
    - val_accuracy: 0.8721
43 Epoch 20/100
44 32/32 [=====] - 0s 2ms/step
    - loss: 0.5709 - accuracy: 0.8444 - val_loss: 0.5510
    - val_accuracy: 0.8721
45 Epoch 21/100
46 32/32 [=====] - 0s 3ms/step
    - loss: 0.5619 - accuracy: 0.8464 - val_loss: 0.5403
    - val_accuracy: 0.8721
47 Epoch 22/100
48 32/32 [=====] - 0s 2ms/step
    - loss: 0.5525 - accuracy: 0.8464 - val_loss: 0.5301
    - val_accuracy: 0.8721
49 Epoch 23/100
50 32/32 [=====] - 0s 2ms/step
    - loss: 0.5429 - accuracy: 0.8513 - val_loss: 0.5193
    - val_accuracy: 0.8721
51 Epoch 24/100
52 32/32 [=====] - 0s 2ms/step
    - loss: 0.5330 - accuracy: 0.8542 - val_loss: 0.5088
    - val_accuracy: 0.8676
53 Epoch 25/100
54 32/32 [=====] - 0s 2ms/step
    - loss: 0.5229 - accuracy: 0.8542 - val_loss: 0.4976
    - val_accuracy: 0.8676
55 Epoch 26/100
56 32/32 [=====] - 0s 2ms/step
    - loss: 0.5130 - accuracy: 0.8493 - val_loss: 0.4856
    - val_accuracy: 0.8676
57 Epoch 27/100
58 32/32 [=====] - 0s 3ms/step
    - loss: 0.5026 - accuracy: 0.8552 - val_loss: 0.4738
    - val_accuracy: 0.8721
59 Epoch 28/100
60 32/32 [=====] - 0s 3ms/step
    - loss: 0.4925 - accuracy: 0.8513 - val_loss: 0.4630
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60  - val_accuracy: 0.8676
61 Epoch 29/100
62 32/32 [=====] - 0s 2ms/step
    - loss: 0.4826 - accuracy: 0.8552 - val_loss: 0.
    4530 - val_accuracy: 0.8676
63 Epoch 30/100
64 32/32 [=====] - 0s 2ms/step
    - loss: 0.4728 - accuracy: 0.8562 - val_loss: 0.
    4415 - val_accuracy: 0.8676
65 Epoch 31/100
66 32/32 [=====] - 0s 2ms/step
    - loss: 0.4633 - accuracy: 0.8591 - val_loss: 0.
    4308 - val_accuracy: 0.8676
67 Epoch 32/100
68 32/32 [=====] - 0s 2ms/step
    - loss: 0.4539 - accuracy: 0.8552 - val_loss: 0.
    4224 - val_accuracy: 0.8584
69 Epoch 33/100
70 32/32 [=====] - 0s 3ms/step
    - loss: 0.4452 - accuracy: 0.8611 - val_loss: 0.
    4116 - val_accuracy: 0.8630
71 Epoch 34/100
72 32/32 [=====] - 0s 2ms/step
    - loss: 0.4366 - accuracy: 0.8571 - val_loss: 0.
    4007 - val_accuracy: 0.8676
73 Epoch 35/100
74 32/32 [=====] - 0s 2ms/step
    - loss: 0.4284 - accuracy: 0.8591 - val_loss: 0.
    3908 - val_accuracy: 0.8721
75 Epoch 36/100
76 32/32 [=====] - 0s 2ms/step
    - loss: 0.4209 - accuracy: 0.8620 - val_loss: 0.
    3826 - val_accuracy: 0.8676
77 Epoch 37/100
78 32/32 [=====] - 0s 2ms/step
    - loss: 0.4134 - accuracy: 0.8581 - val_loss: 0.
    3767 - val_accuracy: 0.8721
79 Epoch 38/100
80 32/32 [=====] - 0s 2ms/step
    - loss: 0.4058 - accuracy: 0.8630 - val_loss: 0.
    3666 - val_accuracy: 0.8721
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81 Epoch 39/100
82 32/32 [=====] - 0s 2ms/step
    - loss: 0.3990 - accuracy: 0.8601 - val_loss: 0.
    3626 - val_accuracy: 0.8721
83 Epoch 40/100
84 32/32 [=====] - 0s 2ms/step
    - loss: 0.3930 - accuracy: 0.8640 - val_loss: 0.
    3544 - val_accuracy: 0.8721
85 Epoch 41/100
86 32/32 [=====] - 0s 2ms/step
    - loss: 0.3868 - accuracy: 0.8650 - val_loss: 0.
    3465 - val_accuracy: 0.8721
87 Epoch 42/100
88 32/32 [=====] - 0s 2ms/step
    - loss: 0.3810 - accuracy: 0.8611 - val_loss: 0.
    3389 - val_accuracy: 0.8813
89 Epoch 43/100
90 32/32 [=====] - 0s 2ms/step
    - loss: 0.3761 - accuracy: 0.8659 - val_loss: 0.
    3356 - val_accuracy: 0.8721
91 Epoch 44/100
92 32/32 [=====] - 0s 2ms/step
    - loss: 0.3710 - accuracy: 0.8669 - val_loss: 0.
    3304 - val_accuracy: 0.8767
93 Epoch 45/100
94 32/32 [=====] - 0s 2ms/step
    - loss: 0.3659 - accuracy: 0.8640 - val_loss: 0.
    3296 - val_accuracy: 0.8721
95 Epoch 46/100
96 32/32 [=====] - 0s 2ms/step
    - loss: 0.3626 - accuracy: 0.8679 - val_loss: 0.
    3216 - val_accuracy: 0.8858
97 Epoch 47/100
98 32/32 [=====] - 0s 2ms/step
    - loss: 0.3577 - accuracy: 0.8689 - val_loss: 0.
    3149 - val_accuracy: 0.8721
99 Epoch 48/100
100 32/32 [=====] - 0s 2ms/step
    - loss: 0.3546 - accuracy: 0.8679 - val_loss: 0.
    3109 - val_accuracy: 0.8721
101 Epoch 49/100
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102 32/32 [=====] - 0s 2ms/step
    - loss: 0.3503 - accuracy: 0.8679 - val_loss: 0.
    3098 - val_accuracy: 0.8813
103 Epoch 50/100
104 32/32 [=====] - 0s 2ms/step
    - loss: 0.3467 - accuracy: 0.8699 - val_loss: 0.
    3053 - val_accuracy: 0.8813
105 Epoch 51/100
106 32/32 [=====] - 0s 2ms/step
    - loss: 0.3437 - accuracy: 0.8708 - val_loss: 0.
    3011 - val_accuracy: 0.8767
107 Epoch 52/100
108 32/32 [=====] - 0s 2ms/step
    - loss: 0.3408 - accuracy: 0.8728 - val_loss: 0.
    2953 - val_accuracy: 0.8904
109 Epoch 53/100
110 32/32 [=====] - 0s 2ms/step
    - loss: 0.3375 - accuracy: 0.8708 - val_loss: 0.
    2947 - val_accuracy: 0.8767
111 Epoch 54/100
112 32/32 [=====] - 0s 2ms/step
    - loss: 0.3351 - accuracy: 0.8728 - val_loss: 0.
    2900 - val_accuracy: 0.8858
113 Epoch 55/100
114 32/32 [=====] - 0s 2ms/step
    - loss: 0.3314 - accuracy: 0.8718 - val_loss: 0.
    2919 - val_accuracy: 0.8950
115 Epoch 56/100
116 32/32 [=====] - 0s 2ms/step
    - loss: 0.3303 - accuracy: 0.8689 - val_loss: 0.
    2850 - val_accuracy: 0.8858
117 Epoch 57/100
118 32/32 [=====] - 0s 2ms/step
    - loss: 0.3273 - accuracy: 0.8738 - val_loss: 0.
    2815 - val_accuracy: 0.8950
119 Epoch 58/100
120 32/32 [=====] - 0s 2ms/step
    - loss: 0.3250 - accuracy: 0.8708 - val_loss: 0.
    2834 - val_accuracy: 0.8950
121 Epoch 59/100
122 32/32 [=====] - 0s 2ms/step
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122 - loss: 0.3229 - accuracy: 0.8699 - val_loss: 0.  
2813 - val_accuracy: 0.8950  
123 Epoch 60/100  
124 32/32 [=====] - 0s 2ms/step  
- loss: 0.3209 - accuracy: 0.8757 - val_loss: 0.  
2792 - val_accuracy: 0.8950  
125 Epoch 61/100  
126 32/32 [=====] - 0s 2ms/step  
- loss: 0.3190 - accuracy: 0.8738 - val_loss: 0.  
2731 - val_accuracy: 0.8995  
127 Epoch 62/100  
128 32/32 [=====] - 0s 2ms/step  
- loss: 0.3174 - accuracy: 0.8748 - val_loss: 0.  
2719 - val_accuracy: 0.8950  
129 Epoch 63/100  
130 32/32 [=====] - 0s 2ms/step  
- loss: 0.3164 - accuracy: 0.8748 - val_loss: 0.  
2720 - val_accuracy: 0.8995  
131 Epoch 64/100  
132 32/32 [=====] - 0s 2ms/step  
- loss: 0.3133 - accuracy: 0.8738 - val_loss: 0.  
2681 - val_accuracy: 0.8950  
133 Epoch 65/100  
134 32/32 [=====] - 0s 2ms/step  
- loss: 0.3121 - accuracy: 0.8757 - val_loss: 0.  
2687 - val_accuracy: 0.8995  
135 Epoch 66/100  
136 32/32 [=====] - 0s 2ms/step  
- loss: 0.3105 - accuracy: 0.8738 - val_loss: 0.  
2655 - val_accuracy: 0.8995  
137 Epoch 67/100  
138 32/32 [=====] - 0s 2ms/step  
- loss: 0.3094 - accuracy: 0.8767 - val_loss: 0.  
2642 - val_accuracy: 0.8995  
139 Epoch 68/100  
140 32/32 [=====] - 0s 2ms/step  
- loss: 0.3071 - accuracy: 0.8767 - val_loss: 0.  
2610 - val_accuracy: 0.8995  
141 Epoch 69/100  
142 32/32 [=====] - 0s 2ms/step  
- loss: 0.3059 - accuracy: 0.8748 - val_loss: 0.
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142 2606 - val_accuracy: 0.8995
143 Epoch 70/100
144 32/32 [=====] - 0s 2ms/step
    - loss: 0.3042 - accuracy: 0.8757 - val_loss: 0.
    2597 - val_accuracy: 0.8995
145 Epoch 71/100
146 32/32 [=====] - 0s 2ms/step
    - loss: 0.3033 - accuracy: 0.8796 - val_loss: 0.
    2575 - val_accuracy: 0.8995
147 Epoch 72/100
148 32/32 [=====] - 0s 2ms/step
    - loss: 0.3020 - accuracy: 0.8806 - val_loss: 0.
    2553 - val_accuracy: 0.9041
149 Epoch 73/100
150 32/32 [=====] - 0s 2ms/step
    - loss: 0.3006 - accuracy: 0.8757 - val_loss: 0.
    2543 - val_accuracy: 0.9087
151 Epoch 74/100
152 32/32 [=====] - 0s 2ms/step
    - loss: 0.2994 - accuracy: 0.8767 - val_loss: 0.
    2586 - val_accuracy: 0.9041
153 Epoch 75/100
154 32/32 [=====] - 0s 2ms/step
    - loss: 0.2989 - accuracy: 0.8796 - val_loss: 0.
    2541 - val_accuracy: 0.9041
155 Epoch 76/100
156 32/32 [=====] - 0s 2ms/step
    - loss: 0.2973 - accuracy: 0.8767 - val_loss: 0.
    2528 - val_accuracy: 0.9041
157 Epoch 77/100
158 32/32 [=====] - 0s 2ms/step
    - loss: 0.2958 - accuracy: 0.8767 - val_loss: 0.
    2541 - val_accuracy: 0.9041
159 Epoch 78/100
160 32/32 [=====] - 0s 2ms/step
    - loss: 0.2951 - accuracy: 0.8787 - val_loss: 0.
    2539 - val_accuracy: 0.9041
161 Epoch 79/100
162 32/32 [=====] - 0s 2ms/step
    - loss: 0.2937 - accuracy: 0.8796 - val_loss: 0.
    2484 - val_accuracy: 0.9041
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163 Epoch 80/100
164 32/32 [=====] - 0s 2ms/step
    - loss: 0.2934 - accuracy: 0.8767 - val_loss: 0.
    2481 - val_accuracy: 0.9041
165 Epoch 81/100
166 32/32 [=====] - 0s 2ms/step
    - loss: 0.2924 - accuracy: 0.8796 - val_loss: 0.
    2469 - val_accuracy: 0.9041
167 Epoch 82/100
168 32/32 [=====] - 0s 2ms/step
    - loss: 0.2908 - accuracy: 0.8816 - val_loss: 0.
    2450 - val_accuracy: 0.9041
169 Epoch 83/100
170 32/32 [=====] - 0s 2ms/step
    - loss: 0.2904 - accuracy: 0.8777 - val_loss: 0.
    2446 - val_accuracy: 0.9087
171 Epoch 84/100
172 32/32 [=====] - 0s 2ms/step
    - loss: 0.2895 - accuracy: 0.8806 - val_loss: 0.
    2447 - val_accuracy: 0.9041
173 Epoch 85/100
174 32/32 [=====] - 0s 2ms/step
    - loss: 0.2884 - accuracy: 0.8796 - val_loss: 0.
    2471 - val_accuracy: 0.9087
175 Epoch 86/100
176 32/32 [=====] - 0s 2ms/step
    - loss: 0.2877 - accuracy: 0.8816 - val_loss: 0.
    2467 - val_accuracy: 0.9041
177 Epoch 87/100
178 32/32 [=====] - 0s 2ms/step
    - loss: 0.2872 - accuracy: 0.8806 - val_loss: 0.
    2452 - val_accuracy: 0.9087
179 Epoch 88/100
180 32/32 [=====] - 0s 2ms/step
    - loss: 0.2861 - accuracy: 0.8816 - val_loss: 0.
    2445 - val_accuracy: 0.9087
181 Epoch 89/100
182 32/32 [=====] - 0s 2ms/step
    - loss: 0.2848 - accuracy: 0.8826 - val_loss: 0.
    2406 - val_accuracy: 0.9087
183 Epoch 90/100
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184 32/32 [=====] - 0s 2ms/step
    - loss: 0.2842 - accuracy: 0.8826 - val_loss: 0.
    2398 - val_accuracy: 0.9087
185 Epoch 91/100
186 32/32 [=====] - 0s 2ms/step
    - loss: 0.2836 - accuracy: 0.8845 - val_loss: 0.
    2399 - val_accuracy: 0.9041
187 Epoch 92/100
188 32/32 [=====] - 0s 2ms/step
    - loss: 0.2829 - accuracy: 0.8816 - val_loss: 0.
    2386 - val_accuracy: 0.9087
189 Epoch 93/100
190 32/32 [=====] - 0s 2ms/step
    - loss: 0.2813 - accuracy: 0.8885 - val_loss: 0.
    2366 - val_accuracy: 0.9041
191 Epoch 94/100
192 32/32 [=====] - 0s 2ms/step
    - loss: 0.2814 - accuracy: 0.8806 - val_loss: 0.
    2362 - val_accuracy: 0.9132
193 Epoch 95/100
194 32/32 [=====] - 0s 2ms/step
    - loss: 0.2808 - accuracy: 0.8826 - val_loss: 0.
    2369 - val_accuracy: 0.9087
195 Epoch 96/100
196 32/32 [=====] - 0s 2ms/step
    - loss: 0.2807 - accuracy: 0.8845 - val_loss: 0.
    2352 - val_accuracy: 0.9132
197 Epoch 97/100
198 32/32 [=====] - 0s 2ms/step
    - loss: 0.2804 - accuracy: 0.8836 - val_loss: 0.
    2358 - val_accuracy: 0.9087
199 Epoch 98/100
200 32/32 [=====] - 0s 2ms/step
    - loss: 0.2779 - accuracy: 0.8865 - val_loss: 0.
    2338 - val_accuracy: 0.9132
201 Epoch 99/100
202 32/32 [=====] - 0s 2ms/step
    - loss: 0.2782 - accuracy: 0.8875 - val_loss: 0.
    2355 - val_accuracy: 0.9087
203 Epoch 100/100
204 32/32 [=====] - 0s 2ms/step
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204 - loss: 0.2775 - accuracy: 0.8865 - val_loss: 0.  
2368 - val_accuracy: 0.9132  
205 7/7 [=====] - 0s 1ms/step  
- loss: 0.2869 - accuracy: 0.8813  
206 Epoch 1/100  
207 32/32 [=====] - 2s 27ms/  
step - loss: 0.4783 - accuracy: 0.7681 - val_loss: 0  
.3608 - val_accuracy: 0.8721  
208 Epoch 2/100  
209 32/32 [=====] - 1s 23ms/  
step - loss: 0.3746 - accuracy: 0.8317 - val_loss: 0  
.2829 - val_accuracy: 0.8630  
210 Epoch 3/100  
211 32/32 [=====] - 1s 24ms/  
step - loss: 0.3132 - accuracy: 0.8748 - val_loss: 0  
.2624 - val_accuracy: 0.9132  
212 Epoch 4/100  
213 32/32 [=====] - 1s 22ms/  
step - loss: 0.3052 - accuracy: 0.8767 - val_loss: 0  
.3021 - val_accuracy: 0.8904  
214 Epoch 5/100  
215 32/32 [=====] - 1s 22ms/  
step - loss: 0.2880 - accuracy: 0.8787 - val_loss: 0  
.2669 - val_accuracy: 0.8493  
216 Epoch 6/100  
217 32/32 [=====] - 1s 22ms/  
step - loss: 0.2668 - accuracy: 0.8875 - val_loss: 0  
.2171 - val_accuracy: 0.9087  
218 Epoch 7/100  
219 32/32 [=====] - 1s 22ms/  
step - loss: 0.2686 - accuracy: 0.9012 - val_loss: 0  
.2634 - val_accuracy: 0.8950  
220 Epoch 8/100  
221 32/32 [=====] - 1s 22ms/  
step - loss: 0.2384 - accuracy: 0.9041 - val_loss: 0  
.2295 - val_accuracy: 0.8813  
222 Epoch 9/100  
223 32/32 [=====] - 1s 22ms/  
step - loss: 0.2423 - accuracy: 0.9061 - val_loss: 0  
.2350 - val_accuracy: 0.8904  
224 Epoch 10/100
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225 32/32 [=====] - 1s 21ms/
    step - loss: 0.2246 - accuracy: 0.9080 - val_loss: 0
    .3244 - val_accuracy: 0.8630
226 Epoch 11/100
227 32/32 [=====] - 1s 22ms/
    step - loss: 0.2519 - accuracy: 0.8973 - val_loss: 0
    .2598 - val_accuracy: 0.8676
228 Epoch 12/100
229 32/32 [=====] - 1s 22ms/
    step - loss: 0.2275 - accuracy: 0.9110 - val_loss: 0
    .1867 - val_accuracy: 0.9269
230 Epoch 13/100
231 32/32 [=====] - 1s 21ms/
    step - loss: 0.2241 - accuracy: 0.9129 - val_loss: 0
    .2436 - val_accuracy: 0.8995
232 Epoch 14/100
233 32/32 [=====] - 1s 22ms/
    step - loss: 0.2196 - accuracy: 0.9168 - val_loss: 0
    .1983 - val_accuracy: 0.9087
234 Epoch 15/100
235 32/32 [=====] - 1s 22ms/
    step - loss: 0.2199 - accuracy: 0.9110 - val_loss: 0
    .2168 - val_accuracy: 0.8858
236 Epoch 16/100
237 32/32 [=====] - 1s 24ms/
    step - loss: 0.2065 - accuracy: 0.9168 - val_loss: 0
    .2350 - val_accuracy: 0.9087
238 Epoch 17/100
239 32/32 [=====] - 1s 26ms/
    step - loss: 0.2192 - accuracy: 0.9031 - val_loss: 0
    .2158 - val_accuracy: 0.8995
240 Epoch 18/100
241 32/32 [=====] - 1s 26ms/
    step - loss: 0.2314 - accuracy: 0.9070 - val_loss: 0
    .2104 - val_accuracy: 0.9041
242 Epoch 19/100
243 32/32 [=====] - 1s 26ms/
    step - loss: 0.1969 - accuracy: 0.9217 - val_loss: 0
    .1967 - val_accuracy: 0.9041
244 Epoch 20/100
245 32/32 [=====] - 1s 26ms/
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245 step - loss: 0.2048 - accuracy: 0.9149 - val_loss: 0  
.2124 - val_accuracy: 0.8904  
246 Epoch 21/100  
247 32/32 [=====] - 1s 25ms/  
step - loss: 0.2049 - accuracy: 0.9188 - val_loss: 0  
.2094 - val_accuracy: 0.9224  
248 Epoch 22/100  
249 32/32 [=====] - 1s 26ms/  
step - loss: 0.1876 - accuracy: 0.9198 - val_loss: 0  
.2211 - val_accuracy: 0.9041  
250 Epoch 23/100  
251 32/32 [=====] - 1s 26ms/  
step - loss: 0.1960 - accuracy: 0.9227 - val_loss: 0  
.1806 - val_accuracy: 0.9269  
252 Epoch 24/100  
253 32/32 [=====] - 1s 26ms/  
step - loss: 0.2098 - accuracy: 0.9080 - val_loss: 0  
.1922 - val_accuracy: 0.9224  
254 Epoch 25/100  
255 32/32 [=====] - 1s 26ms/  
step - loss: 0.2044 - accuracy: 0.9198 - val_loss: 0  
.2281 - val_accuracy: 0.9041  
256 Epoch 26/100  
257 32/32 [=====] - 1s 25ms/  
step - loss: 0.1912 - accuracy: 0.9227 - val_loss: 0  
.2601 - val_accuracy: 0.9041  
258 Epoch 27/100  
259 32/32 [=====] - 1s 25ms/  
step - loss: 0.2209 - accuracy: 0.9110 - val_loss: 0  
.3171 - val_accuracy: 0.8311  
260 Epoch 28/100  
261 32/32 [=====] - 1s 25ms/  
step - loss: 0.1927 - accuracy: 0.9266 - val_loss: 0  
.1989 - val_accuracy: 0.9132  
262 Epoch 29/100  
263 32/32 [=====] - 1s 26ms/  
step - loss: 0.1846 - accuracy: 0.9198 - val_loss: 0  
.2378 - val_accuracy: 0.8858  
264 Epoch 30/100  
265 32/32 [=====] - 1s 25ms/  
step - loss: 0.1875 - accuracy: 0.9227 - val_loss: 0
```

```
265 .2071 - val_accuracy: 0.9178
266 Epoch 31/100
267 32/32 [=====] - 1s 26ms/
    step - loss: 0.1899 - accuracy: 0.9149 - val_loss: 0
    .2163 - val_accuracy: 0.9224
268 Epoch 32/100
269 32/32 [=====] - 1s 26ms/
    step - loss: 0.1862 - accuracy: 0.9217 - val_loss: 0
    .2228 - val_accuracy: 0.8858
270 Epoch 33/100
271 32/32 [=====] - 1s 27ms/
    step - loss: 0.1969 - accuracy: 0.9188 - val_loss: 0
    .2104 - val_accuracy: 0.9132
272 Epoch 34/100
273 32/32 [=====] - 1s 26ms/
    step - loss: 0.1721 - accuracy: 0.9237 - val_loss: 0
    .2477 - val_accuracy: 0.8904
274 Epoch 35/100
275 32/32 [=====] - 1s 26ms/
    step - loss: 0.1708 - accuracy: 0.9286 - val_loss: 0
    .2160 - val_accuracy: 0.9178
276 Epoch 36/100
277 32/32 [=====] - 1s 26ms/
    step - loss: 0.1644 - accuracy: 0.9276 - val_loss: 0
    .2038 - val_accuracy: 0.9132
278 Epoch 37/100
279 32/32 [=====] - 1s 26ms/
    step - loss: 0.1818 - accuracy: 0.9247 - val_loss: 0
    .2060 - val_accuracy: 0.9269
280 Epoch 38/100
281 32/32 [=====] - 1s 26ms/
    step - loss: 0.1751 - accuracy: 0.9247 - val_loss: 0
    .2086 - val_accuracy: 0.9132
282 Epoch 39/100
283 32/32 [=====] - 1s 26ms/
    step - loss: 0.1768 - accuracy: 0.9256 - val_loss: 0
    .2716 - val_accuracy: 0.8995
284 Epoch 40/100
285 32/32 [=====] - 1s 26ms/
    step - loss: 0.1999 - accuracy: 0.9178 - val_loss: 0
    .2694 - val_accuracy: 0.8858
```

```
286 Epoch 41/100
287 32/32 [=====] - 1s 27ms/
    step - loss: 0.1639 - accuracy: 0.9286 - val_loss: 0
    .2628 - val_accuracy: 0.9041
288 Epoch 42/100
289 32/32 [=====] - 1s 26ms/
    step - loss: 0.1657 - accuracy: 0.9325 - val_loss: 0
    .2338 - val_accuracy: 0.9087
290 Epoch 43/100
291 32/32 [=====] - 1s 26ms/
    step - loss: 0.1670 - accuracy: 0.9256 - val_loss: 0
    .2016 - val_accuracy: 0.9269
292 Epoch 44/100
293 32/32 [=====] - 1s 26ms/
    step - loss: 0.1615 - accuracy: 0.9325 - val_loss: 0
    .2043 - val_accuracy: 0.9178
294 Epoch 45/100
295 32/32 [=====] - 1s 26ms/
    step - loss: 0.1653 - accuracy: 0.9335 - val_loss: 0
    .2116 - val_accuracy: 0.9269
296 Epoch 46/100
297 32/32 [=====] - 1s 26ms/
    step - loss: 0.1671 - accuracy: 0.9276 - val_loss: 0
    .2205 - val_accuracy: 0.8904
298 Epoch 47/100
299 32/32 [=====] - 1s 26ms/
    step - loss: 0.1649 - accuracy: 0.9295 - val_loss: 0
    .2217 - val_accuracy: 0.9269
300 Epoch 48/100
301 32/32 [=====] - 1s 26ms/
    step - loss: 0.1554 - accuracy: 0.9413 - val_loss: 0
    .2389 - val_accuracy: 0.9132
302 Epoch 49/100
303 32/32 [=====] - 1s 26ms/
    step - loss: 0.1642 - accuracy: 0.9266 - val_loss: 0
    .2115 - val_accuracy: 0.8950
304 Epoch 50/100
305 32/32 [=====] - 1s 26ms/
    step - loss: 0.1565 - accuracy: 0.9295 - val_loss: 0
    .2506 - val_accuracy: 0.9132
306 Epoch 51/100
```

```
307 32/32 [=====] - 1s 26ms/
    step - loss: 0.1648 - accuracy: 0.9237 - val_loss: 0
    .2334 - val_accuracy: 0.9087
308 Epoch 52/100
309 32/32 [=====] - 1s 26ms/
    step - loss: 0.1518 - accuracy: 0.9403 - val_loss: 0
    .2630 - val_accuracy: 0.9178
310 Epoch 53/100
311 32/32 [=====] - 1s 26ms/
    step - loss: 0.1627 - accuracy: 0.9286 - val_loss: 0
    .2303 - val_accuracy: 0.8950
312 Epoch 54/100
313 32/32 [=====] - 1s 26ms/
    step - loss: 0.1418 - accuracy: 0.9374 - val_loss: 0
    .2530 - val_accuracy: 0.9224
314 Epoch 55/100
315 32/32 [=====] - 1s 26ms/
    step - loss: 0.1708 - accuracy: 0.9344 - val_loss: 0
    .2372 - val_accuracy: 0.9087
316 Epoch 56/100
317 32/32 [=====] - 1s 26ms/
    step - loss: 0.1573 - accuracy: 0.9344 - val_loss: 0
    .2520 - val_accuracy: 0.9041
318 Epoch 57/100
319 32/32 [=====] - 1s 26ms/
    step - loss: 0.1506 - accuracy: 0.9305 - val_loss: 0
    .2414 - val_accuracy: 0.9087
320 Epoch 58/100
321 32/32 [=====] - 1s 27ms/
    step - loss: 0.1581 - accuracy: 0.9335 - val_loss: 0
    .2186 - val_accuracy: 0.8995
322 Epoch 59/100
323 32/32 [=====] - 1s 26ms/
    step - loss: 0.1563 - accuracy: 0.9335 - val_loss: 0
    .2542 - val_accuracy: 0.8813
324 Epoch 60/100
325 32/32 [=====] - 1s 26ms/
    step - loss: 0.1511 - accuracy: 0.9384 - val_loss: 0
    .2487 - val_accuracy: 0.9087
326 Epoch 61/100
327 32/32 [=====] - 1s 26ms/
```

```
327 step - loss: 0.1447 - accuracy: 0.9423 - val_loss: 0  
.2498 - val_accuracy: 0.8904  
328 Epoch 62/100  
329 32/32 [=====] - 1s 26ms/  
step - loss: 0.1527 - accuracy: 0.9384 - val_loss: 0  
.2517 - val_accuracy: 0.9087  
330 Epoch 63/100  
331 32/32 [=====] - 1s 27ms/  
step - loss: 0.1439 - accuracy: 0.9374 - val_loss: 0  
.2639 - val_accuracy: 0.9041  
332 Epoch 64/100  
333 32/32 [=====] - 1s 26ms/  
step - loss: 0.1416 - accuracy: 0.9364 - val_loss: 0  
.2451 - val_accuracy: 0.8950  
334 Epoch 65/100  
335 32/32 [=====] - 1s 27ms/  
step - loss: 0.1445 - accuracy: 0.9305 - val_loss: 0  
.2333 - val_accuracy: 0.9132  
336 Epoch 66/100  
337 32/32 [=====] - 1s 28ms/  
step - loss: 0.1564 - accuracy: 0.9364 - val_loss: 0  
.2228 - val_accuracy: 0.8950  
338 Epoch 67/100  
339 32/32 [=====] - 1s 28ms/  
step - loss: 0.1438 - accuracy: 0.9432 - val_loss: 0  
.2908 - val_accuracy: 0.9087  
340 Epoch 68/100  
341 32/32 [=====] - 1s 26ms/  
step - loss: 0.1481 - accuracy: 0.9413 - val_loss: 0  
.2527 - val_accuracy: 0.8813  
342 Epoch 69/100  
343 32/32 [=====] - 1s 26ms/  
step - loss: 0.1564 - accuracy: 0.9403 - val_loss: 0  
.2205 - val_accuracy: 0.9224  
344 Epoch 70/100  
345 32/32 [=====] - 1s 26ms/  
step - loss: 0.1318 - accuracy: 0.9481 - val_loss: 0  
.2857 - val_accuracy: 0.9269  
346 Epoch 71/100  
347 32/32 [=====] - 1s 26ms/  
step - loss: 0.1448 - accuracy: 0.9393 - val_loss: 0
```

```
347 .2471 - val_accuracy: 0.9132
348 Epoch 72/100
349 32/32 [=====] - 1s 26ms/
    step - loss: 0.1365 - accuracy: 0.9413 - val_loss: 0
    .2523 - val_accuracy: 0.9087
350 Epoch 73/100
351 32/32 [=====] - 1s 26ms/
    step - loss: 0.1604 - accuracy: 0.9305 - val_loss: 0
    .2675 - val_accuracy: 0.9178
352 Epoch 74/100
353 32/32 [=====] - 1s 26ms/
    step - loss: 0.1801 - accuracy: 0.9393 - val_loss: 0
    .2369 - val_accuracy: 0.9224
354 Epoch 75/100
355 32/32 [=====] - 1s 26ms/
    step - loss: 0.1440 - accuracy: 0.9364 - val_loss: 0
    .2867 - val_accuracy: 0.9041
356 Epoch 76/100
357 32/32 [=====] - 1s 27ms/
    step - loss: 0.1415 - accuracy: 0.9403 - val_loss: 0
    .2755 - val_accuracy: 0.8995
358 Epoch 77/100
359 32/32 [=====] - 1s 28ms/
    step - loss: 0.1384 - accuracy: 0.9413 - val_loss: 0
    .2825 - val_accuracy: 0.8950
360 Epoch 78/100
361 32/32 [=====] - 1s 29ms/
    step - loss: 0.1342 - accuracy: 0.9452 - val_loss: 0
    .3156 - val_accuracy: 0.8767
362 Epoch 79/100
363 32/32 [=====] - 1s 28ms/
    step - loss: 0.1267 - accuracy: 0.9511 - val_loss: 0
    .3479 - val_accuracy: 0.9087
364 Epoch 80/100
365 32/32 [=====] - 1s 26ms/
    step - loss: 0.1279 - accuracy: 0.9501 - val_loss: 0
    .3633 - val_accuracy: 0.9178
366 Epoch 81/100
367 32/32 [=====] - 1s 26ms/
    step - loss: 0.1202 - accuracy: 0.9491 - val_loss: 0
    .3187 - val_accuracy: 0.8995
```

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368 Epoch 82/100
369 32/32 [=====] - 1s 27ms/
    step - loss: 0.1344 - accuracy: 0.9452 - val_loss: 0
    .2576 - val_accuracy: 0.9087
370 Epoch 83/100
371 32/32 [=====] - 1s 26ms/
    step - loss: 0.1135 - accuracy: 0.9569 - val_loss: 0
    .3182 - val_accuracy: 0.9087
372 Epoch 84/100
373 32/32 [=====] - 1s 26ms/
    step - loss: 0.1193 - accuracy: 0.9550 - val_loss: 0
    .4140 - val_accuracy: 0.8858
374 Epoch 85/100
375 32/32 [=====] - 1s 26ms/
    step - loss: 0.1294 - accuracy: 0.9579 - val_loss: 0
    .2898 - val_accuracy: 0.9224
376 Epoch 86/100
377 32/32 [=====] - 1s 26ms/
    step - loss: 0.1149 - accuracy: 0.9530 - val_loss: 0
    .3041 - val_accuracy: 0.9087
378 Epoch 87/100
379 32/32 [=====] - 1s 26ms/
    step - loss: 0.1296 - accuracy: 0.9501 - val_loss: 0
    .3506 - val_accuracy: 0.9087
380 Epoch 88/100
381 32/32 [=====] - 1s 26ms/
    step - loss: 0.1289 - accuracy: 0.9442 - val_loss: 0
    .3059 - val_accuracy: 0.9132
382 Epoch 89/100
383 32/32 [=====] - 1s 26ms/
    step - loss: 0.1041 - accuracy: 0.9609 - val_loss: 0
    .3954 - val_accuracy: 0.9087
384 Epoch 90/100
385 32/32 [=====] - 1s 26ms/
    step - loss: 0.1217 - accuracy: 0.9521 - val_loss: 0
    .3831 - val_accuracy: 0.8813
386 Epoch 91/100
387 32/32 [=====] - 1s 26ms/
    step - loss: 0.1230 - accuracy: 0.9511 - val_loss: 0
    .2976 - val_accuracy: 0.9087
388 Epoch 92/100
```

```
389 32/32 [=====] - 1s 26ms/
    step - loss: 0.1401 - accuracy: 0.9403 - val_loss: 0
    .2846 - val_accuracy: 0.9087
390 Epoch 93/100
391 32/32 [=====] - 1s 26ms/
    step - loss: 0.1072 - accuracy: 0.9511 - val_loss: 0
    .3462 - val_accuracy: 0.9224
392 Epoch 94/100
393 32/32 [=====] - 1s 26ms/
    step - loss: 0.1019 - accuracy: 0.9530 - val_loss: 0
    .3930 - val_accuracy: 0.9315
394 Epoch 95/100
395 32/32 [=====] - 1s 26ms/
    step - loss: 0.1273 - accuracy: 0.9462 - val_loss: 0
    .3072 - val_accuracy: 0.9178
396 Epoch 96/100
397 32/32 [=====] - 1s 26ms/
    step - loss: 0.1107 - accuracy: 0.9550 - val_loss: 0
    .3594 - val_accuracy: 0.8995
398 Epoch 97/100
399 32/32 [=====] - 1s 26ms/
    step - loss: 0.1110 - accuracy: 0.9540 - val_loss: 0
    .3518 - val_accuracy: 0.8995
400 Epoch 98/100
401 32/32 [=====] - 1s 26ms/
    step - loss: 0.1141 - accuracy: 0.9472 - val_loss: 0
    .3785 - val_accuracy: 0.8995
402 Epoch 99/100
403 32/32 [=====] - 1s 26ms/
    step - loss: 0.1161 - accuracy: 0.9511 - val_loss: 0
    .2750 - val_accuracy: 0.9224
404 Epoch 100/100
405 32/32 [=====] - 1s 26ms/
    step - loss: 0.0976 - accuracy: 0.9609 - val_loss: 0
    .4094 - val_accuracy: 0.8995
406 Epoch 1/100
407 32/32 [=====] - 2s 31ms/
    step - loss: 14.2540 - accuracy: 0.6223 - val_loss:
    3.8742 - val_accuracy: 0.7945
408 Epoch 2/100
409 32/32 [=====] - 1s 26ms/
```

```
409 step - loss: 1.6667 - accuracy: 0.8493 - val_loss: 0  
    .6155 - val_accuracy: 0.8767  
410 Epoch 3/100  
411 32/32 [=====] - 1s 27ms/  
    step - loss: 0.5728 - accuracy: 0.8640 - val_loss: 0  
    .4717 - val_accuracy: 0.9087  
412 Epoch 4/100  
413 32/32 [=====] - 1s 27ms/  
    step - loss: 0.5011 - accuracy: 0.8757 - val_loss: 0  
    .4344 - val_accuracy: 0.9178  
414 Epoch 5/100  
415 32/32 [=====] - 1s 32ms/  
    step - loss: 0.4868 - accuracy: 0.8904 - val_loss: 0  
    .4385 - val_accuracy: 0.9224  
416 Epoch 6/100  
417 32/32 [=====] - 1s 29ms/  
    step - loss: 0.4873 - accuracy: 0.8581 - val_loss: 0  
    .4146 - val_accuracy: 0.9041  
418 Epoch 7/100  
419 32/32 [=====] - 1s 32ms/  
    step - loss: 0.4557 - accuracy: 0.8933 - val_loss: 0  
    .4559 - val_accuracy: 0.8858  
420 Epoch 8/100  
421 32/32 [=====] - 1s 33ms/  
    step - loss: 0.4777 - accuracy: 0.8787 - val_loss: 0  
    .4103 - val_accuracy: 0.8995  
422 Epoch 9/100  
423 32/32 [=====] - 1s 31ms/  
    step - loss: 0.4737 - accuracy: 0.8777 - val_loss: 0  
    .4234 - val_accuracy: 0.9087  
424 Epoch 10/100  
425 32/32 [=====] - 1s 32ms/  
    step - loss: 0.4596 - accuracy: 0.8904 - val_loss: 0  
    .3990 - val_accuracy: 0.9178  
426 Epoch 11/100  
427 32/32 [=====] - 1s 33ms/  
    step - loss: 0.4647 - accuracy: 0.8894 - val_loss: 0  
    .4369 - val_accuracy: 0.8995  
428 Epoch 12/100  
429 32/32 [=====] - 1s 33ms/  
    step - loss: 0.4807 - accuracy: 0.8718 - val_loss: 0
```

```
429 .3984 - val_accuracy: 0.9041
430 Epoch 13/100
431 32/32 [=====] - 1s 34ms/
    step - loss: 0.4559 - accuracy: 0.8777 - val_loss: 0
    .4570 - val_accuracy: 0.8767
432 Epoch 14/100
433 32/32 [=====] - 1s 32ms/
    step - loss: 0.4733 - accuracy: 0.8669 - val_loss: 0
    .4478 - val_accuracy: 0.8721
434 Epoch 15/100
435 32/32 [=====] - 1s 33ms/
    step - loss: 0.4556 - accuracy: 0.8885 - val_loss: 0
    .3889 - val_accuracy: 0.9132
436 Epoch 16/100
437 32/32 [=====] - 1s 34ms/
    step - loss: 0.4697 - accuracy: 0.8708 - val_loss: 0
    .4419 - val_accuracy: 0.8904
438 Epoch 17/100
439 32/32 [=====] - 1s 33ms/
    step - loss: 0.4583 - accuracy: 0.8826 - val_loss: 0
    .3955 - val_accuracy: 0.9041
440 Epoch 18/100
441 32/32 [=====] - 1s 35ms/
    step - loss: 0.4598 - accuracy: 0.8894 - val_loss: 0
    .3912 - val_accuracy: 0.9041
442 Epoch 19/100
443 32/32 [=====] - 1s 38ms/
    step - loss: 0.4808 - accuracy: 0.8767 - val_loss: 0
    .4098 - val_accuracy: 0.9132
444 Epoch 20/100
445 32/32 [=====] - 1s 39ms/
    step - loss: 0.4694 - accuracy: 0.8806 - val_loss: 0
    .3907 - val_accuracy: 0.9087
446 Epoch 21/100
447 32/32 [=====] - 1s 40ms/
    step - loss: 0.4520 - accuracy: 0.8836 - val_loss: 0
    .3906 - val_accuracy: 0.9087
448 Epoch 22/100
449 32/32 [=====] - 1s 38ms/
    step - loss: 0.4295 - accuracy: 0.8836 - val_loss: 0
    .4207 - val_accuracy: 0.9041
```

```
450 Epoch 23/100
451 32/32 [=====] - 1s 40ms/
    step - loss: 0.4463 - accuracy: 0.8787 - val_loss: 0
    .4332 - val_accuracy: 0.8904
452 Epoch 24/100
453 32/32 [=====] - 1s 36ms/
    step - loss: 0.4596 - accuracy: 0.8718 - val_loss: 0
    .3863 - val_accuracy: 0.9041
454 Epoch 25/100
455 32/32 [=====] - 1s 32ms/
    step - loss: 0.4398 - accuracy: 0.8816 - val_loss: 0
    .3919 - val_accuracy: 0.9178
456 Epoch 26/100
457 32/32 [=====] - 1s 31ms/
    step - loss: 0.4434 - accuracy: 0.8875 - val_loss: 0
    .3810 - val_accuracy: 0.9178
458 Epoch 27/100
459 32/32 [=====] - 1s 31ms/
    step - loss: 0.4581 - accuracy: 0.8845 - val_loss: 0
    .3857 - val_accuracy: 0.9224
460 Epoch 28/100
461 32/32 [=====] - 1s 31ms/
    step - loss: 0.4433 - accuracy: 0.8816 - val_loss: 0
    .4731 - val_accuracy: 0.8539
462 Epoch 29/100
463 32/32 [=====] - 1s 31ms/
    step - loss: 0.4417 - accuracy: 0.8718 - val_loss: 0
    .3810 - val_accuracy: 0.9178
464 Epoch 30/100
465 32/32 [=====] - 1s 31ms/
    step - loss: 0.4446 - accuracy: 0.8816 - val_loss: 0
    .3815 - val_accuracy: 0.9132
466 Epoch 31/100
467 32/32 [=====] - 1s 31ms/
    step - loss: 0.4527 - accuracy: 0.8865 - val_loss: 0
    .3936 - val_accuracy: 0.9178
468 Epoch 32/100
469 32/32 [=====] - 1s 31ms/
    step - loss: 0.4443 - accuracy: 0.8914 - val_loss: 0
    .3874 - val_accuracy: 0.9178
470 Epoch 33/100
```

```
471 32/32 [=====] - 1s 33ms/
    step - loss: 0.4376 - accuracy: 0.8826 - val_loss: 0
    .4286 - val_accuracy: 0.8904
472 Epoch 34/100
473 32/32 [=====] - 1s 32ms/
    step - loss: 0.4407 - accuracy: 0.8787 - val_loss: 0
    .4413 - val_accuracy: 0.8858
474 Epoch 35/100
475 32/32 [=====] - 1s 32ms/
    step - loss: 0.4389 - accuracy: 0.8885 - val_loss: 0
    .3794 - val_accuracy: 0.9224
476 Epoch 36/100
477 32/32 [=====] - 1s 33ms/
    step - loss: 0.4387 - accuracy: 0.8826 - val_loss: 0
    .4114 - val_accuracy: 0.9087
478 Epoch 37/100
479 32/32 [=====] - 1s 35ms/
    step - loss: 0.4473 - accuracy: 0.8767 - val_loss: 0
    .3912 - val_accuracy: 0.9087
480 Epoch 38/100
481 32/32 [=====] - 1s 32ms/
    step - loss: 0.4403 - accuracy: 0.8787 - val_loss: 0
    .3834 - val_accuracy: 0.9087
482 Epoch 39/100
483 32/32 [=====] - 1s 34ms/
    step - loss: 0.4440 - accuracy: 0.8748 - val_loss: 0
    .4357 - val_accuracy: 0.8858
484 Epoch 40/100
485 32/32 [=====] - 1s 34ms/
    step - loss: 0.4404 - accuracy: 0.8816 - val_loss: 0
    .3770 - val_accuracy: 0.9178
486 Epoch 41/100
487 32/32 [=====] - 1s 34ms/
    step - loss: 0.4356 - accuracy: 0.8777 - val_loss: 0
    .3814 - val_accuracy: 0.9132
488 Epoch 42/100
489 32/32 [=====] - 1s 32ms/
    step - loss: 0.4437 - accuracy: 0.8806 - val_loss: 0
    .3802 - val_accuracy: 0.9224
490 Epoch 43/100
491 32/32 [=====] - 1s 32ms/
```

```
491 step - loss: 0.4625 - accuracy: 0.8659 - val_loss: 0  
    .3896 - val_accuracy: 0.9087  
492 Epoch 44/100  
493 32/32 [=====] - 1s 32ms/  
    step - loss: 0.4671 - accuracy: 0.8689 - val_loss: 0  
    .3880 - val_accuracy: 0.9224  
494 Epoch 45/100  
495 32/32 [=====] - 1s 31ms/  
    step - loss: 0.4402 - accuracy: 0.8855 - val_loss: 0  
    .4607 - val_accuracy: 0.8676  
496 Epoch 46/100  
497 32/32 [=====] - 1s 32ms/  
    step - loss: 0.4417 - accuracy: 0.8777 - val_loss: 0  
    .3778 - val_accuracy: 0.9132  
498 Epoch 47/100  
499 32/32 [=====] - 1s 33ms/  
    step - loss: 0.4416 - accuracy: 0.8777 - val_loss: 0  
    .3830 - val_accuracy: 0.9178  
500 Epoch 48/100  
501 32/32 [=====] - 1s 32ms/  
    step - loss: 0.4330 - accuracy: 0.8894 - val_loss: 0  
    .3960 - val_accuracy: 0.8995  
502 Epoch 49/100  
503 32/32 [=====] - 1s 32ms/  
    step - loss: 0.4479 - accuracy: 0.8718 - val_loss: 0  
    .3840 - val_accuracy: 0.9041  
504 Epoch 50/100  
505 32/32 [=====] - 1s 33ms/  
    step - loss: 0.4404 - accuracy: 0.8865 - val_loss: 0  
    .3874 - val_accuracy: 0.9041  
506 Epoch 51/100  
507 32/32 [=====] - 1s 33ms/  
    step - loss: 0.4490 - accuracy: 0.8787 - val_loss: 0  
    .3881 - val_accuracy: 0.9087  
508 Epoch 52/100  
509 32/32 [=====] - 1s 33ms/  
    step - loss: 0.4322 - accuracy: 0.8894 - val_loss: 0  
    .3746 - val_accuracy: 0.9315  
510 Epoch 53/100  
511 32/32 [=====] - 1s 34ms/  
    step - loss: 0.4374 - accuracy: 0.8699 - val_loss: 0
```

```
511 .3946 - val_accuracy: 0.9041
512 Epoch 54/100
513 32/32 [=====] - 1s 36ms/
    step - loss: 0.4640 - accuracy: 0.8591 - val_loss: 0
    .4549 - val_accuracy: 0.8721
514 Epoch 55/100
515 32/32 [=====] - 1s 36ms/
    step - loss: 0.4464 - accuracy: 0.8728 - val_loss: 0
    .3777 - val_accuracy: 0.9132
516 Epoch 56/100
517 32/32 [=====] - 1s 34ms/
    step - loss: 0.4559 - accuracy: 0.8689 - val_loss: 0
    .3957 - val_accuracy: 0.8950
518 Epoch 57/100
519 32/32 [=====] - 1s 36ms/
    step - loss: 0.4816 - accuracy: 0.8659 - val_loss: 0
    .4211 - val_accuracy: 0.9087
520 Epoch 58/100
521 32/32 [=====] - 1s 36ms/
    step - loss: 0.4655 - accuracy: 0.8757 - val_loss: 0
    .4132 - val_accuracy: 0.8950
522 Epoch 59/100
523 32/32 [=====] - 1s 37ms/
    step - loss: 0.4782 - accuracy: 0.8699 - val_loss: 0
    .3933 - val_accuracy: 0.9041
524 Epoch 60/100
525 32/32 [=====] - 1s 37ms/
    step - loss: 0.4331 - accuracy: 0.8836 - val_loss: 0
    .3794 - val_accuracy: 0.9178
526 Epoch 61/100
527 32/32 [=====] - 1s 34ms/
    step - loss: 0.4354 - accuracy: 0.9002 - val_loss: 0
    .3760 - val_accuracy: 0.9224
528 Epoch 62/100
529 32/32 [=====] - 1s 35ms/
    step - loss: 0.4361 - accuracy: 0.8875 - val_loss: 0
    .3846 - val_accuracy: 0.9132
530 Epoch 63/100
531 32/32 [=====] - 1s 41ms/
    step - loss: 0.4374 - accuracy: 0.8845 - val_loss: 0
    .3884 - val_accuracy: 0.8995
```

```
532 Epoch 64/100
533 32/32 [=====] - 2s 51ms/
    step - loss: 0.4314 - accuracy: 0.8855 - val_loss: 0
    .3778 - val_accuracy: 0.9132
534 Epoch 65/100
535 32/32 [=====] - 1s 41ms/
    step - loss: 0.4439 - accuracy: 0.8757 - val_loss: 0
    .3773 - val_accuracy: 0.9224
536 Epoch 66/100
537 32/32 [=====] - 1s 41ms/
    step - loss: 0.4379 - accuracy: 0.8767 - val_loss: 0
    .3763 - val_accuracy: 0.9269
538 Epoch 67/100
539 32/32 [=====] - 1s 42ms/
    step - loss: 0.4375 - accuracy: 0.8875 - val_loss: 0
    .3934 - val_accuracy: 0.9041
540 Epoch 68/100
541 32/32 [=====] - 1s 44ms/
    step - loss: 0.4400 - accuracy: 0.8894 - val_loss: 0
    .3801 - val_accuracy: 0.9178
542 Epoch 69/100
543 32/32 [=====] - 1s 41ms/
    step - loss: 0.4543 - accuracy: 0.8796 - val_loss: 0
    .4068 - val_accuracy: 0.9087
544 Epoch 70/100
545 32/32 [=====] - 1s 43ms/
    step - loss: 0.4382 - accuracy: 0.8757 - val_loss: 0
    .3861 - val_accuracy: 0.9087
546 Epoch 71/100
547 32/32 [=====] - 1s 42ms/
    step - loss: 0.4444 - accuracy: 0.8826 - val_loss: 0
    .3804 - val_accuracy: 0.9132
548 Epoch 72/100
549 32/32 [=====] - 1s 39ms/
    step - loss: 0.4418 - accuracy: 0.8757 - val_loss: 0
    .3731 - val_accuracy: 0.9224
550 Epoch 73/100
551 32/32 [=====] - 1s 38ms/
    step - loss: 0.4308 - accuracy: 0.8855 - val_loss: 0
    .3872 - val_accuracy: 0.8995
552 Epoch 74/100
```

```
553 32/32 [=====] - 1s 38ms/
    step - loss: 0.4300 - accuracy: 0.8826 - val_loss: 0
    .4115 - val_accuracy: 0.9087
554 Epoch 75/100
555 32/32 [=====] - 1s 38ms/
    step - loss: 0.4357 - accuracy: 0.8865 - val_loss: 0
    .4697 - val_accuracy: 0.8584
556 Epoch 76/100
557 32/32 [=====] - 1s 36ms/
    step - loss: 0.4365 - accuracy: 0.8806 - val_loss: 0
    .4012 - val_accuracy: 0.8904
558 Epoch 77/100
559 32/32 [=====] - 1s 36ms/
    step - loss: 0.4704 - accuracy: 0.8689 - val_loss: 0
    .3836 - val_accuracy: 0.9178
560 Epoch 78/100
561 32/32 [=====] - 1s 35ms/
    step - loss: 0.4436 - accuracy: 0.8767 - val_loss: 0
    .3798 - val_accuracy: 0.9178
562 Epoch 79/100
563 32/32 [=====] - 1s 40ms/
    step - loss: 0.4440 - accuracy: 0.8757 - val_loss: 0
    .3826 - val_accuracy: 0.9132
564 Epoch 80/100
565 32/32 [=====] - 1s 37ms/
    step - loss: 0.4296 - accuracy: 0.8826 - val_loss: 0
    .3822 - val_accuracy: 0.9087
566 Epoch 81/100
567 32/32 [=====] - 1s 34ms/
    step - loss: 0.4340 - accuracy: 0.8885 - val_loss: 0
    .4346 - val_accuracy: 0.8813
568 Epoch 82/100
569 32/32 [=====] - 1s 35ms/
    step - loss: 0.4262 - accuracy: 0.8933 - val_loss: 0
    .3763 - val_accuracy: 0.9132
570 Epoch 83/100
571 32/32 [=====] - 1s 42ms/
    step - loss: 0.4346 - accuracy: 0.8894 - val_loss: 0
    .4048 - val_accuracy: 0.9041
572 Epoch 84/100
573 32/32 [=====] - 1s 39ms/
```

```
573 step - loss: 0.4279 - accuracy: 0.8845 - val_loss: 0  
.3782 - val_accuracy: 0.9178  
574 Epoch 85/100  
575 32/32 [=====] - 1s 37ms/  
step - loss: 0.4419 - accuracy: 0.8816 - val_loss: 0  
.4003 - val_accuracy: 0.8904  
576 Epoch 86/100  
577 32/32 [=====] - 1s 36ms/  
step - loss: 0.4591 - accuracy: 0.8777 - val_loss: 0  
.4360 - val_accuracy: 0.8858  
578 Epoch 87/100  
579 32/32 [=====] - 1s 40ms/  
step - loss: 0.4406 - accuracy: 0.8796 - val_loss: 0  
.3825 - val_accuracy: 0.9132  
580 Epoch 88/100  
581 32/32 [=====] - 1s 37ms/  
step - loss: 0.4387 - accuracy: 0.8806 - val_loss: 0  
.3763 - val_accuracy: 0.9178  
582 Epoch 89/100  
583 32/32 [=====] - 1s 35ms/  
step - loss: 0.4318 - accuracy: 0.8855 - val_loss: 0  
.3732 - val_accuracy: 0.9178  
584 Epoch 90/100  
585 32/32 [=====] - 1s 41ms/  
step - loss: 0.4345 - accuracy: 0.8865 - val_loss: 0  
.3737 - val_accuracy: 0.9224  
586 Epoch 91/100  
587 32/32 [=====] - 1s 36ms/  
step - loss: 0.4327 - accuracy: 0.8836 - val_loss: 0  
.3765 - val_accuracy: 0.9178  
588 Epoch 92/100  
589 32/32 [=====] - 1s 41ms/  
step - loss: 0.4375 - accuracy: 0.8757 - val_loss: 0  
.3818 - val_accuracy: 0.9132  
590 Epoch 93/100  
591 32/32 [=====] - 1s 37ms/  
step - loss: 0.4448 - accuracy: 0.8787 - val_loss: 0  
.5318 - val_accuracy: 0.8082  
592 Epoch 94/100  
593 32/32 [=====] - 1s 37ms/  
step - loss: 0.4514 - accuracy: 0.8787 - val_loss: 0
```

```
593 .3736 - val_accuracy: 0.9224
594 Epoch 95/100
595 32/32 [=====] - 1s 37ms/
    step - loss: 0.4312 - accuracy: 0.8806 - val_loss: 0
    .3763 - val_accuracy: 0.9132
596 Epoch 96/100
597 32/32 [=====] - 1s 37ms/
    step - loss: 0.4252 - accuracy: 0.8806 - val_loss: 0
    .3793 - val_accuracy: 0.9041
598 Epoch 97/100
599 32/32 [=====] - 1s 37ms/
    step - loss: 0.4397 - accuracy: 0.8904 - val_loss: 0
    .3795 - val_accuracy: 0.9132
600 Epoch 98/100
601 32/32 [=====] - 1s 35ms/
    step - loss: 0.4384 - accuracy: 0.8826 - val_loss: 0
    .3813 - val_accuracy: 0.9224
602 Epoch 99/100
603 32/32 [=====] - 1s 36ms/
    step - loss: 0.4319 - accuracy: 0.8836 - val_loss: 0
    .3722 - val_accuracy: 0.9178
604 Epoch 100/100
605 32/32 [=====] - 1s 37ms/
    step - loss: 0.4334 - accuracy: 0.8796 - val_loss: 0
    .3899 - val_accuracy: 0.8995
606
607 Process finished with exit code 0
608
```