

# Basic Instructions

1. Enter your Name and UID in the provided space.
2. Do the assignment in the notebook itself
3. you are free to use Google Colab

Name: Paaras Bhandari

UID: 116191739

I have used Keras to implement a 2 layer binary classification neural network. The activations are ReLU and Sigmoid for the 2 layers respectively. I have used stochastic gradient descent as my optimizer.

## Importing Packages

In [19]:

```
# libraries for data processing and analysis
import numpy as np
import matplotlib.pyplot as plt
import h5py
import scipy
import math
from PIL import Image
from scipy import ndimage
import os
import tensorflow as tf
import random as rn
import keras
from keras.models import Sequential
from keras.layers import Dense
from keras.callbacks import History
```

## Model - Cat vs Non-Cat

### Loading Data

In [20]:

```
def load_data(train_file, test_file):    # Code from HW2
    # Load the training data
    train_dataset = h5py.File(train_file, "r")

    # Separate features(x) and labels(y) for training set
    train_set_x_orig = np.array(train_dataset["train_set_x"][:])
    train_set_y_orig = np.array(train_dataset["train_set_y"][:])

    # Load the test data
    test_dataset = h5py.File(test_file, "r")

    # Separate features(x) and labels(y) for training set
    test_set_x_orig = np.array(test_dataset["test_set_x"][:])
    test_set_y_orig = np.array(test_dataset["test_set_y"][:])

    classes = np.array(test_dataset["list_classes"][:]) # the list of classes

    train_set_y_orig = train_set_y_orig.reshape((1, train_set_y_orig.shape[0]))
    test_set_y_orig = test_set_y_orig.reshape((1, test_set_y_orig.shape[0]))

    return train_set_x_orig, train_set_y_orig, test_set_x_orig, test_set_y_orig, classes
```

In [21]:

```
train_file="data/train_catvnoncat.h5"    # loading training dataset
test_file="data/test_catvnoncat.h5"      # loading test dataset
train_x_orig, train_y, test_x_orig, test_y, classes = load_data(train_file, test_file) # seperating input and labels
```

### Pre-processing Data

In [24]:

```
# Reshape the training and test examples
train_x_flatten = train_x_orig.reshape(train_x_orig.shape[0], -1).T # The "-1" makes reshape flatten the remain
ing dimensions
test_x_flatten = test_x_orig.reshape(test_x_orig.shape[0], -1).T

# Standardize data to have feature values between 0 and 1.
train_x = train_x_flatten/255.
test_x = test_x_flatten/255.

print ("train_x's shape: " + str(train_x.shape))
print ("test_x's shape: " + str(test_x.shape))
```

```
train_x's shape: (12288, 209)
test_x's shape: (12288, 50)
```

## Building Model

In [43]:

```
### CONSTANTS DEFINING THE MODEL ###
def buildMode(layers_dim):
    (n_x, n_h, n_y) = layers_dim

    model = Sequential()
    model.add(Dense(n_h, input_dim=n_x, activation='relu')) # adding first hidden layer
    model.add(Dense(n_y, activation='sigmoid'))             # adding output layer

    return model

model1 = buildMode((12288, 7, 1))

## using stochastic gradient descent
from keras.optimizers import SGD
opt = SGD(lr=0.01)
model1.compile(loss='binary_crossentropy', optimizer=opt, metrics=['accuracy'])
```

## Training Model

In [44]:

```
history = History()
history = model1.fit(train_x.T, train_y.T, verbose=1, epochs=2450, batch_size=209, shuffle=False)
```

```
Epoch 1/2450
209/209 [=====] - 0s 439us/step - loss: 0.6840 - accuracy: 0.5981
Epoch 2/2450
209/209 [=====] - 0s 72us/step - loss: 0.6575 - accuracy: 0.6555
Epoch 3/2450
209/209 [=====] - 0s 79us/step - loss: 0.6533 - accuracy: 0.6555
Epoch 4/2450
209/209 [=====] - 0s 114us/step - loss: 0.6515 - accuracy: 0.6555
Epoch 5/2450
209/209 [=====] - 0s 111us/step - loss: 0.6500 - accuracy: 0.6555
Epoch 6/2450
209/209 [=====] - 0s 125us/step - loss: 0.6484 - accuracy: 0.6555
Epoch 7/2450
209/209 [=====] - 0s 157us/step - loss: 0.6469 - accuracy: 0.6555
Epoch 8/2450
209/209 [=====] - 0s 136us/step - loss: 0.6452 - accuracy: 0.6555
Epoch 9/2450
209/209 [=====] - 0s 114us/step - loss: 0.6436 - accuracy: 0.6555
Epoch 10/2450
209/209 [=====] - 0s 89us/step - loss: 0.6419 - accuracy: 0.6555
Epoch 11/2450
209/209 [=====] - 0s 191us/step - loss: 0.6404 - accuracy: 0.6555
Epoch 12/2450
209/209 [=====] - 0s 169us/step - loss: 0.6388 - accuracy: 0.6555
Epoch 13/2450
209/209 [=====] - 0s 97us/step - loss: 0.6373 - accuracy: 0.6555
Epoch 14/2450
209/209 [=====] - 0s 75us/step - loss: 0.6357 - accuracy: 0.6555
Epoch 15/2450
209/209 [=====] - 0s 74us/step - loss: 0.6342 - accuracy: 0.6555
Epoch 16/2450
209/209 [=====] - 0s 80us/step - loss: 0.6327 - accuracy: 0.6555
Epoch 17/2450
209/209 [=====] - 0s 97us/step - loss: 0.6312 - accuracy: 0.6555
Epoch 18/2450
209/209 [=====] - 0s 78us/step - loss: 0.6298 - accuracy: 0.6555
Epoch 19/2450
```

209/209 [=====] - 0s 84us/step - loss: 0.6284 - accuracy: 0.6555  
Epoch 20/2450  
209/209 [=====] - 0s 87us/step - loss: 0.6269 - accuracy: 0.6555  
Epoch 21/2450  
209/209 [=====] - 0s 102us/step - loss: 0.6255 - accuracy: 0.6555  
Epoch 22/2450  
209/209 [=====] - 0s 95us/step - loss: 0.6240 - accuracy: 0.6555  
Epoch 23/2450  
209/209 [=====] - 0s 93us/step - loss: 0.6226 - accuracy: 0.6555  
Epoch 24/2450  
209/209 [=====] - 0s 92us/step - loss: 0.6213 - accuracy: 0.6555  
Epoch 25/2450  
209/209 [=====] - 0s 125us/step - loss: 0.6199 - accuracy: 0.6603  
Epoch 26/2450  
209/209 [=====] - 0s 102us/step - loss: 0.6185 - accuracy: 0.6603  
Epoch 27/2450  
209/209 [=====] - 0s 97us/step - loss: 0.6171 - accuracy: 0.6603  
Epoch 28/2450  
209/209 [=====] - 0s 177us/step - loss: 0.6157 - accuracy: 0.6603  
Epoch 29/2450  
209/209 [=====] - 0s 74us/step - loss: 0.6143 - accuracy: 0.6603  
Epoch 30/2450  
209/209 [=====] - 0s 109us/step - loss: 0.6129 - accuracy: 0.6603  
Epoch 31/2450  
209/209 [=====] - 0s 81us/step - loss: 0.6116 - accuracy: 0.6603  
Epoch 32/2450  
209/209 [=====] - 0s 89us/step - loss: 0.6101 - accuracy: 0.6603  
Epoch 33/2450  
209/209 [=====] - 0s 76us/step - loss: 0.6087 - accuracy: 0.6603  
Epoch 34/2450  
209/209 [=====] - 0s 115us/step - loss: 0.6073 - accuracy: 0.6651  
Epoch 35/2450  
209/209 [=====] - 0s 91us/step - loss: 0.6060 - accuracy: 0.6603  
Epoch 36/2450  
209/209 [=====] - 0s 84us/step - loss: 0.6046 - accuracy: 0.6651  
Epoch 37/2450  
209/209 [=====] - 0s 73us/step - loss: 0.6032 - accuracy: 0.6651  
Epoch 38/2450  
209/209 [=====] - 0s 95us/step - loss: 0.6019 - accuracy: 0.6651  
Epoch 39/2450  
209/209 [=====] - 0s 77us/step - loss: 0.6006 - accuracy: 0.6651  
Epoch 40/2450  
209/209 [=====] - 0s 121us/step - loss: 0.5994 - accuracy: 0.6651  
Epoch 41/2450  
209/209 [=====] - 0s 196us/step - loss: 0.5983 - accuracy: 0.6651  
Epoch 42/2450  
209/209 [=====] - 0s 311us/step - loss: 0.5971 - accuracy: 0.6651  
Epoch 43/2450  
209/209 [=====] - 0s 149us/step - loss: 0.5961 - accuracy: 0.6651  
Epoch 44/2450  
209/209 [=====] - 0s 107us/step - loss: 0.5947 - accuracy: 0.6651  
Epoch 45/2450  
209/209 [=====] - 0s 106us/step - loss: 0.5937 - accuracy: 0.6651  
Epoch 46/2450  
209/209 [=====] - 0s 80us/step - loss: 0.5924 - accuracy: 0.6699  
Epoch 47/2450  
209/209 [=====] - 0s 87us/step - loss: 0.5917 - accuracy: 0.6651  
Epoch 48/2450  
209/209 [=====] - 0s 72us/step - loss: 0.5898 - accuracy: 0.6699  
Epoch 49/2450  
209/209 [=====] - 0s 75us/step - loss: 0.5888 - accuracy: 0.6651  
Epoch 50/2450  
209/209 [=====] - 0s 73us/step - loss: 0.5876 - accuracy: 0.6699  
Epoch 51/2450  
209/209 [=====] - 0s 81us/step - loss: 0.5869 - accuracy: 0.6651  
Epoch 52/2450  
209/209 [=====] - 0s 83us/step - loss: 0.5852 - accuracy: 0.6699  
Epoch 53/2450  
209/209 [=====] - 0s 73us/step - loss: 0.5846 - accuracy: 0.6651  
Epoch 54/2450  
209/209 [=====] - 0s 100us/step - loss: 0.5830 - accuracy: 0.6699  
Epoch 55/2450  
209/209 [=====] - 0s 87us/step - loss: 0.5825 - accuracy: 0.6651  
Epoch 56/2450  
209/209 [=====] - 0s 79us/step - loss: 0.5813 - accuracy: 0.6699  
Epoch 57/2450  
209/209 [=====] - 0s 88us/step - loss: 0.5811 - accuracy: 0.6651  
Epoch 58/2450  
209/209 [=====] - 0s 119us/step - loss: 0.5791 - accuracy: 0.6746  
Epoch 59/2450  
209/209 [=====] - 0s 119us/step - loss: 0.5789 - accuracy: 0.6651  
Epoch 60/2450  
209/209 [=====] - 0s 115us/step - loss: 0.5770 - accuracy: 0.6746

Epoch 61/2450  
209/209 [=====] - 0s 103us/step - loss: 0.5769 - accuracy: 0.6699  
Epoch 62/2450  
209/209 [=====] - 0s 163us/step - loss: 0.5748 - accuracy: 0.6746  
Epoch 63/2450  
209/209 [=====] - 0s 167us/step - loss: 0.5739 - accuracy: 0.6699  
Epoch 64/2450  
209/209 [=====] - 0s 103us/step - loss: 0.5722 - accuracy: 0.6746  
Epoch 65/2450  
209/209 [=====] - 0s 112us/step - loss: 0.5711 - accuracy: 0.6699  
Epoch 66/2450  
209/209 [=====] - 0s 106us/step - loss: 0.5701 - accuracy: 0.6699  
Epoch 67/2450  
209/209 [=====] - 0s 115us/step - loss: 0.5688 - accuracy: 0.6699  
Epoch 68/2450  
209/209 [=====] - 0s 88us/step - loss: 0.5679 - accuracy: 0.6794  
Epoch 69/2450  
209/209 [=====] - 0s 90us/step - loss: 0.5670 - accuracy: 0.6699  
Epoch 70/2450  
209/209 [=====] - 0s 92us/step - loss: 0.5660 - accuracy: 0.6794  
Epoch 71/2450  
209/209 [=====] - 0s 107us/step - loss: 0.5648 - accuracy: 0.6794  
Epoch 72/2450  
209/209 [=====] - 0s 196us/step - loss: 0.5634 - accuracy: 0.6842  
Epoch 73/2450  
209/209 [=====] - 0s 108us/step - loss: 0.5625 - accuracy: 0.6794  
Epoch 74/2450  
209/209 [=====] - 0s 120us/step - loss: 0.5613 - accuracy: 0.6842  
Epoch 75/2450  
209/209 [=====] - 0s 120us/step - loss: 0.5601 - accuracy: 0.6842  
Epoch 76/2450  
209/209 [=====] - 0s 117us/step - loss: 0.5587 - accuracy: 0.6842  
Epoch 77/2450  
209/209 [=====] - 0s 105us/step - loss: 0.5579 - accuracy: 0.6842  
Epoch 78/2450  
209/209 [=====] - 0s 93us/step - loss: 0.5568 - accuracy: 0.6842  
Epoch 79/2450  
209/209 [=====] - 0s 95us/step - loss: 0.5551 - accuracy: 0.6842  
Epoch 80/2450  
209/209 [=====] - 0s 117us/step - loss: 0.5537 - accuracy: 0.6890  
Epoch 81/2450  
209/209 [=====] - 0s 89us/step - loss: 0.5526 - accuracy: 0.6890  
Epoch 82/2450  
209/209 [=====] - 0s 87us/step - loss: 0.5514 - accuracy: 0.6890  
Epoch 83/2450  
209/209 [=====] - 0s 77us/step - loss: 0.5512 - accuracy: 0.6890  
Epoch 84/2450  
209/209 [=====] - 0s 75us/step - loss: 0.5489 - accuracy: 0.6890  
Epoch 85/2450  
209/209 [=====] - 0s 87us/step - loss: 0.5476 - accuracy: 0.7081  
Epoch 86/2450  
209/209 [=====] - 0s 83us/step - loss: 0.5465 - accuracy: 0.6938  
Epoch 87/2450  
209/209 [=====] - 0s 68us/step - loss: 0.5459 - accuracy: 0.7273  
Epoch 88/2450  
209/209 [=====] - 0s 96us/step - loss: 0.5473 - accuracy: 0.6890  
Epoch 89/2450  
209/209 [=====] - 0s 114us/step - loss: 0.5482 - accuracy: 0.7416  
Epoch 90/2450  
209/209 [=====] - 0s 93us/step - loss: 0.5559 - accuracy: 0.6699  
Epoch 91/2450  
209/209 [=====] - 0s 89us/step - loss: 0.5446 - accuracy: 0.7225  
Epoch 92/2450  
209/209 [=====] - 0s 79us/step - loss: 0.5387 - accuracy: 0.7129  
Epoch 93/2450  
209/209 [=====] - 0s 83us/step - loss: 0.5411 - accuracy: 0.7464  
Epoch 94/2450  
209/209 [=====] - 0s 97us/step - loss: 0.5538 - accuracy: 0.6794  
Epoch 95/2450  
209/209 [=====] - 0s 84us/step - loss: 0.5421 - accuracy: 0.7225  
Epoch 96/2450  
209/209 [=====] - 0s 99us/step - loss: 0.5310 - accuracy: 0.7225  
Epoch 97/2450  
209/209 [=====] - 0s 86us/step - loss: 0.5347 - accuracy: 0.7512  
Epoch 98/2450  
209/209 [=====] - 0s 80us/step - loss: 0.5465 - accuracy: 0.6842  
Epoch 99/2450  
209/209 [=====] - 0s 83us/step - loss: 0.5379 - accuracy: 0.7321  
Epoch 100/2450  
209/209 [=====] - 0s 84us/step - loss: 0.5452 - accuracy: 0.6794  
Epoch 101/2450  
209/209 [=====] - 0s 110us/step - loss: 0.5316 - accuracy: 0.7416  
Epoch 102/2450

209/209 [=====] - 0s 90us/step - loss: 0.5207 - accuracy: 0.7273  
Epoch 103/2450  
209/209 [=====] - 0s 109us/step - loss: 0.5180 - accuracy: 0.7321  
Epoch 104/2450  
209/209 [=====] - 0s 150us/step - loss: 0.5177 - accuracy: 0.7273  
Epoch 105/2450  
209/209 [=====] - 0s 87us/step - loss: 0.5227 - accuracy: 0.7512  
Epoch 106/2450  
209/209 [=====] - 0s 85us/step - loss: 0.5423 - accuracy: 0.6938  
Epoch 107/2450  
209/209 [=====] - 0s 103us/step - loss: 0.5255 - accuracy: 0.7416  
Epoch 108/2450  
209/209 [=====] - 0s 108us/step - loss: 0.5282 - accuracy: 0.7033  
Epoch 109/2450  
209/209 [=====] - 0s 106us/step - loss: 0.5224 - accuracy: 0.7464  
Epoch 110/2450  
209/209 [=====] - 0s 124us/step - loss: 0.5266 - accuracy: 0.7033  
Epoch 111/2450  
209/209 [=====] - 0s 103us/step - loss: 0.5210 - accuracy: 0.7464  
Epoch 112/2450  
209/209 [=====] - 0s 99us/step - loss: 0.5277 - accuracy: 0.6986  
Epoch 113/2450  
209/209 [=====] - 0s 106us/step - loss: 0.5203 - accuracy: 0.7464  
Epoch 114/2450  
209/209 [=====] - 0s 114us/step - loss: 0.5253 - accuracy: 0.7033  
Epoch 115/2450  
209/209 [=====] - 0s 84us/step - loss: 0.5231 - accuracy: 0.7560  
Epoch 116/2450  
209/209 [=====] - 0s 89us/step - loss: 0.5413 - accuracy: 0.6890  
Epoch 117/2450  
209/209 [=====] - 0s 201us/step - loss: 0.5189 - accuracy: 0.7512  
Epoch 118/2450  
209/209 [=====] - 0s 100us/step - loss: 0.5026 - accuracy: 0.7225  
Epoch 119/2450  
209/209 [=====] - 0s 120us/step - loss: 0.5060 - accuracy: 0.7608  
Epoch 120/2450  
209/209 [=====] - 0s 107us/step - loss: 0.5214 - accuracy: 0.7081  
Epoch 121/2450  
209/209 [=====] - 0s 85us/step - loss: 0.5147 - accuracy: 0.7703  
Epoch 122/2450  
209/209 [=====] - 0s 98us/step - loss: 0.5230 - accuracy: 0.7081  
Epoch 123/2450  
209/209 [=====] - 0s 128us/step - loss: 0.5146 - accuracy: 0.7560  
Epoch 124/2450  
209/209 [=====] - 0s 125us/step - loss: 0.5283 - accuracy: 0.6986  
Epoch 125/2450  
209/209 [=====] - 0s 108us/step - loss: 0.5131 - accuracy: 0.7656  
Epoch 126/2450  
209/209 [=====] - 0s 124us/step - loss: 0.5149 - accuracy: 0.7177  
Epoch 127/2450  
209/209 [=====] - 0s 113us/step - loss: 0.5123 - accuracy: 0.7608  
Epoch 128/2450  
209/209 [=====] - 0s 95us/step - loss: 0.5264 - accuracy: 0.6890  
Epoch 129/2450  
209/209 [=====] - 0s 141us/step - loss: 0.5065 - accuracy: 0.7560  
Epoch 130/2450  
209/209 [=====] - 0s 106us/step - loss: 0.5051 - accuracy: 0.7225  
Epoch 131/2450  
209/209 [=====] - 0s 113us/step - loss: 0.5049 - accuracy: 0.7656  
Epoch 132/2450  
209/209 [=====] - 0s 85us/step - loss: 0.5174 - accuracy: 0.7081  
Epoch 133/2450  
209/209 [=====] - 0s 108us/step - loss: 0.5028 - accuracy: 0.7560  
Epoch 134/2450  
209/209 [=====] - 0s 112us/step - loss: 0.5006 - accuracy: 0.7225  
Epoch 135/2450  
209/209 [=====] - 0s 167us/step - loss: 0.5019 - accuracy: 0.7608  
Epoch 136/2450  
209/209 [=====] - 0s 108us/step - loss: 0.5159 - accuracy: 0.7081  
Epoch 137/2450  
209/209 [=====] - 0s 97us/step - loss: 0.4986 - accuracy: 0.7464  
Epoch 138/2450  
209/209 [=====] - 0s 124us/step - loss: 0.4987 - accuracy: 0.7225  
Epoch 139/2450  
209/209 [=====] - 0s 100us/step - loss: 0.4983 - accuracy: 0.7560  
Epoch 140/2450  
209/209 [=====] - 0s 121us/step - loss: 0.5076 - accuracy: 0.7177  
Epoch 141/2450  
209/209 [=====] - 0s 100us/step - loss: 0.4958 - accuracy: 0.7608  
Epoch 142/2450  
209/209 [=====] - 0s 112us/step - loss: 0.4993 - accuracy: 0.7225  
Epoch 143/2450  
209/209 [=====] - 0s 92us/step - loss: 0.4926 - accuracy: 0.7560

Epoch 144/2450  
209/209 [=====] - 0s 124us/step - loss: 0.5002 - accuracy: 0.7225  
Epoch 145/2450  
209/209 [=====] - 0s 129us/step - loss: 0.4966 - accuracy: 0.7560  
Epoch 146/2450  
209/209 [=====] - 0s 114us/step - loss: 0.5080 - accuracy: 0.7129  
Epoch 147/2450  
209/209 [=====] - 0s 112us/step - loss: 0.4971 - accuracy: 0.7560  
Epoch 148/2450  
209/209 [=====] - 0s 86us/step - loss: 0.5036 - accuracy: 0.7177  
Epoch 149/2450  
209/209 [=====] - 0s 136us/step - loss: 0.4933 - accuracy: 0.7560  
Epoch 150/2450  
209/209 [=====] - 0s 245us/step - loss: 0.4949 - accuracy: 0.7273  
Epoch 151/2450  
209/209 [=====] - 0s 163us/step - loss: 0.4879 - accuracy: 0.7608  
Epoch 152/2450  
209/209 [=====] - 0s 157us/step - loss: 0.4969 - accuracy: 0.7225  
Epoch 153/2450  
209/209 [=====] - 0s 92us/step - loss: 0.4907 - accuracy: 0.7560  
Epoch 154/2450  
209/209 [=====] - 0s 82us/step - loss: 0.4965 - accuracy: 0.7225  
Epoch 155/2450  
209/209 [=====] - 0s 97us/step - loss: 0.4849 - accuracy: 0.7608  
Epoch 156/2450  
209/209 [=====] - 0s 83us/step - loss: 0.4858 - accuracy: 0.7273  
Epoch 157/2450  
209/209 [=====] - 0s 97us/step - loss: 0.4833 - accuracy: 0.7656  
Epoch 158/2450  
209/209 [=====] - 0s 100us/step - loss: 0.4849 - accuracy: 0.7225  
Epoch 159/2450  
209/209 [=====] - 0s 100us/step - loss: 0.4813 - accuracy: 0.7608  
Epoch 160/2450  
209/209 [=====] - 0s 92us/step - loss: 0.4893 - accuracy: 0.7225  
Epoch 161/2450  
209/209 [=====] - 0s 147us/step - loss: 0.4811 - accuracy: 0.7608  
Epoch 162/2450  
209/209 [=====] - 0s 136us/step - loss: 0.4873 - accuracy: 0.7225  
Epoch 163/2450  
209/209 [=====] - 0s 112us/step - loss: 0.4774 - accuracy: 0.7703  
Epoch 164/2450  
209/209 [=====] - 0s 121us/step - loss: 0.4823 - accuracy: 0.7273  
Epoch 165/2450  
209/209 [=====] - 0s 91us/step - loss: 0.4780 - accuracy: 0.7656  
Epoch 166/2450  
209/209 [=====] - 0s 104us/step - loss: 0.4816 - accuracy: 0.7225  
Epoch 167/2450  
209/209 [=====] - 0s 117us/step - loss: 0.4756 - accuracy: 0.7751  
Epoch 168/2450  
209/209 [=====] - 0s 89us/step - loss: 0.4801 - accuracy: 0.7225  
Epoch 169/2450  
209/209 [=====] - 0s 97us/step - loss: 0.4733 - accuracy: 0.7799  
Epoch 170/2450  
209/209 [=====] - 0s 111us/step - loss: 0.4820 - accuracy: 0.7273  
Epoch 171/2450  
209/209 [=====] - 0s 130us/step - loss: 0.4782 - accuracy: 0.7751  
Epoch 172/2450  
209/209 [=====] - 0s 142us/step - loss: 0.4866 - accuracy: 0.7225  
Epoch 173/2450  
209/209 [=====] - 0s 135us/step - loss: 0.4719 - accuracy: 0.7847  
Epoch 174/2450  
209/209 [=====] - 0s 106us/step - loss: 0.4742 - accuracy: 0.7273  
Epoch 175/2450  
209/209 [=====] - 0s 97us/step - loss: 0.4664 - accuracy: 0.7799  
Epoch 176/2450  
209/209 [=====] - 0s 160us/step - loss: 0.4692 - accuracy: 0.7273  
Epoch 177/2450  
209/209 [=====] - 0s 145us/step - loss: 0.4674 - accuracy: 0.7799  
Epoch 178/2450  
209/209 [=====] - 0s 107us/step - loss: 0.4844 - accuracy: 0.7273  
Epoch 179/2450  
209/209 [=====] - 0s 113us/step - loss: 0.4718 - accuracy: 0.7751  
Epoch 180/2450  
209/209 [=====] - 0s 95us/step - loss: 0.4724 - accuracy: 0.7273  
Epoch 181/2450  
209/209 [=====] - 0s 95us/step - loss: 0.4634 - accuracy: 0.7799  
Epoch 182/2450  
209/209 [=====] - 0s 125us/step - loss: 0.4696 - accuracy: 0.7273  
Epoch 183/2450  
209/209 [=====] - 0s 137us/step - loss: 0.4700 - accuracy: 0.7703  
Epoch 184/2450  
209/209 [=====] - 0s 103us/step - loss: 0.4932 - accuracy: 0.7177  
Epoch 185/2450

209/209 [=====] - 0s 125us/step - loss: 0.4671 - accuracy: 0.7895  
Epoch 186/2450  
209/209 [=====] - 0s 137us/step - loss: 0.4569 - accuracy: 0.7273  
Epoch 187/2450  
209/209 [=====] - 0s 257us/step - loss: 0.4490 - accuracy: 0.7847  
Epoch 188/2450  
209/209 [=====] - 0s 107us/step - loss: 0.4514 - accuracy: 0.7368  
Epoch 189/2450  
209/209 [=====] - 0s 119us/step - loss: 0.4541 - accuracy: 0.7895  
Epoch 190/2450  
209/209 [=====] - 0s 131us/step - loss: 0.4654 - accuracy: 0.7273  
Epoch 191/2450  
209/209 [=====] - 0s 127us/step - loss: 0.4629 - accuracy: 0.7799  
Epoch 192/2450  
209/209 [=====] - 0s 124us/step - loss: 0.4641 - accuracy: 0.7273  
Epoch 193/2450  
209/209 [=====] - 0s 133us/step - loss: 0.4621 - accuracy: 0.7703  
Epoch 194/2450  
209/209 [=====] - 0s 145us/step - loss: 0.4793 - accuracy: 0.7225  
Epoch 195/2450  
209/209 [=====] - 0s 122us/step - loss: 0.4596 - accuracy: 0.7847  
Epoch 196/2450  
209/209 [=====] - 0s 149us/step - loss: 0.4551 - accuracy: 0.7273  
Epoch 197/2450  
209/209 [=====] - 0s 96us/step - loss: 0.4518 - accuracy: 0.7799  
Epoch 198/2450  
209/209 [=====] - 0s 136us/step - loss: 0.4682 - accuracy: 0.7273  
Epoch 199/2450  
209/209 [=====] - 0s 107us/step - loss: 0.4614 - accuracy: 0.7799  
Epoch 200/2450  
209/209 [=====] - 0s 158us/step - loss: 0.4566 - accuracy: 0.7273  
Epoch 201/2450  
209/209 [=====] - 0s 106us/step - loss: 0.4473 - accuracy: 0.7895  
Epoch 202/2450  
209/209 [=====] - 0s 145us/step - loss: 0.4514 - accuracy: 0.7273  
Epoch 203/2450  
209/209 [=====] - 0s 132us/step - loss: 0.4523 - accuracy: 0.7847  
Epoch 204/2450  
209/209 [=====] - 0s 169us/step - loss: 0.4652 - accuracy: 0.7273  
Epoch 205/2450  
209/209 [=====] - 0s 128us/step - loss: 0.4536 - accuracy: 0.7847  
Epoch 206/2450  
209/209 [=====] - 0s 124us/step - loss: 0.4479 - accuracy: 0.7273  
Epoch 207/2450  
209/209 [=====] - 0s 125us/step - loss: 0.4442 - accuracy: 0.7895  
Epoch 208/2450  
209/209 [=====] - 0s 117us/step - loss: 0.4552 - accuracy: 0.7273  
Epoch 209/2450  
209/209 [=====] - 0s 141us/step - loss: 0.4555 - accuracy: 0.7799  
Epoch 210/2450  
209/209 [=====] - 0s 137us/step - loss: 0.4583 - accuracy: 0.7273  
Epoch 211/2450  
209/209 [=====] - 0s 134us/step - loss: 0.4462 - accuracy: 0.7990  
Epoch 212/2450  
209/209 [=====] - 0s 137us/step - loss: 0.4416 - accuracy: 0.7273  
Epoch 213/2450  
209/209 [=====] - 0s 125us/step - loss: 0.4348 - accuracy: 0.7895  
Epoch 214/2450  
209/209 [=====] - 0s 90us/step - loss: 0.4409 - accuracy: 0.7321  
Epoch 215/2450  
209/209 [=====] - 0s 322us/step - loss: 0.4394 - accuracy: 0.7799  
Epoch 216/2450  
209/209 [=====] - 0s 98us/step - loss: 0.4456 - accuracy: 0.7273  
Epoch 217/2450  
209/209 [=====] - 0s 122us/step - loss: 0.4472 - accuracy: 0.7847  
Epoch 218/2450  
209/209 [=====] - 0s 83us/step - loss: 0.4540 - accuracy: 0.7273  
Epoch 219/2450  
209/209 [=====] - 0s 96us/step - loss: 0.4399 - accuracy: 0.7990  
Epoch 220/2450  
209/209 [=====] - 0s 106us/step - loss: 0.4338 - accuracy: 0.7321  
Epoch 221/2450  
209/209 [=====] - 0s 115us/step - loss: 0.4310 - accuracy: 0.7895  
Epoch 222/2450  
209/209 [=====] - 0s 122us/step - loss: 0.4405 - accuracy: 0.7273  
Epoch 223/2450  
209/209 [=====] - 0s 109us/step - loss: 0.4451 - accuracy: 0.7847  
Epoch 224/2450  
209/209 [=====] - 0s 83us/step - loss: 0.4515 - accuracy: 0.7273  
Epoch 225/2450  
209/209 [=====] - 0s 117us/step - loss: 0.4364 - accuracy: 0.8612  
Epoch 226/2450  
209/209 [=====] - 0s 99us/step - loss: 0.4279 - accuracy: 0.7416

Epoch 227/2450  
209/209 [=====] - 0s 110us/step - loss: 0.4220 - accuracy: 0.8278  
Epoch 228/2450  
209/209 [=====] - 0s 88us/step - loss: 0.4279 - accuracy: 0.7416  
Epoch 229/2450  
209/209 [=====] - 0s 90us/step - loss: 0.4260 - accuracy: 0.8565  
Epoch 230/2450  
209/209 [=====] - 0s 132us/step - loss: 0.4302 - accuracy: 0.7368  
Epoch 231/2450  
209/209 [=====] - 0s 127us/step - loss: 0.4317 - accuracy: 0.8565  
Epoch 232/2450  
209/209 [=====] - 0s 148us/step - loss: 0.4347 - accuracy: 0.7273  
Epoch 233/2450  
209/209 [=====] - 0s 119us/step - loss: 0.4369 - accuracy: 0.8517  
Epoch 234/2450  
209/209 [=====] - 0s 123us/step - loss: 0.4422 - accuracy: 0.7273  
Epoch 235/2450  
209/209 [=====] - 0s 108us/step - loss: 0.4301 - accuracy: 0.8517  
Epoch 236/2450  
209/209 [=====] - 0s 129us/step - loss: 0.4240 - accuracy: 0.7416  
Epoch 237/2450  
209/209 [=====] - 0s 146us/step - loss: 0.4245 - accuracy: 0.8517  
Epoch 238/2450  
209/209 [=====] - 0s 131us/step - loss: 0.4249 - accuracy: 0.7368  
Epoch 239/2450  
209/209 [=====] - 0s 125us/step - loss: 0.4249 - accuracy: 0.8612  
Epoch 240/2450  
209/209 [=====] - 0s 150us/step - loss: 0.4241 - accuracy: 0.7368  
Epoch 241/2450  
209/209 [=====] - 0s 112us/step - loss: 0.4217 - accuracy: 0.8565  
Epoch 242/2450  
209/209 [=====] - 0s 133us/step - loss: 0.4240 - accuracy: 0.7368  
Epoch 243/2450  
209/209 [=====] - 0s 109us/step - loss: 0.4242 - accuracy: 0.8612  
Epoch 244/2450  
209/209 [=====] - 0s 119us/step - loss: 0.4266 - accuracy: 0.7321  
Epoch 245/2450  
209/209 [=====] - 0s 105us/step - loss: 0.4265 - accuracy: 0.8565  
Epoch 246/2450  
209/209 [=====] - 0s 113us/step - loss: 0.4296 - accuracy: 0.7273  
Epoch 247/2450  
209/209 [=====] - 0s 287us/step - loss: 0.4228 - accuracy: 0.8660  
Epoch 248/2450  
209/209 [=====] - 0s 140us/step - loss: 0.4207 - accuracy: 0.7368  
Epoch 249/2450  
209/209 [=====] - 0s 137us/step - loss: 0.4179 - accuracy: 0.8565  
Epoch 250/2450  
209/209 [=====] - 0s 193us/step - loss: 0.4165 - accuracy: 0.7464  
Epoch 251/2450  
209/209 [=====] - 0s 105us/step - loss: 0.4183 - accuracy: 0.8660  
Epoch 252/2450  
209/209 [=====] - 0s 130us/step - loss: 0.4160 - accuracy: 0.7464  
Epoch 253/2450  
209/209 [=====] - 0s 110us/step - loss: 0.4144 - accuracy: 0.8660  
Epoch 254/2450  
209/209 [=====] - 0s 120us/step - loss: 0.4127 - accuracy: 0.7560  
Epoch 255/2450  
209/209 [=====] - 0s 140us/step - loss: 0.4123 - accuracy: 0.8660  
Epoch 256/2450  
209/209 [=====] - 0s 115us/step - loss: 0.4089 - accuracy: 0.7560  
Epoch 257/2450  
209/209 [=====] - 0s 104us/step - loss: 0.4089 - accuracy: 0.8660  
Epoch 258/2450  
209/209 [=====] - 0s 156us/step - loss: 0.4058 - accuracy: 0.7560  
Epoch 259/2450  
209/209 [=====] - 0s 146us/step - loss: 0.4041 - accuracy: 0.8565  
Epoch 260/2450  
209/209 [=====] - 0s 154us/step - loss: 0.3998 - accuracy: 0.7608  
Epoch 261/2450  
209/209 [=====] - 0s 118us/step - loss: 0.3999 - accuracy: 0.8660  
Epoch 262/2450  
209/209 [=====] - 0s 138us/step - loss: 0.3996 - accuracy: 0.7608  
Epoch 263/2450  
209/209 [=====] - 0s 107us/step - loss: 0.4026 - accuracy: 0.8756  
Epoch 264/2450  
209/209 [=====] - 0s 137us/step - loss: 0.3983 - accuracy: 0.7608  
Epoch 265/2450  
209/209 [=====] - 0s 142us/step - loss: 0.4000 - accuracy: 0.8756  
Epoch 266/2450  
209/209 [=====] - 0s 144us/step - loss: 0.3986 - accuracy: 0.7608  
Epoch 267/2450  
209/209 [=====] - 0s 186us/step - loss: 0.4020 - accuracy: 0.8756  
Epoch 268/2450



209/209 [=====] - 0s 85us/step - loss: 0.3993 - accuracy: 0.7608  
Epoch 269/2450  
209/209 [=====] - 0s 120us/step - loss: 0.3998 - accuracy: 0.8804  
Epoch 270/2450  
209/209 [=====] - 0s 127us/step - loss: 0.3959 - accuracy: 0.7608  
Epoch 271/2450  
209/209 [=====] - 0s 131us/step - loss: 0.4001 - accuracy: 0.8852  
Epoch 272/2450  
209/209 [=====] - 0s 109us/step - loss: 0.3933 - accuracy: 0.7608  
Epoch 273/2450  
209/209 [=====] - 0s 138us/step - loss: 0.3938 - accuracy: 0.8804  
Epoch 274/2450  
209/209 [=====] - 0s 108us/step - loss: 0.3910 - accuracy: 0.7656  
Epoch 275/2450  
209/209 [=====] - 0s 117us/step - loss: 0.3942 - accuracy: 0.8852  
Epoch 276/2450  
209/209 [=====] - 0s 146us/step - loss: 0.3899 - accuracy: 0.7656  
Epoch 277/2450  
209/209 [=====] - 0s 272us/step - loss: 0.3933 - accuracy: 0.8852  
Epoch 278/2450  
209/209 [=====] - 0s 121us/step - loss: 0.3910 - accuracy: 0.7656  
Epoch 279/2450  
209/209 [=====] - 0s 107us/step - loss: 0.3907 - accuracy: 0.8900  
Epoch 280/2450  
209/209 [=====] - 0s 105us/step - loss: 0.3913 - accuracy: 0.7608  
Epoch 281/2450  
209/209 [=====] - 0s 240us/step - loss: 0.3952 - accuracy: 0.8900  
Epoch 282/2450  
209/209 [=====] - 0s 102us/step - loss: 0.3967 - accuracy: 0.7608  
Epoch 283/2450  
209/209 [=====] - 0s 122us/step - loss: 0.4012 - accuracy: 0.8756  
Epoch 284/2450  
209/209 [=====] - 0s 158us/step - loss: 0.4004 - accuracy: 0.7608  
Epoch 285/2450  
209/209 [=====] - 0s 135us/step - loss: 0.4059 - accuracy: 0.8708  
Epoch 286/2450  
209/209 [=====] - 0s 162us/step - loss: 0.3929 - accuracy: 0.7560  
Epoch 287/2450  
209/209 [=====] - 0s 132us/step - loss: 0.3837 - accuracy: 0.8900  
Epoch 288/2450  
209/209 [=====] - 0s 130us/step - loss: 0.3825 - accuracy: 0.7703  
Epoch 289/2450  
209/209 [=====] - 0s 112us/step - loss: 0.3867 - accuracy: 0.8947  
Epoch 290/2450  
209/209 [=====] - 0s 107us/step - loss: 0.3812 - accuracy: 0.7703  
Epoch 291/2450  
209/209 [=====] - 0s 103us/step - loss: 0.3803 - accuracy: 0.9043  
Epoch 292/2450  
209/209 [=====] - 0s 86us/step - loss: 0.3766 - accuracy: 0.7751  
Epoch 293/2450  
209/209 [=====] - 0s 102us/step - loss: 0.3780 - accuracy: 0.8995  
Epoch 294/2450  
209/209 [=====] - 0s 138us/step - loss: 0.3773 - accuracy: 0.7751  
Epoch 295/2450  
209/209 [=====] - 0s 131us/step - loss: 0.3838 - accuracy: 0.8995  
Epoch 296/2450  
209/209 [=====] - 0s 134us/step - loss: 0.3792 - accuracy: 0.7703  
Epoch 297/2450  
209/209 [=====] - 0s 142us/step - loss: 0.3814 - accuracy: 0.8947  
Epoch 298/2450  
209/209 [=====] - 0s 97us/step - loss: 0.3818 - accuracy: 0.7656  
Epoch 299/2450  
209/209 [=====] - 0s 125us/step - loss: 0.3845 - accuracy: 0.8900  
Epoch 300/2450  
209/209 [=====] - 0s 123us/step - loss: 0.3825 - accuracy: 0.7608  
Epoch 301/2450  
209/209 [=====] - 0s 130us/step - loss: 0.3856 - accuracy: 0.8947  
Epoch 302/2450  
209/209 [=====] - 0s 164us/step - loss: 0.3764 - accuracy: 0.7751  
Epoch 303/2450  
209/209 [=====] - 0s 135us/step - loss: 0.3711 - accuracy: 0.8995  
Epoch 304/2450  
209/209 [=====] - 0s 126us/step - loss: 0.3741 - accuracy: 0.7799  
Epoch 305/2450  
209/209 [=====] - 0s 136us/step - loss: 0.3769 - accuracy: 0.9043  
Epoch 306/2450  
209/209 [=====] - 0s 137us/step - loss: 0.3714 - accuracy: 0.7847  
Epoch 307/2450  
209/209 [=====] - 0s 132us/step - loss: 0.3767 - accuracy: 0.8995  
Epoch 308/2450  
209/209 [=====] - 0s 320us/step - loss: 0.3732 - accuracy: 0.7703  
Epoch 309/2450  
209/209 [=====] - 0s 168us/step - loss: 0.3743 - accuracy: 0.8947

Epoch 310/2450  
209/209 [=====] - 0s 114us/step - loss: 0.3729 - accuracy: 0.7799  
Epoch 311/2450  
209/209 [=====] - 0s 220us/step - loss: 0.3769 - accuracy: 0.8995  
Epoch 312/2450  
209/209 [=====] - 0s 202us/step - loss: 0.3719 - accuracy: 0.7751  
Epoch 313/2450  
209/209 [=====] - 0s 127us/step - loss: 0.3710 - accuracy: 0.9043  
Epoch 314/2450  
209/209 [=====] - 0s 108us/step - loss: 0.3668 - accuracy: 0.7895  
Epoch 315/2450  
209/209 [=====] - 0s 141us/step - loss: 0.3707 - accuracy: 0.8995  
Epoch 316/2450  
209/209 [=====] - 0s 151us/step - loss: 0.3636 - accuracy: 0.7943  
Epoch 317/2450  
209/209 [=====] - 0s 132us/step - loss: 0.3617 - accuracy: 0.9043  
Epoch 318/2450  
209/209 [=====] - 0s 117us/step - loss: 0.3569 - accuracy: 0.8134  
Epoch 319/2450  
209/209 [=====] - 0s 169us/step - loss: 0.3569 - accuracy: 0.9043  
Epoch 320/2450  
209/209 [=====] - 0s 144us/step - loss: 0.3523 - accuracy: 0.8182  
Epoch 321/2450  
209/209 [=====] - 0s 151us/step - loss: 0.3551 - accuracy: 0.8995  
Epoch 322/2450  
209/209 [=====] - 0s 122us/step - loss: 0.3578 - accuracy: 0.8038  
Epoch 323/2450  
209/209 [=====] - 0s 122us/step - loss: 0.3588 - accuracy: 0.9091  
Epoch 324/2450  
209/209 [=====] - 0s 119us/step - loss: 0.3561 - accuracy: 0.8086  
Epoch 325/2450  
209/209 [=====] - 0s 136us/step - loss: 0.3603 - accuracy: 0.9091  
Epoch 326/2450  
209/209 [=====] - 0s 142us/step - loss: 0.3586 - accuracy: 0.7990  
Epoch 327/2450  
209/209 [=====] - 0s 204us/step - loss: 0.3691 - accuracy: 0.9091  
Epoch 328/2450  
209/209 [=====] - 0s 108us/step - loss: 0.3678 - accuracy: 0.7799  
Epoch 329/2450  
209/209 [=====] - 0s 135us/step - loss: 0.3777 - accuracy: 0.9043  
Epoch 330/2450  
209/209 [=====] - 0s 178us/step - loss: 0.3612 - accuracy: 0.7943  
Epoch 331/2450  
209/209 [=====] - 0s 175us/step - loss: 0.3530 - accuracy: 0.9139  
Epoch 332/2450  
209/209 [=====] - 0s 129us/step - loss: 0.3537 - accuracy: 0.8134  
Epoch 333/2450  
209/209 [=====] - 0s 143us/step - loss: 0.3638 - accuracy: 0.9139  
Epoch 334/2450  
209/209 [=====] - 0s 133us/step - loss: 0.3585 - accuracy: 0.7943  
Epoch 335/2450  
209/209 [=====] - 0s 140us/step - loss: 0.3632 - accuracy: 0.9139  
Epoch 336/2450  
209/209 [=====] - 0s 283us/step - loss: 0.3586 - accuracy: 0.7943  
Epoch 337/2450  
209/209 [=====] - 0s 147us/step - loss: 0.3673 - accuracy: 0.9139  
Epoch 338/2450  
209/209 [=====] - 0s 136us/step - loss: 0.3574 - accuracy: 0.7990  
Epoch 339/2450  
209/209 [=====] - 0s 140us/step - loss: 0.3596 - accuracy: 0.9139  
Epoch 340/2450  
209/209 [=====] - 0s 144us/step - loss: 0.3584 - accuracy: 0.7895  
Epoch 341/2450  
209/209 [=====] - 0s 130us/step - loss: 0.3674 - accuracy: 0.9139  
Epoch 342/2450  
209/209 [=====] - 0s 137us/step - loss: 0.3564 - accuracy: 0.7943  
Epoch 343/2450  
209/209 [=====] - 0s 151us/step - loss: 0.3602 - accuracy: 0.9139  
Epoch 344/2450  
209/209 [=====] - 0s 152us/step - loss: 0.3503 - accuracy: 0.8086  
Epoch 345/2450  
209/209 [=====] - 0s 139us/step - loss: 0.3603 - accuracy: 0.9091  
Epoch 346/2450  
209/209 [=====] - 0s 146us/step - loss: 0.3555 - accuracy: 0.7943  
Epoch 347/2450  
209/209 [=====] - 0s 126us/step - loss: 0.3543 - accuracy: 0.9187  
Epoch 348/2450  
209/209 [=====] - 0s 110us/step - loss: 0.3489 - accuracy: 0.8086  
Epoch 349/2450  
209/209 [=====] - 0s 128us/step - loss: 0.3583 - accuracy: 0.9139  
Epoch 350/2450  
209/209 [=====] - 0s 129us/step - loss: 0.3563 - accuracy: 0.7943  
Epoch 351/2450

209/209 [=====] - 0s 144us/step - loss: 0.3585 - accuracy: 0.9043  
Epoch 352/2450  
209/209 [=====] - 0s 125us/step - loss: 0.3521 - accuracy: 0.7943  
Epoch 353/2450  
209/209 [=====] - 0s 139us/step - loss: 0.3650 - accuracy: 0.9091  
Epoch 354/2450  
209/209 [=====] - 0s 147us/step - loss: 0.3505 - accuracy: 0.7990  
Epoch 355/2450  
209/209 [=====] - 0s 147us/step - loss: 0.3478 - accuracy: 0.9139  
Epoch 356/2450  
209/209 [=====] - 0s 146us/step - loss: 0.3451 - accuracy: 0.8086  
Epoch 357/2450  
209/209 [=====] - 0s 135us/step - loss: 0.3581 - accuracy: 0.9043  
Epoch 358/2450  
209/209 [=====] - 0s 114us/step - loss: 0.3534 - accuracy: 0.7990  
Epoch 359/2450  
209/209 [=====] - 0s 289us/step - loss: 0.3557 - accuracy: 0.9091  
Epoch 360/2450  
209/209 [=====] - 0s 182us/step - loss: 0.3476 - accuracy: 0.8038  
Epoch 361/2450  
209/209 [=====] - 0s 159us/step - loss: 0.3582 - accuracy: 0.9091  
Epoch 362/2450  
209/209 [=====] - 0s 156us/step - loss: 0.3426 - accuracy: 0.8086  
Epoch 363/2450  
209/209 [=====] - 0s 110us/step - loss: 0.3427 - accuracy: 0.9043  
Epoch 364/2450  
209/209 [=====] - 0s 292us/step - loss: 0.3406 - accuracy: 0.8134  
Epoch 365/2450  
209/209 [=====] - 0s 148us/step - loss: 0.3547 - accuracy: 0.9043  
Epoch 366/2450  
209/209 [=====] - 0s 154us/step - loss: 0.3477 - accuracy: 0.7990  
Epoch 367/2450  
209/209 [=====] - 0s 124us/step - loss: 0.3599 - accuracy: 0.9091  
Epoch 368/2450  
209/209 [=====] - 0s 143us/step - loss: 0.3465 - accuracy: 0.7990  
Epoch 369/2450  
209/209 [=====] - 0s 156us/step - loss: 0.3580 - accuracy: 0.9091  
Epoch 370/2450  
209/209 [=====] - 0s 141us/step - loss: 0.3425 - accuracy: 0.8086  
Epoch 371/2450  
209/209 [=====] - 0s 130us/step - loss: 0.3514 - accuracy: 0.9091  
Epoch 372/2450  
209/209 [=====] - 0s 163us/step - loss: 0.3381 - accuracy: 0.8182  
Epoch 373/2450  
209/209 [=====] - 0s 161us/step - loss: 0.3474 - accuracy: 0.9091  
Epoch 374/2450  
209/209 [=====] - 0s 241us/step - loss: 0.3411 - accuracy: 0.8086  
Epoch 375/2450  
209/209 [=====] - 0s 259us/step - loss: 0.3489 - accuracy: 0.9091  
Epoch 376/2450  
209/209 [=====] - 0s 227us/step - loss: 0.3351 - accuracy: 0.8230  
Epoch 377/2450  
209/209 [=====] - 0s 199us/step - loss: 0.3353 - accuracy: 0.9091  
Epoch 378/2450  
209/209 [=====] - 0s 132us/step - loss: 0.3318 - accuracy: 0.8230  
Epoch 379/2450  
209/209 [=====] - 0s 201us/step - loss: 0.3519 - accuracy: 0.9043  
Epoch 380/2450  
209/209 [=====] - 0s 174us/step - loss: 0.3423 - accuracy: 0.8038  
Epoch 381/2450  
209/209 [=====] - 0s 159us/step - loss: 0.3504 - accuracy: 0.9139  
Epoch 382/2450  
209/209 [=====] - 0s 165us/step - loss: 0.3350 - accuracy: 0.8134  
Epoch 383/2450  
209/209 [=====] - 0s 178us/step - loss: 0.3462 - accuracy: 0.9139  
Epoch 384/2450  
209/209 [=====] - 0s 121us/step - loss: 0.3338 - accuracy: 0.8230  
Epoch 385/2450  
209/209 [=====] - 0s 116us/step - loss: 0.3444 - accuracy: 0.9091  
Epoch 386/2450  
209/209 [=====] - 0s 134us/step - loss: 0.3331 - accuracy: 0.8182  
Epoch 387/2450  
209/209 [=====] - 0s 118us/step - loss: 0.3401 - accuracy: 0.9091  
Epoch 388/2450  
209/209 [=====] - 0s 107us/step - loss: 0.3251 - accuracy: 0.8469  
Epoch 389/2450  
209/209 [=====] - 0s 249us/step - loss: 0.3302 - accuracy: 0.9139  
Epoch 390/2450  
209/209 [=====] - 0s 241us/step - loss: 0.3225 - accuracy: 0.8517  
Epoch 391/2450  
209/209 [=====] - 0s 141us/step - loss: 0.3361 - accuracy: 0.9091  
Epoch 392/2450  
209/209 [=====] - 0s 188us/step - loss: 0.3259 - accuracy: 0.8325

Epoch 393/2450  
209/209 [=====] - 0s 118us/step - loss: 0.3343 - accuracy: 0.9091  
Epoch 394/2450  
209/209 [=====] - 0s 143us/step - loss: 0.3198 - accuracy: 0.8469  
Epoch 395/2450  
209/209 [=====] - 0s 129us/step - loss: 0.3256 - accuracy: 0.9187  
Epoch 396/2450  
209/209 [=====] - 0s 159us/step - loss: 0.3155 - accuracy: 0.8660  
Epoch 397/2450  
209/209 [=====] - 0s 152us/step - loss: 0.3286 - accuracy: 0.9091  
Epoch 398/2450  
209/209 [=====] - 0s 144us/step - loss: 0.3240 - accuracy: 0.8373  
Epoch 399/2450  
209/209 [=====] - 0s 104us/step - loss: 0.3387 - accuracy: 0.9139  
Epoch 400/2450  
209/209 [=====] - 0s 131us/step - loss: 0.3222 - accuracy: 0.8421  
Epoch 401/2450  
209/209 [=====] - 0s 156us/step - loss: 0.3306 - accuracy: 0.9187  
Epoch 402/2450  
209/209 [=====] - 0s 145us/step - loss: 0.3164 - accuracy: 0.8565  
Epoch 403/2450  
209/209 [=====] - 0s 144us/step - loss: 0.3240 - accuracy: 0.9234  
Epoch 404/2450  
209/209 [=====] - 0s 132us/step - loss: 0.3098 - accuracy: 0.8660  
Epoch 405/2450  
209/209 [=====] - 0s 113us/step - loss: 0.3193 - accuracy: 0.9187  
Epoch 406/2450  
209/209 [=====] - 0s 113us/step - loss: 0.3136 - accuracy: 0.8565  
Epoch 407/2450  
209/209 [=====] - 0s 106us/step - loss: 0.3245 - accuracy: 0.9234  
Epoch 408/2450  
209/209 [=====] - 0s 168us/step - loss: 0.3113 - accuracy: 0.8612  
Epoch 409/2450  
209/209 [=====] - 0s 239us/step - loss: 0.3232 - accuracy: 0.9234  
Epoch 410/2450  
209/209 [=====] - 0s 168us/step - loss: 0.3135 - accuracy: 0.8565  
Epoch 411/2450  
209/209 [=====] - 0s 201us/step - loss: 0.3217 - accuracy: 0.9234  
Epoch 412/2450  
209/209 [=====] - 0s 147us/step - loss: 0.3076 - accuracy: 0.8660  
Epoch 413/2450  
209/209 [=====] - 0s 159us/step - loss: 0.3189 - accuracy: 0.9234  
Epoch 414/2450  
209/209 [=====] - 0s 283us/step - loss: 0.3120 - accuracy: 0.8517  
Epoch 415/2450  
209/209 [=====] - 0s 337us/step - loss: 0.3285 - accuracy: 0.9187  
Epoch 416/2450  
209/209 [=====] - 0s 189us/step - loss: 0.3164 - accuracy: 0.8469  
Epoch 417/2450  
209/209 [=====] - 0s 127us/step - loss: 0.3259 - accuracy: 0.9187  
Epoch 418/2450  
209/209 [=====] - 0s 123us/step - loss: 0.3121 - accuracy: 0.8565  
Epoch 419/2450  
209/209 [=====] - 0s 124us/step - loss: 0.3161 - accuracy: 0.9234  
Epoch 420/2450  
209/209 [=====] - 0s 98us/step - loss: 0.3019 - accuracy: 0.8660  
Epoch 421/2450  
209/209 [=====] - 0s 95us/step - loss: 0.3072 - accuracy: 0.9187  
Epoch 422/2450  
209/209 [=====] - 0s 106us/step - loss: 0.2992 - accuracy: 0.8660  
Epoch 423/2450  
209/209 [=====] - 0s 108us/step - loss: 0.3122 - accuracy: 0.9234  
Epoch 424/2450  
209/209 [=====] - 0s 134us/step - loss: 0.3027 - accuracy: 0.8660  
Epoch 425/2450  
209/209 [=====] - 0s 146us/step - loss: 0.3082 - accuracy: 0.9234  
Epoch 426/2450  
209/209 [=====] - 0s 128us/step - loss: 0.2941 - accuracy: 0.8756  
Epoch 427/2450  
209/209 [=====] - 0s 125us/step - loss: 0.3052 - accuracy: 0.9187  
Epoch 428/2450  
209/209 [=====] - 0s 123us/step - loss: 0.2959 - accuracy: 0.8708  
Epoch 429/2450  
209/209 [=====] - 0s 104us/step - loss: 0.3072 - accuracy: 0.9234  
Epoch 430/2450  
209/209 [=====] - 0s 111us/step - loss: 0.2968 - accuracy: 0.8708  
Epoch 431/2450  
209/209 [=====] - 0s 133us/step - loss: 0.3086 - accuracy: 0.9234  
Epoch 432/2450  
209/209 [=====] - 0s 123us/step - loss: 0.2968 - accuracy: 0.8708  
Epoch 433/2450  
209/209 [=====] - 0s 146us/step - loss: 0.3038 - accuracy: 0.9234  
Epoch 434/2450

209/209 [=====] - 0s 113us/step - loss: 0.2928 - accuracy: 0.8708  
Epoch 435/2450  
209/209 [=====] - 0s 118us/step - loss: 0.2995 - accuracy: 0.9234  
Epoch 436/2450  
209/209 [=====] - 0s 116us/step - loss: 0.2919 - accuracy: 0.8708  
Epoch 437/2450  
209/209 [=====] - 0s 143us/step - loss: 0.2999 - accuracy: 0.9234  
Epoch 438/2450  
209/209 [=====] - 0s 101us/step - loss: 0.2882 - accuracy: 0.8900  
Epoch 439/2450  
209/209 [=====] - 0s 93us/step - loss: 0.2959 - accuracy: 0.9234  
Epoch 440/2450  
209/209 [=====] - 0s 118us/step - loss: 0.2865 - accuracy: 0.8804  
Epoch 441/2450  
209/209 [=====] - 0s 124us/step - loss: 0.2929 - accuracy: 0.9234  
Epoch 442/2450  
209/209 [=====] - 0s 111us/step - loss: 0.2811 - accuracy: 0.8900  
Epoch 443/2450  
209/209 [=====] - 0s 114us/step - loss: 0.2859 - accuracy: 0.9282  
Epoch 444/2450  
209/209 [=====] - 0s 126us/step - loss: 0.2803 - accuracy: 0.8995  
Epoch 445/2450  
209/209 [=====] - 0s 145us/step - loss: 0.2939 - accuracy: 0.9234  
Epoch 446/2450  
209/209 [=====] - 0s 329us/step - loss: 0.2980 - accuracy: 0.8660  
Epoch 447/2450  
209/209 [=====] - 0s 158us/step - loss: 0.3194 - accuracy: 0.9139  
Epoch 448/2450  
209/209 [=====] - 0s 301us/step - loss: 0.3004 - accuracy: 0.8517  
Epoch 449/2450  
209/209 [=====] - 0s 158us/step - loss: 0.3145 - accuracy: 0.9187  
Epoch 450/2450  
209/209 [=====] - 0s 128us/step - loss: 0.2940 - accuracy: 0.8756  
Epoch 451/2450  
209/209 [=====] - 0s 126us/step - loss: 0.2957 - accuracy: 0.9234  
Epoch 452/2450  
209/209 [=====] - 0s 110us/step - loss: 0.2810 - accuracy: 0.8900  
Epoch 453/2450  
209/209 [=====] - 0s 106us/step - loss: 0.2826 - accuracy: 0.9282  
Epoch 454/2450  
209/209 [=====] - 0s 100us/step - loss: 0.2732 - accuracy: 0.8995  
Epoch 455/2450  
209/209 [=====] - 0s 130us/step - loss: 0.2853 - accuracy: 0.9282  
Epoch 456/2450  
209/209 [=====] - 0s 126us/step - loss: 0.2892 - accuracy: 0.8708  
Epoch 457/2450  
209/209 [=====] - 0s 117us/step - loss: 0.3058 - accuracy: 0.9234  
Epoch 458/2450  
209/209 [=====] - 0s 149us/step - loss: 0.2881 - accuracy: 0.8708  
Epoch 459/2450  
209/209 [=====] - 0s 178us/step - loss: 0.2989 - accuracy: 0.9234  
Epoch 460/2450  
209/209 [=====] - 0s 174us/step - loss: 0.2858 - accuracy: 0.8708  
Epoch 461/2450  
209/209 [=====] - 0s 146us/step - loss: 0.2933 - accuracy: 0.9234  
Epoch 462/2450  
209/209 [=====] - 0s 151us/step - loss: 0.2801 - accuracy: 0.8804  
Epoch 463/2450  
209/209 [=====] - 0s 206us/step - loss: 0.2832 - accuracy: 0.9282  
Epoch 464/2450  
209/209 [=====] - 0s 124us/step - loss: 0.2745 - accuracy: 0.8947  
Epoch 465/2450  
209/209 [=====] - 0s 133us/step - loss: 0.2927 - accuracy: 0.9282  
Epoch 466/2450  
209/209 [=====] - 0s 120us/step - loss: 0.2918 - accuracy: 0.8565  
Epoch 467/2450  
209/209 [=====] - 0s 123us/step - loss: 0.3058 - accuracy: 0.9234  
Epoch 468/2450  
209/209 [=====] - 0s 110us/step - loss: 0.2829 - accuracy: 0.8852  
Epoch 469/2450  
209/209 [=====] - 0s 114us/step - loss: 0.2831 - accuracy: 0.9234  
Epoch 470/2450  
209/209 [=====] - 0s 128us/step - loss: 0.2661 - accuracy: 0.8947  
Epoch 471/2450  
209/209 [=====] - 0s 112us/step - loss: 0.2658 - accuracy: 0.9282  
Epoch 472/2450  
209/209 [=====] - 0s 131us/step - loss: 0.2700 - accuracy: 0.8995  
Epoch 473/2450  
209/209 [=====] - 0s 107us/step - loss: 0.2809 - accuracy: 0.9234  
Epoch 474/2450  
209/209 [=====] - 0s 106us/step - loss: 0.2778 - accuracy: 0.8852  
Epoch 475/2450  
209/209 [=====] - 0s 242us/step - loss: 0.2922 - accuracy: 0.9234

Epoch 476/2450  
209/209 [=====] - 0s 140us/step - loss: 0.2768 - accuracy: 0.8852  
Epoch 477/2450  
209/209 [=====] - 0s 129us/step - loss: 0.2837 - accuracy: 0.9234  
Epoch 478/2450  
209/209 [=====] - 0s 180us/step - loss: 0.2699 - accuracy: 0.8995  
Epoch 479/2450  
209/209 [=====] - 0s 114us/step - loss: 0.2790 - accuracy: 0.9330  
Epoch 480/2450  
209/209 [=====] - 0s 137us/step - loss: 0.2832 - accuracy: 0.8756  
Epoch 481/2450  
209/209 [=====] - 0s 107us/step - loss: 0.2989 - accuracy: 0.9187  
Epoch 482/2450  
209/209 [=====] - 0s 156us/step - loss: 0.2784 - accuracy: 0.8852  
Epoch 483/2450  
209/209 [=====] - 0s 110us/step - loss: 0.2905 - accuracy: 0.9234  
Epoch 484/2450  
209/209 [=====] - 0s 120us/step - loss: 0.2720 - accuracy: 0.8852  
Epoch 485/2450  
209/209 [=====] - 0s 112us/step - loss: 0.2740 - accuracy: 0.9234  
Epoch 486/2450  
209/209 [=====] - 0s 144us/step - loss: 0.2549 - accuracy: 0.9187  
Epoch 487/2450  
209/209 [=====] - 0s 136us/step - loss: 0.2552 - accuracy: 0.9282  
Epoch 488/2450  
209/209 [=====] - 0s 148us/step - loss: 0.2608 - accuracy: 0.9139  
Epoch 489/2450  
209/209 [=====] - 0s 154us/step - loss: 0.2665 - accuracy: 0.9330  
Epoch 490/2450  
209/209 [=====] - 0s 137us/step - loss: 0.2643 - accuracy: 0.8995  
Epoch 491/2450  
209/209 [=====] - 0s 160us/step - loss: 0.2804 - accuracy: 0.9282  
Epoch 492/2450  
209/209 [=====] - 0s 128us/step - loss: 0.2792 - accuracy: 0.8804  
Epoch 493/2450  
209/209 [=====] - 0s 139us/step - loss: 0.2947 - accuracy: 0.9187  
Epoch 494/2450  
209/209 [=====] - 0s 125us/step - loss: 0.2705 - accuracy: 0.8852  
Epoch 495/2450  
209/209 [=====] - 0s 107us/step - loss: 0.2725 - accuracy: 0.9330  
Epoch 496/2450  
209/209 [=====] - 0s 119us/step - loss: 0.2582 - accuracy: 0.9091  
Epoch 497/2450  
209/209 [=====] - 0s 146us/step - loss: 0.2619 - accuracy: 0.9330  
Epoch 498/2450  
209/209 [=====] - 0s 152us/step - loss: 0.2581 - accuracy: 0.9091  
Epoch 499/2450  
209/209 [=====] - 0s 133us/step - loss: 0.2700 - accuracy: 0.9330  
Epoch 500/2450  
209/209 [=====] - 0s 123us/step - loss: 0.2674 - accuracy: 0.8852  
Epoch 501/2450  
209/209 [=====] - 0s 131us/step - loss: 0.2787 - accuracy: 0.9234  
Epoch 502/2450  
209/209 [=====] - 0s 136us/step - loss: 0.2604 - accuracy: 0.8995  
Epoch 503/2450  
209/209 [=====] - 0s 141us/step - loss: 0.2613 - accuracy: 0.9330  
Epoch 504/2450  
209/209 [=====] - 0s 186us/step - loss: 0.2605 - accuracy: 0.9043  
Epoch 505/2450  
209/209 [=====] - 0s 280us/step - loss: 0.2715 - accuracy: 0.9330  
Epoch 506/2450  
209/209 [=====] - 0s 227us/step - loss: 0.2735 - accuracy: 0.8852  
Epoch 507/2450  
209/209 [=====] - 0s 183us/step - loss: 0.2940 - accuracy: 0.9234  
Epoch 508/2450  
209/209 [=====] - 0s 105us/step - loss: 0.2693 - accuracy: 0.8852  
Epoch 509/2450  
209/209 [=====] - 0s 118us/step - loss: 0.2681 - accuracy: 0.9330  
Epoch 510/2450  
209/209 [=====] - 0s 97us/step - loss: 0.2576 - accuracy: 0.9091  
Epoch 511/2450  
209/209 [=====] - 0s 115us/step - loss: 0.2689 - accuracy: 0.9330  
Epoch 512/2450  
209/209 [=====] - 0s 103us/step - loss: 0.2628 - accuracy: 0.8852  
Epoch 513/2450  
209/209 [=====] - 0s 96us/step - loss: 0.2704 - accuracy: 0.9234  
Epoch 514/2450  
209/209 [=====] - 0s 121us/step - loss: 0.2539 - accuracy: 0.9091  
Epoch 515/2450  
209/209 [=====] - 0s 119us/step - loss: 0.2564 - accuracy: 0.9378  
Epoch 516/2450  
209/209 [=====] - 0s 93us/step - loss: 0.2529 - accuracy: 0.9187  
Epoch 517/2450

209/209 [=====] - 0s 124us/step - loss: 0.2619 - accuracy: 0.9378  
Epoch 518/2450  
209/209 [=====] - 0s 105us/step - loss: 0.2560 - accuracy: 0.9043  
Epoch 519/2450  
209/209 [=====] - 0s 141us/step - loss: 0.2646 - accuracy: 0.9378  
Epoch 520/2450  
209/209 [=====] - 0s 129us/step - loss: 0.2579 - accuracy: 0.8947  
Epoch 521/2450  
209/209 [=====] - 0s 108us/step - loss: 0.2779 - accuracy: 0.9282  
Epoch 522/2450  
209/209 [=====] - 0s 127us/step - loss: 0.2728 - accuracy: 0.8756  
Epoch 523/2450  
209/209 [=====] - 0s 133us/step - loss: 0.2837 - accuracy: 0.9234  
Epoch 524/2450  
209/209 [=====] - 0s 124us/step - loss: 0.2605 - accuracy: 0.8900  
Epoch 525/2450  
209/209 [=====] - 0s 165us/step - loss: 0.2557 - accuracy: 0.9330  
Epoch 526/2450  
209/209 [=====] - 0s 141us/step - loss: 0.2434 - accuracy: 0.9139  
Epoch 527/2450  
209/209 [=====] - 0s 136us/step - loss: 0.2459 - accuracy: 0.9330  
Epoch 528/2450  
209/209 [=====] - 0s 110us/step - loss: 0.2351 - accuracy: 0.9234  
Epoch 529/2450  
209/209 [=====] - 0s 156us/step - loss: 0.2384 - accuracy: 0.9330  
Epoch 530/2450  
209/209 [=====] - 0s 141us/step - loss: 0.2391 - accuracy: 0.9234  
Epoch 531/2450  
209/209 [=====] - 0s 128us/step - loss: 0.2431 - accuracy: 0.9330  
Epoch 532/2450  
209/209 [=====] - 0s 130us/step - loss: 0.2350 - accuracy: 0.9282  
Epoch 533/2450  
209/209 [=====] - 0s 175us/step - loss: 0.2474 - accuracy: 0.9378  
Epoch 534/2450  
209/209 [=====] - 0s 141us/step - loss: 0.2504 - accuracy: 0.9043  
Epoch 535/2450  
209/209 [=====] - 0s 129us/step - loss: 0.2670 - accuracy: 0.9330  
Epoch 536/2450  
209/209 [=====] - 0s 474us/step - loss: 0.2562 - accuracy: 0.8995  
Epoch 537/2450  
209/209 [=====] - 0s 139us/step - loss: 0.2716 - accuracy: 0.9282  
Epoch 538/2450  
209/209 [=====] - 0s 230us/step - loss: 0.2635 - accuracy: 0.8852  
Epoch 539/2450  
209/209 [=====] - 0s 110us/step - loss: 0.2784 - accuracy: 0.9234  
Epoch 540/2450  
209/209 [=====] - 0s 127us/step - loss: 0.2569 - accuracy: 0.8900  
Epoch 541/2450  
209/209 [=====] - 0s 129us/step - loss: 0.2503 - accuracy: 0.9330  
Epoch 542/2450  
209/209 [=====] - 0s 116us/step - loss: 0.2361 - accuracy: 0.9282  
Epoch 543/2450  
209/209 [=====] - 0s 110us/step - loss: 0.2334 - accuracy: 0.9330  
Epoch 544/2450  
209/209 [=====] - 0s 125us/step - loss: 0.2235 - accuracy: 0.9282  
Epoch 545/2450  
209/209 [=====] - 0s 94us/step - loss: 0.2219 - accuracy: 0.9378  
Epoch 546/2450  
209/209 [=====] - 0s 158us/step - loss: 0.2180 - accuracy: 0.9378  
Epoch 547/2450  
209/209 [=====] - 0s 122us/step - loss: 0.2183 - accuracy: 0.9378  
Epoch 548/2450  
209/209 [=====] - 0s 114us/step - loss: 0.2139 - accuracy: 0.9426  
Epoch 549/2450  
209/209 [=====] - 0s 128us/step - loss: 0.2172 - accuracy: 0.9378  
Epoch 550/2450  
209/209 [=====] - 0s 125us/step - loss: 0.2125 - accuracy: 0.9426  
Epoch 551/2450  
209/209 [=====] - 0s 111us/step - loss: 0.2150 - accuracy: 0.9378  
Epoch 552/2450  
209/209 [=====] - 0s 142us/step - loss: 0.2129 - accuracy: 0.9474  
Epoch 553/2450  
209/209 [=====] - 0s 102us/step - loss: 0.2163 - accuracy: 0.9378  
Epoch 554/2450  
209/209 [=====] - 0s 108us/step - loss: 0.2132 - accuracy: 0.9426  
Epoch 555/2450  
209/209 [=====] - 0s 106us/step - loss: 0.2188 - accuracy: 0.9426  
Epoch 556/2450  
209/209 [=====] - 0s 138us/step - loss: 0.2160 - accuracy: 0.9378  
Epoch 557/2450  
209/209 [=====] - 0s 117us/step - loss: 0.2265 - accuracy: 0.9426  
Epoch 558/2450  
209/209 [=====] - 0s 118us/step - loss: 0.2304 - accuracy: 0.9282

Epoch 559/2450  
209/209 [=====] - 0s 119us/step - loss: 0.2514 - accuracy: 0.9330  
Epoch 560/2450  
209/209 [=====] - 0s 114us/step - loss: 0.2485 - accuracy: 0.9043  
Epoch 561/2450  
209/209 [=====] - 0s 156us/step - loss: 0.2746 - accuracy: 0.9282  
Epoch 562/2450  
209/209 [=====] - 0s 154us/step - loss: 0.2763 - accuracy: 0.8612  
Epoch 563/2450  
209/209 [=====] - 0s 150us/step - loss: 0.2988 - accuracy: 0.9043  
Epoch 564/2450  
209/209 [=====] - 0s 116us/step - loss: 0.2654 - accuracy: 0.8756  
Epoch 565/2450  
209/209 [=====] - 0s 116us/step - loss: 0.2453 - accuracy: 0.9378  
Epoch 566/2450  
209/209 [=====] - 0s 138us/step - loss: 0.2278 - accuracy: 0.9330  
Epoch 567/2450  
209/209 [=====] - 0s 138us/step - loss: 0.2271 - accuracy: 0.9378  
Epoch 568/2450  
209/209 [=====] - 0s 121us/step - loss: 0.2171 - accuracy: 0.9330  
Epoch 569/2450  
209/209 [=====] - 0s 142us/step - loss: 0.2152 - accuracy: 0.9426  
Epoch 570/2450  
209/209 [=====] - 0s 130us/step - loss: 0.2160 - accuracy: 0.9330  
Epoch 571/2450  
209/209 [=====] - 0s 133us/step - loss: 0.2230 - accuracy: 0.9378  
Epoch 572/2450  
209/209 [=====] - 0s 121us/step - loss: 0.2154 - accuracy: 0.9330  
Epoch 573/2450  
209/209 [=====] - 0s 113us/step - loss: 0.2233 - accuracy: 0.9378  
Epoch 574/2450  
209/209 [=====] - 0s 140us/step - loss: 0.2164 - accuracy: 0.9330  
Epoch 575/2450  
209/209 [=====] - 0s 133us/step - loss: 0.2260 - accuracy: 0.9378  
Epoch 576/2450  
209/209 [=====] - 0s 116us/step - loss: 0.2230 - accuracy: 0.9282  
Epoch 577/2450  
209/209 [=====] - 0s 132us/step - loss: 0.2417 - accuracy: 0.9378  
Epoch 578/2450  
209/209 [=====] - 0s 114us/step - loss: 0.2467 - accuracy: 0.8900  
Epoch 579/2450  
209/209 [=====] - 0s 108us/step - loss: 0.2698 - accuracy: 0.9187  
Epoch 580/2450  
209/209 [=====] - 0s 103us/step - loss: 0.2602 - accuracy: 0.8756  
Epoch 581/2450  
209/209 [=====] - 0s 106us/step - loss: 0.2819 - accuracy: 0.9139  
Epoch 582/2450  
209/209 [=====] - 0s 109us/step - loss: 0.2617 - accuracy: 0.8756  
Epoch 583/2450  
209/209 [=====] - 0s 125us/step - loss: 0.2515 - accuracy: 0.9378  
Epoch 584/2450  
209/209 [=====] - 0s 96us/step - loss: 0.2294 - accuracy: 0.9234  
Epoch 585/2450  
209/209 [=====] - 0s 155us/step - loss: 0.2285 - accuracy: 0.9378  
Epoch 586/2450  
209/209 [=====] - 0s 127us/step - loss: 0.2149 - accuracy: 0.9330  
Epoch 587/2450  
209/209 [=====] - 0s 145us/step - loss: 0.2124 - accuracy: 0.9426  
Epoch 588/2450  
209/209 [=====] - 0s 110us/step - loss: 0.2070 - accuracy: 0.9426  
Epoch 589/2450  
209/209 [=====] - 0s 125us/step - loss: 0.2047 - accuracy: 0.9426  
Epoch 590/2450  
209/209 [=====] - 0s 113us/step - loss: 0.1986 - accuracy: 0.9474  
Epoch 591/2450  
209/209 [=====] - 0s 126us/step - loss: 0.2011 - accuracy: 0.9426  
Epoch 592/2450  
209/209 [=====] - 0s 151us/step - loss: 0.1953 - accuracy: 0.9522  
Epoch 593/2450  
209/209 [=====] - 0s 124us/step - loss: 0.1934 - accuracy: 0.9474  
Epoch 594/2450  
209/209 [=====] - 0s 117us/step - loss: 0.1871 - accuracy: 0.9522  
Epoch 595/2450  
209/209 [=====] - 0s 233us/step - loss: 0.1864 - accuracy: 0.9522  
Epoch 596/2450  
209/209 [=====] - 0s 144us/step - loss: 0.1824 - accuracy: 0.9617  
Epoch 597/2450  
209/209 [=====] - 0s 156us/step - loss: 0.1811 - accuracy: 0.9522  
Epoch 598/2450  
209/209 [=====] - 0s 106us/step - loss: 0.1792 - accuracy: 0.9617  
Epoch 599/2450  
209/209 [=====] - 0s 126us/step - loss: 0.1809 - accuracy: 0.9569  
Epoch 600/2450



209/209 [=====] - 0s 164us/step - loss: 0.1849 - accuracy: 0.9522  
Epoch 601/2450  
209/209 [=====] - 0s 150us/step - loss: 0.1918 - accuracy: 0.9474  
Epoch 602/2450  
209/209 [=====] - 0s 252us/step - loss: 0.1893 - accuracy: 0.9522  
Epoch 603/2450  
209/209 [=====] - 0s 158us/step - loss: 0.1967 - accuracy: 0.9426  
Epoch 604/2450  
209/209 [=====] - 0s 108us/step - loss: 0.1917 - accuracy: 0.9522  
Epoch 605/2450  
209/209 [=====] - 0s 145us/step - loss: 0.1989 - accuracy: 0.9426  
Epoch 606/2450  
209/209 [=====] - 0s 152us/step - loss: 0.1956 - accuracy: 0.9474  
Epoch 607/2450  
209/209 [=====] - 0s 139us/step - loss: 0.2058 - accuracy: 0.9426  
Epoch 608/2450  
209/209 [=====] - 0s 194us/step - loss: 0.2024 - accuracy: 0.9474  
Epoch 609/2450  
209/209 [=====] - 0s 139us/step - loss: 0.2218 - accuracy: 0.9426  
Epoch 610/2450  
209/209 [=====] - 0s 147us/step - loss: 0.2286 - accuracy: 0.9187  
Epoch 611/2450  
209/209 [=====] - 0s 126us/step - loss: 0.2620 - accuracy: 0.9139  
Epoch 612/2450  
209/209 [=====] - 0s 117us/step - loss: 0.2666 - accuracy: 0.8565  
Epoch 613/2450  
209/209 [=====] - 0s 114us/step - loss: 0.2945 - accuracy: 0.9043  
Epoch 614/2450  
209/209 [=====] - 0s 140us/step - loss: 0.2554 - accuracy: 0.8852  
Epoch 615/2450  
209/209 [=====] - 0s 151us/step - loss: 0.2293 - accuracy: 0.9426  
Epoch 616/2450  
209/209 [=====] - 0s 255us/step - loss: 0.2081 - accuracy: 0.9426  
Epoch 617/2450  
209/209 [=====] - 0s 151us/step - loss: 0.2057 - accuracy: 0.9426  
Epoch 618/2450  
209/209 [=====] - 0s 93us/step - loss: 0.1971 - accuracy: 0.9426  
Epoch 619/2450  
209/209 [=====] - 0s 115us/step - loss: 0.1961 - accuracy: 0.9426  
Epoch 620/2450  
209/209 [=====] - 0s 140us/step - loss: 0.1893 - accuracy: 0.9522  
Epoch 621/2450  
209/209 [=====] - 0s 131us/step - loss: 0.1884 - accuracy: 0.9474  
Epoch 622/2450  
209/209 [=====] - 0s 111us/step - loss: 0.1810 - accuracy: 0.9569  
Epoch 623/2450  
209/209 [=====] - 0s 295us/step - loss: 0.1779 - accuracy: 0.9569  
Epoch 624/2450  
209/209 [=====] - 0s 131us/step - loss: 0.1722 - accuracy: 0.9665  
Epoch 625/2450  
209/209 [=====] - 0s 98us/step - loss: 0.1703 - accuracy: 0.9522  
Epoch 626/2450  
209/209 [=====] - 0s 146us/step - loss: 0.1688 - accuracy: 0.9665  
Epoch 627/2450  
209/209 [=====] - 0s 138us/step - loss: 0.1726 - accuracy: 0.9569  
Epoch 628/2450  
209/209 [=====] - 0s 114us/step - loss: 0.1737 - accuracy: 0.9617  
Epoch 629/2450  
209/209 [=====] - 0s 102us/step - loss: 0.1787 - accuracy: 0.9569  
Epoch 630/2450  
209/209 [=====] - 0s 116us/step - loss: 0.1732 - accuracy: 0.9617  
Epoch 631/2450  
209/209 [=====] - 0s 279us/step - loss: 0.1760 - accuracy: 0.9569  
Epoch 632/2450  
209/209 [=====] - 0s 111us/step - loss: 0.1722 - accuracy: 0.9617  
Epoch 633/2450  
209/209 [=====] - 0s 123us/step - loss: 0.1754 - accuracy: 0.9569  
Epoch 634/2450  
209/209 [=====] - 0s 184us/step - loss: 0.1713 - accuracy: 0.9617  
Epoch 635/2450  
209/209 [=====] - 0s 137us/step - loss: 0.1739 - accuracy: 0.9569  
Epoch 636/2450  
209/209 [=====] - 0s 113us/step - loss: 0.1696 - accuracy: 0.9617  
Epoch 637/2450  
209/209 [=====] - 0s 121us/step - loss: 0.1741 - accuracy: 0.9569  
Epoch 638/2450  
209/209 [=====] - 0s 119us/step - loss: 0.1707 - accuracy: 0.9617  
Epoch 639/2450  
209/209 [=====] - 0s 151us/step - loss: 0.1750 - accuracy: 0.9569  
Epoch 640/2450  
209/209 [=====] - 0s 104us/step - loss: 0.1716 - accuracy: 0.9617  
Epoch 641/2450  
209/209 [=====] - 0s 133us/step - loss: 0.1771 - accuracy: 0.9569

Epoch 642/2450  
209/209 [=====] - 0s 152us/step - loss: 0.1718 - accuracy: 0.9617  
Epoch 643/2450  
209/209 [=====] - 0s 150us/step - loss: 0.1757 - accuracy: 0.9569  
Epoch 644/2450  
209/209 [=====] - 0s 133us/step - loss: 0.1722 - accuracy: 0.9569  
Epoch 645/2450  
209/209 [=====] - 0s 136us/step - loss: 0.1800 - accuracy: 0.9522  
Epoch 646/2450  
209/209 [=====] - 0s 115us/step - loss: 0.1751 - accuracy: 0.9569  
Epoch 647/2450  
209/209 [=====] - 0s 114us/step - loss: 0.1833 - accuracy: 0.9522  
Epoch 648/2450  
209/209 [=====] - 0s 113us/step - loss: 0.1801 - accuracy: 0.9569  
Epoch 649/2450  
209/209 [=====] - 0s 107us/step - loss: 0.1930 - accuracy: 0.9474  
Epoch 650/2450  
209/209 [=====] - 0s 144us/step - loss: 0.1989 - accuracy: 0.9426  
Epoch 651/2450  
209/209 [=====] - 0s 231us/step - loss: 0.2280 - accuracy: 0.9330  
Epoch 652/2450  
209/209 [=====] - 0s 147us/step - loss: 0.2357 - accuracy: 0.8900  
Epoch 653/2450  
209/209 [=====] - 0s 140us/step - loss: 0.2832 - accuracy: 0.8995  
Epoch 654/2450  
209/209 [=====] - 0s 152us/step - loss: 0.2912 - accuracy: 0.8134  
Epoch 655/2450  
209/209 [=====] - 0s 163us/step - loss: 0.3257 - accuracy: 0.8565  
Epoch 656/2450  
209/209 [=====] - 0s 139us/step - loss: 0.2716 - accuracy: 0.8373  
Epoch 657/2450  
209/209 [=====] - 0s 104us/step - loss: 0.2201 - accuracy: 0.9474  
Epoch 658/2450  
209/209 [=====] - 0s 100us/step - loss: 0.1921 - accuracy: 0.9522  
Epoch 659/2450  
209/209 [=====] - 0s 161us/step - loss: 0.1774 - accuracy: 0.9569  
Epoch 660/2450  
209/209 [=====] - 0s 128us/step - loss: 0.1701 - accuracy: 0.9617  
Epoch 661/2450  
209/209 [=====] - 0s 127us/step - loss: 0.1631 - accuracy: 0.9569  
Epoch 662/2450  
209/209 [=====] - 0s 96us/step - loss: 0.1584 - accuracy: 0.9713  
Epoch 663/2450  
209/209 [=====] - 0s 131us/step - loss: 0.1560 - accuracy: 0.9569  
Epoch 664/2450  
209/209 [=====] - 0s 122us/step - loss: 0.1534 - accuracy: 0.9761  
Epoch 665/2450  
209/209 [=====] - 0s 136us/step - loss: 0.1530 - accuracy: 0.9665  
Epoch 666/2450  
209/209 [=====] - 0s 122us/step - loss: 0.1537 - accuracy: 0.9665  
Epoch 667/2450  
209/209 [=====] - 0s 126us/step - loss: 0.1606 - accuracy: 0.9569  
Epoch 668/2450  
209/209 [=====] - 0s 116us/step - loss: 0.1626 - accuracy: 0.9665  
Epoch 669/2450  
209/209 [=====] - 0s 118us/step - loss: 0.1688 - accuracy: 0.9617  
Epoch 670/2450  
209/209 [=====] - 0s 163us/step - loss: 0.1634 - accuracy: 0.9665  
Epoch 671/2450  
209/209 [=====] - 0s 155us/step - loss: 0.1682 - accuracy: 0.9617  
Epoch 672/2450  
209/209 [=====] - 0s 135us/step - loss: 0.1624 - accuracy: 0.9665  
Epoch 673/2450  
209/209 [=====] - 0s 165us/step - loss: 0.1631 - accuracy: 0.9569  
Epoch 674/2450  
209/209 [=====] - 0s 153us/step - loss: 0.1575 - accuracy: 0.9665  
Epoch 675/2450  
209/209 [=====] - 0s 179us/step - loss: 0.1592 - accuracy: 0.9569  
Epoch 676/2450  
209/209 [=====] - 0s 113us/step - loss: 0.1543 - accuracy: 0.9665  
Epoch 677/2450  
209/209 [=====] - 0s 148us/step - loss: 0.1564 - accuracy: 0.9569  
Epoch 678/2450  
209/209 [=====] - 0s 97us/step - loss: 0.1579 - accuracy: 0.9665  
Epoch 679/2450  
209/209 [=====] - 0s 197us/step - loss: 0.1630 - accuracy: 0.9617  
Epoch 680/2450  
209/209 [=====] - 0s 106us/step - loss: 0.1589 - accuracy: 0.9665  
Epoch 681/2450  
209/209 [=====] - 0s 349us/step - loss: 0.1643 - accuracy: 0.9617  
Epoch 682/2450  
209/209 [=====] - 0s 170us/step - loss: 0.1598 - accuracy: 0.9665  
Epoch 683/2450

209/209 [=====] - 0s 128us/step - loss: 0.1640 - accuracy: 0.9617  
Epoch 684/2450  
209/209 [=====] - 0s 310us/step - loss: 0.1601 - accuracy: 0.9665  
Epoch 685/2450  
209/209 [=====] - 0s 189us/step - loss: 0.1669 - accuracy: 0.9617  
Epoch 686/2450  
209/209 [=====] - 0s 154us/step - loss: 0.1633 - accuracy: 0.9617  
Epoch 687/2450  
209/209 [=====] - 0s 109us/step - loss: 0.1745 - accuracy: 0.9569  
Epoch 688/2450  
209/209 [=====] - 0s 95us/step - loss: 0.1744 - accuracy: 0.9569  
Epoch 689/2450  
209/209 [=====] - 0s 113us/step - loss: 0.1975 - accuracy: 0.9474  
Epoch 690/2450  
209/209 [=====] - 0s 124us/step - loss: 0.2044 - accuracy: 0.9282  
Epoch 691/2450  
209/209 [=====] - 0s 112us/step - loss: 0.2402 - accuracy: 0.9187  
Epoch 692/2450  
209/209 [=====] - 0s 95us/step - loss: 0.2436 - accuracy: 0.8852  
Epoch 693/2450  
209/209 [=====] - 0s 111us/step - loss: 0.3037 - accuracy: 0.8756  
Epoch 694/2450  
209/209 [=====] - 0s 95us/step - loss: 0.3025 - accuracy: 0.8230  
Epoch 695/2450  
209/209 [=====] - 0s 154us/step - loss: 0.2779 - accuracy: 0.8900  
Epoch 696/2450  
209/209 [=====] - 0s 124us/step - loss: 0.2197 - accuracy: 0.9187  
Epoch 697/2450  
209/209 [=====] - 0s 131us/step - loss: 0.1859 - accuracy: 0.9665  
Epoch 698/2450  
209/209 [=====] - 0s 134us/step - loss: 0.1632 - accuracy: 0.9617  
Epoch 699/2450  
209/209 [=====] - 0s 142us/step - loss: 0.1488 - accuracy: 0.9665  
Epoch 700/2450  
209/209 [=====] - 0s 147us/step - loss: 0.1439 - accuracy: 0.9809  
Epoch 701/2450  
209/209 [=====] - 0s 144us/step - loss: 0.1425 - accuracy: 0.9713  
Epoch 702/2450  
209/209 [=====] - 0s 115us/step - loss: 0.1405 - accuracy: 0.9809  
Epoch 703/2450  
209/209 [=====] - 0s 103us/step - loss: 0.1397 - accuracy: 0.9713  
Epoch 704/2450  
209/209 [=====] - 0s 153us/step - loss: 0.1397 - accuracy: 0.9809  
Epoch 705/2450  
209/209 [=====] - 0s 146us/step - loss: 0.1414 - accuracy: 0.9665  
Epoch 706/2450  
209/209 [=====] - 0s 95us/step - loss: 0.1419 - accuracy: 0.9665  
Epoch 707/2450  
209/209 [=====] - 0s 140us/step - loss: 0.1512 - accuracy: 0.9569  
Epoch 708/2450  
209/209 [=====] - 0s 88us/step - loss: 0.1539 - accuracy: 0.9665  
Epoch 709/2450  
209/209 [=====] - 0s 259us/step - loss: 0.1616 - accuracy: 0.9617  
Epoch 710/2450  
209/209 [=====] - 0s 109us/step - loss: 0.1571 - accuracy: 0.9665  
Epoch 711/2450  
209/209 [=====] - 0s 114us/step - loss: 0.1708 - accuracy: 0.9569  
Epoch 712/2450  
209/209 [=====] - 0s 103us/step - loss: 0.1678 - accuracy: 0.9569  
Epoch 713/2450  
209/209 [=====] - 0s 128us/step - loss: 0.1845 - accuracy: 0.9474  
Epoch 714/2450  
209/209 [=====] - 0s 189us/step - loss: 0.1787 - accuracy: 0.9474  
Epoch 715/2450  
209/209 [=====] - 0s 195us/step - loss: 0.1993 - accuracy: 0.9426  
Epoch 716/2450  
209/209 [=====] - 0s 204us/step - loss: 0.1906 - accuracy: 0.9330  
Epoch 717/2450  
209/209 [=====] - 0s 137us/step - loss: 0.2086 - accuracy: 0.9378  
Epoch 718/2450  
209/209 [=====] - 0s 180us/step - loss: 0.2045 - accuracy: 0.9187  
Epoch 719/2450  
209/209 [=====] - 0s 172us/step - loss: 0.2128 - accuracy: 0.9330  
Epoch 720/2450  
209/209 [=====] - 0s 204us/step - loss: 0.1985 - accuracy: 0.9234  
Epoch 721/2450  
209/209 [=====] - 0s 121us/step - loss: 0.2084 - accuracy: 0.9378  
Epoch 722/2450  
209/209 [=====] - 0s 136us/step - loss: 0.1884 - accuracy: 0.9378  
Epoch 723/2450  
209/209 [=====] - 0s 139us/step - loss: 0.1819 - accuracy: 0.9569  
Epoch 724/2450  
209/209 [=====] - 0s 148us/step - loss: 0.1718 - accuracy: 0.9569

Epoch 725/2450  
209/209 [=====] - 0s 94us/step - loss: 0.1716 - accuracy: 0.9617  
Epoch 726/2450  
209/209 [=====] - 0s 151us/step - loss: 0.1578 - accuracy: 0.9665  
Epoch 727/2450  
209/209 [=====] - 0s 138us/step - loss: 0.1523 - accuracy: 0.9665  
Epoch 728/2450  
209/209 [=====] - 0s 155us/step - loss: 0.1445 - accuracy: 0.9665  
Epoch 729/2450  
209/209 [=====] - 0s 175us/step - loss: 0.1429 - accuracy: 0.9569  
Epoch 730/2450  
209/209 [=====] - 0s 176us/step - loss: 0.1409 - accuracy: 0.9761  
Epoch 731/2450  
209/209 [=====] - 0s 150us/step - loss: 0.1361 - accuracy: 0.9665  
Epoch 732/2450  
209/209 [=====] - 0s 168us/step - loss: 0.1319 - accuracy: 0.9809  
Epoch 733/2450  
209/209 [=====] - 0s 161us/step - loss: 0.1320 - accuracy: 0.9713  
Epoch 734/2450  
209/209 [=====] - 0s 138us/step - loss: 0.1315 - accuracy: 0.9809  
Epoch 735/2450  
209/209 [=====] - 0s 263us/step - loss: 0.1365 - accuracy: 0.9665  
Epoch 736/2450  
209/209 [=====] - 0s 151us/step - loss: 0.1369 - accuracy: 0.9761  
Epoch 737/2450  
209/209 [=====] - 0s 123us/step - loss: 0.1405 - accuracy: 0.9665  
Epoch 738/2450  
209/209 [=====] - 0s 171us/step - loss: 0.1384 - accuracy: 0.9665  
Epoch 739/2450  
209/209 [=====] - 0s 210us/step - loss: 0.1481 - accuracy: 0.9617  
Epoch 740/2450  
209/209 [=====] - 0s 170us/step - loss: 0.1494 - accuracy: 0.9665  
Epoch 741/2450  
209/209 [=====] - 0s 122us/step - loss: 0.1538 - accuracy: 0.9665  
Epoch 742/2450  
209/209 [=====] - 0s 181us/step - loss: 0.1462 - accuracy: 0.9665  
Epoch 743/2450  
209/209 [=====] - 0s 139us/step - loss: 0.1564 - accuracy: 0.9617  
Epoch 744/2450  
209/209 [=====] - 0s 157us/step - loss: 0.1591 - accuracy: 0.9617  
Epoch 745/2450  
209/209 [=====] - 0s 172us/step - loss: 0.1767 - accuracy: 0.9522  
Epoch 746/2450  
209/209 [=====] - 0s 157us/step - loss: 0.1632 - accuracy: 0.9617  
Epoch 747/2450  
209/209 [=====] - 0s 138us/step - loss: 0.1725 - accuracy: 0.9569  
Epoch 748/2450  
209/209 [=====] - 0s 125us/step - loss: 0.1642 - accuracy: 0.9617  
Epoch 749/2450  
209/209 [=====] - 0s 149us/step - loss: 0.1746 - accuracy: 0.9617  
Epoch 750/2450  
209/209 [=====] - 0s 145us/step - loss: 0.1628 - accuracy: 0.9617  
Epoch 751/2450  
209/209 [=====] - 0s 97us/step - loss: 0.1648 - accuracy: 0.9617  
Epoch 752/2450  
209/209 [=====] - 0s 141us/step - loss: 0.1527 - accuracy: 0.9665  
Epoch 753/2450  
209/209 [=====] - 0s 131us/step - loss: 0.1472 - accuracy: 0.9665  
Epoch 754/2450  
209/209 [=====] - 0s 190us/step - loss: 0.1370 - accuracy: 0.9713  
Epoch 755/2450  
209/209 [=====] - 0s 284us/step - loss: 0.1358 - accuracy: 0.9665  
Epoch 756/2450  
209/209 [=====] - 0s 163us/step - loss: 0.1332 - accuracy: 0.9761  
Epoch 757/2450  
209/209 [=====] - 0s 187us/step - loss: 0.1317 - accuracy: 0.9713  
Epoch 758/2450  
209/209 [=====] - 0s 205us/step - loss: 0.1292 - accuracy: 0.9761  
Epoch 759/2450  
209/209 [=====] - 0s 110us/step - loss: 0.1317 - accuracy: 0.9713  
Epoch 760/2450  
209/209 [=====] - 0s 116us/step - loss: 0.1314 - accuracy: 0.9761  
Epoch 761/2450  
209/209 [=====] - 0s 113us/step - loss: 0.1354 - accuracy: 0.9665  
Epoch 762/2450  
209/209 [=====] - 0s 189us/step - loss: 0.1345 - accuracy: 0.9713  
Epoch 763/2450  
209/209 [=====] - 0s 143us/step - loss: 0.1388 - accuracy: 0.9665  
Epoch 764/2450  
209/209 [=====] - 0s 141us/step - loss: 0.1333 - accuracy: 0.9713  
Epoch 765/2450  
209/209 [=====] - 0s 123us/step - loss: 0.1390 - accuracy: 0.9665  
Epoch 766/2450

209/209 [=====] - 0s 137us/step - loss: 0.1390 - accuracy: 0.9713  
Epoch 767/2450  
209/209 [=====] - 0s 358us/step - loss: 0.1406 - accuracy: 0.9665  
Epoch 768/2450  
209/209 [=====] - 0s 195us/step - loss: 0.1321 - accuracy: 0.9713  
Epoch 769/2450  
209/209 [=====] - 0s 125us/step - loss: 0.1370 - accuracy: 0.9665  
Epoch 770/2450  
209/209 [=====] - 0s 147us/step - loss: 0.1379 - accuracy: 0.9713  
Epoch 771/2450  
209/209 [=====] - 0s 148us/step - loss: 0.1426 - accuracy: 0.9665  
Epoch 772/2450  
209/209 [=====] - 0s 166us/step - loss: 0.1338 - accuracy: 0.9713  
Epoch 773/2450  
209/209 [=====] - 0s 154us/step - loss: 0.1417 - accuracy: 0.9665  
Epoch 774/2450  
209/209 [=====] - 0s 139us/step - loss: 0.1421 - accuracy: 0.9713  
Epoch 775/2450  
209/209 [=====] - 0s 118us/step - loss: 0.1460 - accuracy: 0.9665  
Epoch 776/2450  
209/209 [=====] - 0s 121us/step - loss: 0.1382 - accuracy: 0.9665  
Epoch 777/2450  
209/209 [=====] - 0s 118us/step - loss: 0.1491 - accuracy: 0.9665  
Epoch 778/2450  
209/209 [=====] - 0s 122us/step - loss: 0.1521 - accuracy: 0.9617  
Epoch 779/2450  
209/209 [=====] - 0s 135us/step - loss: 0.1653 - accuracy: 0.9617  
Epoch 780/2450  
209/209 [=====] - 0s 143us/step - loss: 0.1503 - accuracy: 0.9617  
Epoch 781/2450  
209/209 [=====] - 0s 194us/step - loss: 0.1592 - accuracy: 0.9617  
Epoch 782/2450  
209/209 [=====] - 0s 152us/step - loss: 0.1584 - accuracy: 0.9569  
Epoch 783/2450  
209/209 [=====] - 0s 169us/step - loss: 0.1599 - accuracy: 0.9617  
Epoch 784/2450  
209/209 [=====] - 0s 169us/step - loss: 0.1473 - accuracy: 0.9665  
Epoch 785/2450  
209/209 [=====] - 0s 124us/step - loss: 0.1555 - accuracy: 0.9665  
Epoch 786/2450  
209/209 [=====] - 0s 332us/step - loss: 0.1458 - accuracy: 0.9665  
Epoch 787/2450  
209/209 [=====] - 0s 153us/step - loss: 0.1414 - accuracy: 0.9665  
Epoch 788/2450  
209/209 [=====] - 0s 157us/step - loss: 0.1344 - accuracy: 0.9713  
Epoch 789/2450  
209/209 [=====] - 0s 129us/step - loss: 0.1350 - accuracy: 0.9665  
Epoch 790/2450  
209/209 [=====] - 0s 143us/step - loss: 0.1345 - accuracy: 0.9713  
Epoch 791/2450  
209/209 [=====] - 0s 124us/step - loss: 0.1312 - accuracy: 0.9713  
Epoch 792/2450  
209/209 [=====] - 0s 104us/step - loss: 0.1214 - accuracy: 0.9761  
Epoch 793/2450  
209/209 [=====] - 0s 134us/step - loss: 0.1181 - accuracy: 0.9809  
Epoch 794/2450  
209/209 [=====] - 0s 134us/step - loss: 0.1145 - accuracy: 0.9856  
Epoch 795/2450  
209/209 [=====] - 0s 130us/step - loss: 0.1156 - accuracy: 0.9809  
Epoch 796/2450  
209/209 [=====] - 0s 112us/step - loss: 0.1132 - accuracy: 0.9856  
Epoch 797/2450  
209/209 [=====] - 0s 99us/step - loss: 0.1146 - accuracy: 0.9809  
Epoch 798/2450  
209/209 [=====] - 0s 126us/step - loss: 0.1123 - accuracy: 0.9856  
Epoch 799/2450  
209/209 [=====] - 0s 122us/step - loss: 0.1144 - accuracy: 0.9809  
Epoch 800/2450  
209/209 [=====] - 0s 135us/step - loss: 0.1120 - accuracy: 0.9904  
Epoch 801/2450  
209/209 [=====] - 0s 112us/step - loss: 0.1147 - accuracy: 0.9809  
Epoch 802/2450  
209/209 [=====] - 0s 123us/step - loss: 0.1138 - accuracy: 0.9856  
Epoch 803/2450  
209/209 [=====] - 0s 109us/step - loss: 0.1196 - accuracy: 0.9809  
Epoch 804/2450  
209/209 [=====] - 0s 137us/step - loss: 0.1160 - accuracy: 0.9856  
Epoch 805/2450  
209/209 [=====] - 0s 120us/step - loss: 0.1228 - accuracy: 0.9761  
Epoch 806/2450  
209/209 [=====] - 0s 126us/step - loss: 0.1240 - accuracy: 0.9713  
Epoch 807/2450  
209/209 [=====] - 0s 132us/step - loss: 0.1329 - accuracy: 0.9665

Epoch 808/2450  
209/209 [=====] - 0s 129us/step - loss: 0.1246 - accuracy: 0.9713  
Epoch 809/2450  
209/209 [=====] - 0s 113us/step - loss: 0.1310 - accuracy: 0.9665  
Epoch 810/2450  
209/209 [=====] - 0s 112us/step - loss: 0.1302 - accuracy: 0.9713  
Epoch 811/2450  
209/209 [=====] - 0s 117us/step - loss: 0.1323 - accuracy: 0.9713  
Epoch 812/2450  
209/209 [=====] - 0s 117us/step - loss: 0.1217 - accuracy: 0.9713  
Epoch 813/2450  
209/209 [=====] - 0s 99us/step - loss: 0.1271 - accuracy: 0.9761  
Epoch 814/2450  
209/209 [=====] - 0s 124us/step - loss: 0.1286 - accuracy: 0.9713  
Epoch 815/2450  
209/209 [=====] - 0s 124us/step - loss: 0.1318 - accuracy: 0.9665  
Epoch 816/2450  
209/209 [=====] - 0s 111us/step - loss: 0.1334 - accuracy: 0.9713  
Epoch 817/2450  
209/209 [=====] - 0s 112us/step - loss: 0.1431 - accuracy: 0.9665  
Epoch 818/2450  
209/209 [=====] - 0s 127us/step - loss: 0.1317 - accuracy: 0.9713  
Epoch 819/2450  
209/209 [=====] - 0s 260us/step - loss: 0.1453 - accuracy: 0.9665  
Epoch 820/2450  
209/209 [=====] - 0s 206us/step - loss: 0.1463 - accuracy: 0.9617  
Epoch 821/2450  
209/209 [=====] - 0s 179us/step - loss: 0.1617 - accuracy: 0.9617  
Epoch 822/2450  
209/209 [=====] - 0s 166us/step - loss: 0.1595 - accuracy: 0.9474  
Epoch 823/2450  
209/209 [=====] - 0s 134us/step - loss: 0.1712 - accuracy: 0.9569  
Epoch 824/2450  
209/209 [=====] - 0s 100us/step - loss: 0.1548 - accuracy: 0.9617  
Epoch 825/2450  
209/209 [=====] - 0s 140us/step - loss: 0.1649 - accuracy: 0.9617  
Epoch 826/2450  
209/209 [=====] - 0s 116us/step - loss: 0.1642 - accuracy: 0.9426  
Epoch 827/2450  
209/209 [=====] - 0s 112us/step - loss: 0.1623 - accuracy: 0.9617  
Epoch 828/2450  
209/209 [=====] - 0s 191us/step - loss: 0.1477 - accuracy: 0.9617  
Epoch 829/2450  
209/209 [=====] - 0s 148us/step - loss: 0.1554 - accuracy: 0.9617  
Epoch 830/2450  
209/209 [=====] - 0s 126us/step - loss: 0.1444 - accuracy: 0.9665  
Epoch 831/2450  
209/209 [=====] - 0s 124us/step - loss: 0.1359 - accuracy: 0.9713  
Epoch 832/2450  
209/209 [=====] - 0s 114us/step - loss: 0.1246 - accuracy: 0.9713  
Epoch 833/2450  
209/209 [=====] - 0s 148us/step - loss: 0.1199 - accuracy: 0.9761  
Epoch 834/2450  
209/209 [=====] - 0s 123us/step - loss: 0.1111 - accuracy: 0.9856  
Epoch 835/2450  
209/209 [=====] - 0s 147us/step - loss: 0.1072 - accuracy: 0.9809  
Epoch 836/2450  
209/209 [=====] - 0s 109us/step - loss: 0.1034 - accuracy: 0.9904  
Epoch 837/2450  
209/209 [=====] - 0s 96us/step - loss: 0.1019 - accuracy: 0.9809  
Epoch 838/2450  
209/209 [=====] - 0s 131us/step - loss: 0.1006 - accuracy: 0.9904  
Epoch 839/2450  
209/209 [=====] - 0s 152us/step - loss: 0.1014 - accuracy: 0.9809  
Epoch 840/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0996 - accuracy: 0.9904  
Epoch 841/2450  
209/209 [=====] - 0s 163us/step - loss: 0.1002 - accuracy: 0.9856  
Epoch 842/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0991 - accuracy: 0.9904  
Epoch 843/2450  
209/209 [=====] - 0s 171us/step - loss: 0.1011 - accuracy: 0.9809  
Epoch 844/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0995 - accuracy: 0.9904  
Epoch 845/2450  
209/209 [=====] - 0s 121us/step - loss: 0.1021 - accuracy: 0.9809  
Epoch 846/2450  
209/209 [=====] - 0s 316us/step - loss: 0.1007 - accuracy: 0.9904  
Epoch 847/2450  
209/209 [=====] - 0s 103us/step - loss: 0.1024 - accuracy: 0.9809  
Epoch 848/2450  
209/209 [=====] - 0s 134us/step - loss: 0.1009 - accuracy: 0.9904  
Epoch 849/2450

209/209 [=====] - 0s 157us/step - loss: 0.1058 - accuracy: 0.9809  
Epoch 850/2450  
209/209 [=====] - 0s 101us/step - loss: 0.1030 - accuracy: 0.9904  
Epoch 851/2450  
209/209 [=====] - 0s 124us/step - loss: 0.1095 - accuracy: 0.9809  
Epoch 852/2450  
209/209 [=====] - 0s 105us/step - loss: 0.1055 - accuracy: 0.9856  
Epoch 853/2450  
209/209 [=====] - 0s 127us/step - loss: 0.1075 - accuracy: 0.9809  
Epoch 854/2450  
209/209 [=====] - 0s 109us/step - loss: 0.1041 - accuracy: 0.9904  
Epoch 855/2450  
209/209 [=====] - 0s 87us/step - loss: 0.1087 - accuracy: 0.9809  
Epoch 856/2450  
209/209 [=====] - 0s 134us/step - loss: 0.1062 - accuracy: 0.9856  
Epoch 857/2450  
209/209 [=====] - 0s 123us/step - loss: 0.1091 - accuracy: 0.9809  
Epoch 858/2450  
209/209 [=====] - 0s 103us/step - loss: 0.1058 - accuracy: 0.9856  
Epoch 859/2450  
209/209 [=====] - 0s 95us/step - loss: 0.1106 - accuracy: 0.9809  
Epoch 860/2450  
209/209 [=====] - 0s 108us/step - loss: 0.1106 - accuracy: 0.9809  
Epoch 861/2450  
209/209 [=====] - 0s 106us/step - loss: 0.1145 - accuracy: 0.9761  
Epoch 862/2450  
209/209 [=====] - 0s 113us/step - loss: 0.1081 - accuracy: 0.9856  
Epoch 863/2450  
209/209 [=====] - 0s 111us/step - loss: 0.1170 - accuracy: 0.9761  
Epoch 864/2450  
209/209 [=====] - 0s 114us/step - loss: 0.1171 - accuracy: 0.9761  
Epoch 865/2450  
209/209 [=====] - 0s 121us/step - loss: 0.1280 - accuracy: 0.9713  
Epoch 866/2450  
209/209 [=====] - 0s 119us/step - loss: 0.1162 - accuracy: 0.9761  
Epoch 867/2450  
209/209 [=====] - 0s 153us/step - loss: 0.1224 - accuracy: 0.9761  
Epoch 868/2450  
209/209 [=====] - 0s 153us/step - loss: 0.1183 - accuracy: 0.9761  
Epoch 869/2450  
209/209 [=====] - 0s 172us/step - loss: 0.1182 - accuracy: 0.9761  
Epoch 870/2450  
209/209 [=====] - 0s 184us/step - loss: 0.1088 - accuracy: 0.9809  
Epoch 871/2450  
209/209 [=====] - 0s 203us/step - loss: 0.1118 - accuracy: 0.9761  
Epoch 872/2450  
209/209 [=====] - 0s 152us/step - loss: 0.1051 - accuracy: 0.9856  
Epoch 873/2450  
209/209 [=====] - 0s 116us/step - loss: 0.1058 - accuracy: 0.9809  
Epoch 874/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0992 - accuracy: 0.9904  
Epoch 875/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0985 - accuracy: 0.9809  
Epoch 876/2450  
209/209 [=====] - 0s 135us/step - loss: 0.0943 - accuracy: 0.9904  
Epoch 877/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0944 - accuracy: 0.9809  
Epoch 878/2450  
209/209 [=====] - 0s 271us/step - loss: 0.0919 - accuracy: 0.9904  
Epoch 879/2450  
209/209 [=====] - 0s 134us/step - loss: 0.0934 - accuracy: 0.9856  
Epoch 880/2450  
209/209 [=====] - 0s 150us/step - loss: 0.0918 - accuracy: 0.9904  
Epoch 881/2450  
209/209 [=====] - 0s 173us/step - loss: 0.0937 - accuracy: 0.9809  
Epoch 882/2450  
209/209 [=====] - 0s 156us/step - loss: 0.0920 - accuracy: 0.9904  
Epoch 883/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0949 - accuracy: 0.9809  
Epoch 884/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0925 - accuracy: 0.9904  
Epoch 885/2450  
209/209 [=====] - 0s 145us/step - loss: 0.0937 - accuracy: 0.9809  
Epoch 886/2450  
209/209 [=====] - 0s 163us/step - loss: 0.0920 - accuracy: 0.9952  
Epoch 887/2450  
209/209 [=====] - 0s 153us/step - loss: 0.0962 - accuracy: 0.9809  
Epoch 888/2450  
209/209 [=====] - 0s 146us/step - loss: 0.0932 - accuracy: 0.9904  
Epoch 889/2450  
209/209 [=====] - 0s 176us/step - loss: 0.0963 - accuracy: 0.9809  
Epoch 890/2450  
209/209 [=====] - 0s 183us/step - loss: 0.0929 - accuracy: 0.9952

Epoch 891/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0961 - accuracy: 0.9809  
Epoch 892/2450  
209/209 [=====] - 0s 143us/step - loss: 0.0925 - accuracy: 0.9952  
Epoch 893/2450  
209/209 [=====] - 0s 217us/step - loss: 0.0957 - accuracy: 0.9809  
Epoch 894/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0922 - accuracy: 0.9952  
Epoch 895/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0953 - accuracy: 0.9809  
Epoch 896/2450  
209/209 [=====] - 0s 147us/step - loss: 0.0916 - accuracy: 0.9952  
Epoch 897/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0948 - accuracy: 0.9809  
Epoch 898/2450  
209/209 [=====] - 0s 101us/step - loss: 0.0910 - accuracy: 0.9952  
Epoch 899/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0933 - accuracy: 0.9809  
Epoch 900/2450  
209/209 [=====] - 0s 179us/step - loss: 0.0897 - accuracy: 0.9952  
Epoch 901/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0912 - accuracy: 0.9809  
Epoch 902/2450  
209/209 [=====] - 0s 159us/step - loss: 0.0884 - accuracy: 0.9952  
Epoch 903/2450  
209/209 [=====] - 0s 173us/step - loss: 0.0920 - accuracy: 0.9809  
Epoch 904/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0886 - accuracy: 0.9952  
Epoch 905/2450  
209/209 [=====] - 0s 123us/step - loss: 0.0898 - accuracy: 0.9856  
Epoch 906/2450  
209/209 [=====] - 0s 224us/step - loss: 0.0875 - accuracy: 0.9952  
Epoch 907/2450  
209/209 [=====] - 0s 180us/step - loss: 0.0904 - accuracy: 0.9856  
Epoch 908/2450  
209/209 [=====] - 0s 131us/step - loss: 0.0865 - accuracy: 1.0000  
Epoch 909/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0875 - accuracy: 0.9856  
Epoch 910/2450  
209/209 [=====] - 0s 155us/step - loss: 0.0850 - accuracy: 1.0000  
Epoch 911/2450  
209/209 [=====] - 0s 176us/step - loss: 0.0876 - accuracy: 0.9856  
Epoch 912/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0863 - accuracy: 0.9952  
Epoch 913/2450  
209/209 [=====] - 0s 130us/step - loss: 0.0877 - accuracy: 0.9856  
Epoch 914/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0880 - accuracy: 0.9952  
Epoch 915/2450  
209/209 [=====] - 0s 193us/step - loss: 0.0917 - accuracy: 0.9856  
Epoch 916/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0874 - accuracy: 0.9952  
Epoch 917/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0905 - accuracy: 0.9809  
Epoch 918/2450  
209/209 [=====] - 0s 143us/step - loss: 0.0872 - accuracy: 0.9952  
Epoch 919/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0920 - accuracy: 0.9809  
Epoch 920/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0883 - accuracy: 0.9952  
Epoch 921/2450  
209/209 [=====] - 0s 150us/step - loss: 0.0924 - accuracy: 0.9809  
Epoch 922/2450  
209/209 [=====] - 0s 156us/step - loss: 0.0922 - accuracy: 0.9952  
Epoch 923/2450  
209/209 [=====] - 0s 165us/step - loss: 0.0981 - accuracy: 0.9809  
Epoch 924/2450  
209/209 [=====] - 0s 177us/step - loss: 0.0899 - accuracy: 0.9952  
Epoch 925/2450  
209/209 [=====] - 0s 160us/step - loss: 0.0914 - accuracy: 0.9809  
Epoch 926/2450  
209/209 [=====] - 0s 165us/step - loss: 0.0872 - accuracy: 0.9952  
Epoch 927/2450  
209/209 [=====] - 0s 160us/step - loss: 0.0900 - accuracy: 0.9809  
Epoch 928/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0858 - accuracy: 0.9952  
Epoch 929/2450  
209/209 [=====] - 0s 137us/step - loss: 0.0870 - accuracy: 0.9856  
Epoch 930/2450  
209/209 [=====] - 0s 259us/step - loss: 0.0839 - accuracy: 0.9952  
Epoch 931/2450  
209/209 [=====] - 0s 170us/step - loss: 0.0867 - accuracy: 0.9856  
Epoch 932/2450



209/209 [=====] - 0s 123us/step - loss: 0.0829 - accuracy: 1.0000  
Epoch 933/2450  
209/209 [=====] - 0s 145us/step - loss: 0.0836 - accuracy: 0.9856  
Epoch 934/2450  
209/209 [=====] - 0s 281us/step - loss: 0.0808 - accuracy: 1.0000  
Epoch 935/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0829 - accuracy: 0.9856  
Epoch 936/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0810 - accuracy: 1.0000  
Epoch 937/2450  
209/209 [=====] - 0s 130us/step - loss: 0.0819 - accuracy: 0.9856  
Epoch 938/2450  
209/209 [=====] - 0s 130us/step - loss: 0.0805 - accuracy: 1.0000  
Epoch 939/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0826 - accuracy: 0.9856  
Epoch 940/2450  
209/209 [=====] - 0s 101us/step - loss: 0.0803 - accuracy: 1.0000  
Epoch 941/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0842 - accuracy: 0.9856  
Epoch 942/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0815 - accuracy: 1.0000  
Epoch 943/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0852 - accuracy: 0.9856  
Epoch 944/2450  
209/209 [=====] - 0s 152us/step - loss: 0.0823 - accuracy: 0.9952  
Epoch 945/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0866 - accuracy: 0.9856  
Epoch 946/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0857 - accuracy: 0.9952  
Epoch 947/2450  
209/209 [=====] - 0s 160us/step - loss: 0.0885 - accuracy: 0.9809  
Epoch 948/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0829 - accuracy: 0.9952  
Epoch 949/2450  
209/209 [=====] - 0s 205us/step - loss: 0.0865 - accuracy: 0.9856  
Epoch 950/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0818 - accuracy: 1.0000  
Epoch 951/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0828 - accuracy: 0.9856  
Epoch 952/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0795 - accuracy: 1.0000  
Epoch 953/2450  
209/209 [=====] - 0s 141us/step - loss: 0.0816 - accuracy: 0.9856  
Epoch 954/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0783 - accuracy: 1.0000  
Epoch 955/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0796 - accuracy: 0.9856  
Epoch 956/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0767 - accuracy: 1.0000  
Epoch 957/2450  
209/209 [=====] - 0s 119us/step - loss: 0.0769 - accuracy: 0.9952  
Epoch 958/2450  
209/209 [=====] - 0s 165us/step - loss: 0.0750 - accuracy: 1.0000  
Epoch 959/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0756 - accuracy: 0.9952  
Epoch 960/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0746 - accuracy: 1.0000  
Epoch 961/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0767 - accuracy: 0.9952  
Epoch 962/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0757 - accuracy: 1.0000  
Epoch 963/2450  
209/209 [=====] - 0s 139us/step - loss: 0.0767 - accuracy: 0.9952  
Epoch 964/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0761 - accuracy: 1.0000  
Epoch 965/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0796 - accuracy: 0.9856  
Epoch 966/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0803 - accuracy: 1.0000  
Epoch 967/2450  
209/209 [=====] - 0s 174us/step - loss: 0.0858 - accuracy: 0.9856  
Epoch 968/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0798 - accuracy: 1.0000  
Epoch 969/2450  
209/209 [=====] - 0s 208us/step - loss: 0.0825 - accuracy: 0.9856  
Epoch 970/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0790 - accuracy: 1.0000  
Epoch 971/2450  
209/209 [=====] - 0s 149us/step - loss: 0.0828 - accuracy: 0.9856  
Epoch 972/2450  
209/209 [=====] - 0s 156us/step - loss: 0.0812 - accuracy: 1.0000  
Epoch 973/2450  
209/209 [=====] - 0s 203us/step - loss: 0.0819 - accuracy: 0.9856

Epoch 974/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0777 - accuracy: 1.0000  
Epoch 975/2450  
209/209 [=====] - 0s 270us/step - loss: 0.0805 - accuracy: 0.9856  
Epoch 976/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0761 - accuracy: 1.0000  
Epoch 977/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0763 - accuracy: 0.9952  
Epoch 978/2450  
209/209 [=====] - 0s 163us/step - loss: 0.0732 - accuracy: 1.0000  
Epoch 979/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0735 - accuracy: 0.9952  
Epoch 980/2450  
209/209 [=====] - 0s 183us/step - loss: 0.0718 - accuracy: 1.0000  
Epoch 981/2450  
209/209 [=====] - 0s 165us/step - loss: 0.0726 - accuracy: 0.9952  
Epoch 982/2450  
209/209 [=====] - 0s 130us/step - loss: 0.0719 - accuracy: 1.0000  
Epoch 983/2450  
209/209 [=====] - 0s 165us/step - loss: 0.0745 - accuracy: 0.9952  
Epoch 984/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0730 - accuracy: 1.0000  
Epoch 985/2450  
209/209 [=====] - 0s 141us/step - loss: 0.0746 - accuracy: 0.9952  
Epoch 986/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0728 - accuracy: 1.0000  
Epoch 987/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0750 - accuracy: 0.9952  
Epoch 988/2450  
209/209 [=====] - 0s 158us/step - loss: 0.0730 - accuracy: 1.0000  
Epoch 989/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0760 - accuracy: 0.9856  
Epoch 990/2450  
209/209 [=====] - 0s 159us/step - loss: 0.0740 - accuracy: 1.0000  
Epoch 991/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0774 - accuracy: 0.9856  
Epoch 992/2450  
209/209 [=====] - 0s 146us/step - loss: 0.0774 - accuracy: 1.0000  
Epoch 993/2450  
209/209 [=====] - 0s 232us/step - loss: 0.0816 - accuracy: 0.9856  
Epoch 994/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0756 - accuracy: 1.0000  
Epoch 995/2450  
209/209 [=====] - 0s 176us/step - loss: 0.0779 - accuracy: 0.9856  
Epoch 996/2450  
209/209 [=====] - 0s 185us/step - loss: 0.0740 - accuracy: 1.0000  
Epoch 997/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0759 - accuracy: 0.9856  
Epoch 998/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0729 - accuracy: 1.0000  
Epoch 999/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0740 - accuracy: 0.9952  
Epoch 1000/2450  
209/209 [=====] - 0s 217us/step - loss: 0.0713 - accuracy: 1.0000  
Epoch 1001/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0728 - accuracy: 0.9952  
Epoch 1002/2450  
209/209 [=====] - 0s 123us/step - loss: 0.0707 - accuracy: 1.0000  
Epoch 1003/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0716 - accuracy: 0.9952  
Epoch 1004/2450  
209/209 [=====] - 0s 123us/step - loss: 0.0697 - accuracy: 1.0000  
Epoch 1005/2450  
209/209 [=====] - 0s 142us/step - loss: 0.0717 - accuracy: 0.9952  
Epoch 1006/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0694 - accuracy: 1.0000  
Epoch 1007/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0709 - accuracy: 0.9952  
Epoch 1008/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0688 - accuracy: 1.0000  
Epoch 1009/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0700 - accuracy: 0.9952  
Epoch 1010/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0680 - accuracy: 1.0000  
Epoch 1011/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0689 - accuracy: 0.9952  
Epoch 1012/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0677 - accuracy: 1.0000  
Epoch 1013/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0698 - accuracy: 0.9952  
Epoch 1014/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0681 - accuracy: 1.0000  
Epoch 1015/2450

209/209 [=====] - 0s 296us/step - loss: 0.0689 - accuracy: 0.9952  
Epoch 1016/2450  
209/209 [=====] - 0s 136us/step - loss: 0.0674 - accuracy: 1.0000  
Epoch 1017/2450  
209/209 [=====] - 0s 92us/step - loss: 0.0695 - accuracy: 0.9952  
Epoch 1018/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0681 - accuracy: 1.0000  
Epoch 1019/2450  
209/209 [=====] - 0s 89us/step - loss: 0.0699 - accuracy: 0.9952  
Epoch 1020/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0681 - accuracy: 1.0000  
Epoch 1021/2450  
209/209 [=====] - 0s 87us/step - loss: 0.0702 - accuracy: 0.9952  
Epoch 1022/2450  
209/209 [=====] - 0s 97us/step - loss: 0.0684 - accuracy: 1.0000  
Epoch 1023/2450  
209/209 [=====] - 0s 94us/step - loss: 0.0702 - accuracy: 0.9952  
Epoch 1024/2450  
209/209 [=====] - 0s 233us/step - loss: 0.0699 - accuracy: 1.0000  
Epoch 1025/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0720 - accuracy: 0.9904  
Epoch 1026/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0688 - accuracy: 1.0000  
Epoch 1027/2450  
209/209 [=====] - 0s 92us/step - loss: 0.0713 - accuracy: 0.9952  
Epoch 1028/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0688 - accuracy: 1.0000  
Epoch 1029/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0706 - accuracy: 0.9952  
Epoch 1030/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0698 - accuracy: 1.0000  
Epoch 1031/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0712 - accuracy: 0.9904  
Epoch 1032/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0682 - accuracy: 1.0000  
Epoch 1033/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0705 - accuracy: 0.9952  
Epoch 1034/2450  
209/209 [=====] - 0s 97us/step - loss: 0.0686 - accuracy: 1.0000  
Epoch 1035/2450  
209/209 [=====] - 0s 101us/step - loss: 0.0692 - accuracy: 0.9952  
Epoch 1036/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0666 - accuracy: 1.0000  
Epoch 1037/2450  
209/209 [=====] - 0s 131us/step - loss: 0.0685 - accuracy: 0.9952  
Epoch 1038/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0662 - accuracy: 1.0000  
Epoch 1039/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0666 - accuracy: 0.9952  
Epoch 1040/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0643 - accuracy: 1.0000  
Epoch 1041/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0643 - accuracy: 0.9952  
Epoch 1042/2450  
209/209 [=====] - 0s 88us/step - loss: 0.0628 - accuracy: 1.0000  
Epoch 1043/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0634 - accuracy: 0.9952  
Epoch 1044/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0621 - accuracy: 1.0000  
Epoch 1045/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0624 - accuracy: 0.9952  
Epoch 1046/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0615 - accuracy: 1.0000  
Epoch 1047/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0617 - accuracy: 0.9952  
Epoch 1048/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0609 - accuracy: 1.0000  
Epoch 1049/2450  
209/209 [=====] - 0s 136us/step - loss: 0.0614 - accuracy: 0.9952  
Epoch 1050/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0606 - accuracy: 1.0000  
Epoch 1051/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0614 - accuracy: 0.9952  
Epoch 1052/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0607 - accuracy: 1.0000  
Epoch 1053/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0615 - accuracy: 0.9952  
Epoch 1054/2450  
209/209 [=====] - 0s 134us/step - loss: 0.0605 - accuracy: 1.0000  
Epoch 1055/2450  
209/209 [=====] - 0s 133us/step - loss: 0.0615 - accuracy: 0.9952  
Epoch 1056/2450  
209/209 [=====] - 0s 158us/step - loss: 0.0605 - accuracy: 1.0000

Epoch 1057/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0615 - accuracy: 0.9952  
Epoch 1058/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0603 - accuracy: 1.0000  
Epoch 1059/2450  
209/209 [=====] - 0s 184us/step - loss: 0.0613 - accuracy: 0.9952  
Epoch 1060/2450  
209/209 [=====] - 0s 148us/step - loss: 0.0602 - accuracy: 1.0000  
Epoch 1061/2450  
209/209 [=====] - 0s 144us/step - loss: 0.0612 - accuracy: 0.9952  
Epoch 1062/2450  
209/209 [=====] - 0s 146us/step - loss: 0.0601 - accuracy: 1.0000  
Epoch 1063/2450  
209/209 [=====] - 0s 211us/step - loss: 0.0612 - accuracy: 0.9952  
Epoch 1064/2450  
209/209 [=====] - 0s 130us/step - loss: 0.0598 - accuracy: 1.0000  
Epoch 1065/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0607 - accuracy: 0.9952  
Epoch 1066/2450  
209/209 [=====] - 0s 135us/step - loss: 0.0596 - accuracy: 1.0000  
Epoch 1067/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0604 - accuracy: 0.9952  
Epoch 1068/2450  
209/209 [=====] - 0s 96us/step - loss: 0.0592 - accuracy: 1.0000  
Epoch 1069/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0600 - accuracy: 0.9952  
Epoch 1070/2450  
209/209 [=====] - 0s 253us/step - loss: 0.0590 - accuracy: 1.0000  
Epoch 1071/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0598 - accuracy: 0.9952  
Epoch 1072/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0588 - accuracy: 1.0000  
Epoch 1073/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0594 - accuracy: 0.9952  
Epoch 1074/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0584 - accuracy: 1.0000  
Epoch 1075/2450  
209/209 [=====] - 0s 133us/step - loss: 0.0592 - accuracy: 0.9952  
Epoch 1076/2450  
209/209 [=====] - 0s 137us/step - loss: 0.0582 - accuracy: 1.0000  
Epoch 1077/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0591 - accuracy: 0.9952  
Epoch 1078/2450  
209/209 [=====] - 0s 150us/step - loss: 0.0589 - accuracy: 1.0000  
Epoch 1079/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0601 - accuracy: 0.9952  
Epoch 1080/2450  
209/209 [=====] - 0s 144us/step - loss: 0.0586 - accuracy: 1.0000  
Epoch 1081/2450  
209/209 [=====] - 0s 131us/step - loss: 0.0599 - accuracy: 0.9952  
Epoch 1082/2450  
209/209 [=====] - 0s 160us/step - loss: 0.0586 - accuracy: 1.0000  
Epoch 1083/2450  
209/209 [=====] - 0s 93us/step - loss: 0.0598 - accuracy: 0.9952  
Epoch 1084/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0585 - accuracy: 1.0000  
Epoch 1085/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0593 - accuracy: 0.9952  
Epoch 1086/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0580 - accuracy: 1.0000  
Epoch 1087/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0592 - accuracy: 0.9952  
Epoch 1088/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0576 - accuracy: 1.0000  
Epoch 1089/2450  
209/209 [=====] - 0s 123us/step - loss: 0.0582 - accuracy: 0.9952  
Epoch 1090/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0572 - accuracy: 1.0000  
Epoch 1091/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0577 - accuracy: 0.9952  
Epoch 1092/2450  
209/209 [=====] - 0s 136us/step - loss: 0.0564 - accuracy: 1.0000  
Epoch 1093/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0568 - accuracy: 0.9952  
Epoch 1094/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0558 - accuracy: 1.0000  
Epoch 1095/2450  
209/209 [=====] - 0s 96us/step - loss: 0.0556 - accuracy: 0.9952  
Epoch 1096/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0555 - accuracy: 1.0000  
Epoch 1097/2450  
209/209 [=====] - 0s 134us/step - loss: 0.0563 - accuracy: 0.9952  
Epoch 1098/2450

209/209 [=====] - 0s 124us/step - loss: 0.0561 - accuracy: 1.0000  
Epoch 1099/2450  
209/209 [=====] - 0s 89us/step - loss: 0.0564 - accuracy: 0.9952  
Epoch 1100/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0554 - accuracy: 1.0000  
Epoch 1101/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0559 - accuracy: 0.9952  
Epoch 1102/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0548 - accuracy: 1.0000  
Epoch 1103/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0552 - accuracy: 0.9952  
Epoch 1104/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0544 - accuracy: 1.0000  
Epoch 1105/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0544 - accuracy: 0.9952  
Epoch 1106/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0544 - accuracy: 1.0000  
Epoch 1107/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0550 - accuracy: 0.9952  
Epoch 1108/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0550 - accuracy: 1.0000  
Epoch 1109/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0555 - accuracy: 0.9952  
Epoch 1110/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0545 - accuracy: 1.0000  
Epoch 1111/2450  
209/209 [=====] - 0s 101us/step - loss: 0.0553 - accuracy: 0.9952  
Epoch 1112/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0542 - accuracy: 1.0000  
Epoch 1113/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0548 - accuracy: 0.9952  
Epoch 1114/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0539 - accuracy: 1.0000  
Epoch 1115/2450  
209/209 [=====] - 0s 295us/step - loss: 0.0546 - accuracy: 0.9952  
Epoch 1116/2450  
209/209 [=====] - 0s 259us/step - loss: 0.0536 - accuracy: 1.0000  
Epoch 1117/2450  
209/209 [=====] - 0s 144us/step - loss: 0.0541 - accuracy: 0.9952  
Epoch 1118/2450  
209/209 [=====] - 0s 164us/step - loss: 0.0531 - accuracy: 1.0000  
Epoch 1119/2450  
209/209 [=====] - 0s 320us/step - loss: 0.0533 - accuracy: 0.9952  
Epoch 1120/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0525 - accuracy: 1.0000  
Epoch 1121/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0523 - accuracy: 1.0000  
Epoch 1122/2450  
209/209 [=====] - 0s 160us/step - loss: 0.0521 - accuracy: 1.0000  
Epoch 1123/2450  
209/209 [=====] - 0s 180us/step - loss: 0.0522 - accuracy: 1.0000  
Epoch 1124/2450  
209/209 [=====] - 0s 122us/step - loss: 0.0524 - accuracy: 1.0000  
Epoch 1125/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0530 - accuracy: 0.9952  
Epoch 1126/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0537 - accuracy: 1.0000  
Epoch 1127/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0546 - accuracy: 0.9952  
Epoch 1128/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0533 - accuracy: 1.0000  
Epoch 1129/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0539 - accuracy: 0.9952  
Epoch 1130/2450  
209/209 [=====] - 0s 89us/step - loss: 0.0529 - accuracy: 1.0000  
Epoch 1131/2450  
209/209 [=====] - 0s 97us/step - loss: 0.0536 - accuracy: 0.9952  
Epoch 1132/2450  
209/209 [=====] - 0s 86us/step - loss: 0.0524 - accuracy: 1.0000  
Epoch 1133/2450  
209/209 [=====] - 0s 144us/step - loss: 0.0531 - accuracy: 0.9952  
Epoch 1134/2450  
209/209 [=====] - 0s 93us/step - loss: 0.0518 - accuracy: 1.0000  
Epoch 1135/2450  
209/209 [=====] - 0s 92us/step - loss: 0.0519 - accuracy: 0.9952  
Epoch 1136/2450  
209/209 [=====] - 0s 95us/step - loss: 0.0513 - accuracy: 1.0000  
Epoch 1137/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0514 - accuracy: 0.9952  
Epoch 1138/2450  
209/209 [=====] - 0s 92us/step - loss: 0.0512 - accuracy: 1.0000  
Epoch 1139/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0517 - accuracy: 0.9952

Epoch 1140/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0523 - accuracy: 1.0000  
Epoch 1141/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0528 - accuracy: 0.9952  
Epoch 1142/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0516 - accuracy: 1.0000  
Epoch 1143/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0523 - accuracy: 0.9952  
Epoch 1144/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0511 - accuracy: 1.0000  
Epoch 1145/2450  
209/209 [=====] - 0s 79us/step - loss: 0.0517 - accuracy: 0.9952  
Epoch 1146/2450  
209/209 [=====] - 0s 209us/step - loss: 0.0507 - accuracy: 1.0000  
Epoch 1147/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0507 - accuracy: 0.9952  
Epoch 1148/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0506 - accuracy: 1.0000  
Epoch 1149/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0510 - accuracy: 0.9952  
Epoch 1150/2450  
209/209 [=====] - 0s 94us/step - loss: 0.0515 - accuracy: 1.0000  
Epoch 1151/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0520 - accuracy: 0.9952  
Epoch 1152/2450  
209/209 [=====] - 0s 236us/step - loss: 0.0506 - accuracy: 1.0000  
Epoch 1153/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0510 - accuracy: 0.9952  
Epoch 1154/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0499 - accuracy: 1.0000  
Epoch 1155/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0500 - accuracy: 0.9952  
Epoch 1156/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0500 - accuracy: 1.0000  
Epoch 1157/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0503 - accuracy: 0.9952  
Epoch 1158/2450  
209/209 [=====] - 0s 217us/step - loss: 0.0500 - accuracy: 1.0000  
Epoch 1159/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0504 - accuracy: 0.9952  
Epoch 1160/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0503 - accuracy: 1.0000  
Epoch 1161/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0506 - accuracy: 0.9952  
Epoch 1162/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0513 - accuracy: 1.0000  
Epoch 1163/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0514 - accuracy: 0.9952  
Epoch 1164/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0498 - accuracy: 1.0000  
Epoch 1165/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0502 - accuracy: 0.9952  
Epoch 1166/2450  
209/209 [=====] - 0s 162us/step - loss: 0.0489 - accuracy: 1.0000  
Epoch 1167/2450  
209/209 [=====] - 0s 157us/step - loss: 0.0492 - accuracy: 1.0000  
Epoch 1168/2450  
209/209 [=====] - 0s 135us/step - loss: 0.0490 - accuracy: 1.0000  
Epoch 1169/2450  
209/209 [=====] - 0s 181us/step - loss: 0.0492 - accuracy: 0.9952  
Epoch 1170/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0490 - accuracy: 1.0000  
Epoch 1171/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0494 - accuracy: 0.9952  
Epoch 1172/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0489 - accuracy: 1.0000  
Epoch 1173/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0490 - accuracy: 0.9952  
Epoch 1174/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0487 - accuracy: 1.0000  
Epoch 1175/2450  
209/209 [=====] - 0s 224us/step - loss: 0.0489 - accuracy: 0.9952  
Epoch 1176/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0484 - accuracy: 1.0000  
Epoch 1177/2450  
209/209 [=====] - 0s 173us/step - loss: 0.0484 - accuracy: 0.9952  
Epoch 1178/2450  
209/209 [=====] - 0s 122us/step - loss: 0.0483 - accuracy: 1.0000  
Epoch 1179/2450  
209/209 [=====] - 0s 133us/step - loss: 0.0484 - accuracy: 0.9952  
Epoch 1180/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0482 - accuracy: 1.0000  
Epoch 1181/2450

209/209 [=====] - 0s 105us/step - loss: 0.0485 - accuracy: 0.9952  
Epoch 1182/2450  
209/209 [=====] - 0s 101us/step - loss: 0.0480 - accuracy: 1.0000  
Epoch 1183/2450  
209/209 [=====] - 0s 141us/step - loss: 0.0480 - accuracy: 1.0000  
Epoch 1184/2450  
209/209 [=====] - 0s 142us/step - loss: 0.0477 - accuracy: 1.0000  
Epoch 1185/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0476 - accuracy: 1.0000  
Epoch 1186/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0473 - accuracy: 1.0000  
Epoch 1187/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0473 - accuracy: 1.0000  
Epoch 1188/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0469 - accuracy: 1.0000  
Epoch 1189/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0471 - accuracy: 1.0000  
Epoch 1190/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0467 - accuracy: 1.0000  
Epoch 1191/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0466 - accuracy: 1.0000  
Epoch 1192/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0463 - accuracy: 1.0000  
Epoch 1193/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0462 - accuracy: 1.0000  
Epoch 1194/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0457 - accuracy: 1.0000  
Epoch 1195/2450  
209/209 [=====] - 0s 174us/step - loss: 0.0457 - accuracy: 1.0000  
Epoch 1196/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0453 - accuracy: 1.0000  
Epoch 1197/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0450 - accuracy: 1.0000  
Epoch 1198/2450  
209/209 [=====] - 0s 90us/step - loss: 0.0448 - accuracy: 1.0000  
Epoch 1199/2450  
209/209 [=====] - 0s 94us/step - loss: 0.0447 - accuracy: 1.0000  
Epoch 1200/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0445 - accuracy: 1.0000  
Epoch 1201/2450  
209/209 [=====] - 0s 131us/step - loss: 0.0444 - accuracy: 1.0000  
Epoch 1202/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0442 - accuracy: 1.0000  
Epoch 1203/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0441 - accuracy: 1.0000  
Epoch 1204/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0439 - accuracy: 1.0000  
Epoch 1205/2450  
209/209 [=====] - 0s 137us/step - loss: 0.0439 - accuracy: 1.0000  
Epoch 1206/2450  
209/209 [=====] - 0s 159us/step - loss: 0.0438 - accuracy: 1.0000  
Epoch 1207/2450  
209/209 [=====] - 0s 160us/step - loss: 0.0438 - accuracy: 1.0000  
Epoch 1208/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0437 - accuracy: 1.0000  
Epoch 1209/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0437 - accuracy: 1.0000  
Epoch 1210/2450  
209/209 [=====] - 0s 135us/step - loss: 0.0436 - accuracy: 1.0000  
Epoch 1211/2450  
209/209 [=====] - 0s 93us/step - loss: 0.0436 - accuracy: 1.0000  
Epoch 1212/2450  
209/209 [=====] - 0s 85us/step - loss: 0.0434 - accuracy: 1.0000  
Epoch 1213/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0434 - accuracy: 1.0000  
Epoch 1214/2450  
209/209 [=====] - 0s 87us/step - loss: 0.0433 - accuracy: 1.0000  
Epoch 1215/2450  
209/209 [=====] - 0s 147us/step - loss: 0.0433 - accuracy: 1.0000  
Epoch 1216/2450  
209/209 [=====] - 0s 92us/step - loss: 0.0432 - accuracy: 1.0000  
Epoch 1217/2450  
209/209 [=====] - 0s 197us/step - loss: 0.0432 - accuracy: 1.0000  
Epoch 1218/2450  
209/209 [=====] - 0s 131us/step - loss: 0.0431 - accuracy: 1.0000  
Epoch 1219/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0430 - accuracy: 1.0000  
Epoch 1220/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0429 - accuracy: 1.0000  
Epoch 1221/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0428 - accuracy: 1.0000  
Epoch 1222/2450  
209/209 [=====] - 0s 140us/step - loss: 0.0427 - accuracy: 1.0000

Epoch 1223/2450  
209/209 [=====] - 0s 143us/step - loss: 0.0427 - accuracy: 1.0000  
Epoch 1224/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0425 - accuracy: 1.0000  
Epoch 1225/2450  
209/209 [=====] - 0s 467us/step - loss: 0.0425 - accuracy: 1.0000  
Epoch 1226/2450  
209/209 [=====] - 0s 164us/step - loss: 0.0424 - accuracy: 1.0000  
Epoch 1227/2450  
209/209 [=====] - 0s 132us/step - loss: 0.0424 - accuracy: 1.0000  
Epoch 1228/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0422 - accuracy: 1.0000  
Epoch 1229/2450  
209/209 [=====] - 0s 144us/step - loss: 0.0423 - accuracy: 1.0000  
Epoch 1230/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0421 - accuracy: 1.0000  
Epoch 1231/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0421 - accuracy: 1.0000  
Epoch 1232/2450  
209/209 [=====] - 0s 89us/step - loss: 0.0421 - accuracy: 1.0000  
Epoch 1233/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0420 - accuracy: 1.0000  
Epoch 1234/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0418 - accuracy: 1.0000  
Epoch 1235/2450  
209/209 [=====] - 0s 135us/step - loss: 0.0419 - accuracy: 1.0000  
Epoch 1236/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0417 - accuracy: 1.0000  
Epoch 1237/2450  
209/209 [=====] - 0s 272us/step - loss: 0.0417 - accuracy: 1.0000  
Epoch 1238/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0416 - accuracy: 1.0000  
Epoch 1239/2450  
209/209 [=====] - 0s 93us/step - loss: 0.0415 - accuracy: 1.0000  
Epoch 1240/2450  
209/209 [=====] - 0s 405us/step - loss: 0.0414 - accuracy: 1.0000  
Epoch 1241/2450  
209/209 [=====] - 0s 134us/step - loss: 0.0414 - accuracy: 1.0000  
Epoch 1242/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0412 - accuracy: 1.0000  
Epoch 1243/2450  
209/209 [=====] - 0s 142us/step - loss: 0.0412 - accuracy: 1.0000  
Epoch 1244/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0411 - accuracy: 1.0000  
Epoch 1245/2450  
209/209 [=====] - 0s 273us/step - loss: 0.0411 - accuracy: 1.0000  
Epoch 1246/2450  
209/209 [=====] - 0s 119us/step - loss: 0.0411 - accuracy: 1.0000  
Epoch 1247/2450  
209/209 [=====] - 0s 209us/step - loss: 0.0410 - accuracy: 1.0000  
Epoch 1248/2450  
209/209 [=====] - 0s 99us/step - loss: 0.0409 - accuracy: 1.0000  
Epoch 1249/2450  
209/209 [=====] - 0s 92us/step - loss: 0.0408 - accuracy: 1.0000  
Epoch 1250/2450  
209/209 [=====] - 0s 131us/step - loss: 0.0407 - accuracy: 1.0000  
Epoch 1251/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0407 - accuracy: 1.0000  
Epoch 1252/2450  
209/209 [=====] - 0s 197us/step - loss: 0.0405 - accuracy: 1.0000  
Epoch 1253/2450  
209/209 [=====] - 0s 153us/step - loss: 0.0405 - accuracy: 1.0000  
Epoch 1254/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0404 - accuracy: 1.0000  
Epoch 1255/2450  
209/209 [=====] - 0s 133us/step - loss: 0.0404 - accuracy: 1.0000  
Epoch 1256/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0402 - accuracy: 1.0000  
Epoch 1257/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0403 - accuracy: 1.0000  
Epoch 1258/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0401 - accuracy: 1.0000  
Epoch 1259/2450  
209/209 [=====] - 0s 84us/step - loss: 0.0401 - accuracy: 1.0000  
Epoch 1260/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0400 - accuracy: 1.0000  
Epoch 1261/2450  
209/209 [=====] - 0s 88us/step - loss: 0.0400 - accuracy: 1.0000  
Epoch 1262/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0400 - accuracy: 1.0000  
Epoch 1263/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0400 - accuracy: 1.0000  
Epoch 1264/2450



209/209 [=====] - 0s 125us/step - loss: 0.0402 - accuracy: 1.0000  
Epoch 1265/2450  
209/209 [=====] - 0s 87us/step - loss: 0.0402 - accuracy: 1.0000  
Epoch 1266/2450  
209/209 [=====] - 0s 133us/step - loss: 0.0399 - accuracy: 1.0000  
Epoch 1267/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0399 - accuracy: 1.0000  
Epoch 1268/2450  
209/209 [=====] - 0s 149us/step - loss: 0.0398 - accuracy: 1.0000  
Epoch 1269/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0398 - accuracy: 1.0000  
Epoch 1270/2450  
209/209 [=====] - 0s 245us/step - loss: 0.0396 - accuracy: 1.0000  
Epoch 1271/2450  
209/209 [=====] - 0s 95us/step - loss: 0.0396 - accuracy: 1.0000  
Epoch 1272/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0395 - accuracy: 1.0000  
Epoch 1273/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0395 - accuracy: 1.0000  
Epoch 1274/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0393 - accuracy: 1.0000  
Epoch 1275/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0393 - accuracy: 1.0000  
Epoch 1276/2450  
209/209 [=====] - 0s 202us/step - loss: 0.0392 - accuracy: 1.0000  
Epoch 1277/2450  
209/209 [=====] - 0s 90us/step - loss: 0.0392 - accuracy: 1.0000  
Epoch 1278/2450  
209/209 [=====] - 0s 158us/step - loss: 0.0390 - accuracy: 1.0000  
Epoch 1279/2450  
209/209 [=====] - 0s 96us/step - loss: 0.0389 - accuracy: 1.0000  
Epoch 1280/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0387 - accuracy: 1.0000  
Epoch 1281/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0387 - accuracy: 1.0000  
Epoch 1282/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0385 - accuracy: 1.0000  
Epoch 1283/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0385 - accuracy: 1.0000  
Epoch 1284/2450  
209/209 [=====] - 0s 202us/step - loss: 0.0384 - accuracy: 1.0000  
Epoch 1285/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0384 - accuracy: 1.0000  
Epoch 1286/2450  
209/209 [=====] - 0s 139us/step - loss: 0.0382 - accuracy: 1.0000  
Epoch 1287/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0382 - accuracy: 1.0000  
Epoch 1288/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0382 - accuracy: 1.0000  
Epoch 1289/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0381 - accuracy: 1.0000  
Epoch 1290/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0381 - accuracy: 1.0000  
Epoch 1291/2450  
209/209 [=====] - 0s 189us/step - loss: 0.0381 - accuracy: 1.0000  
Epoch 1292/2450  
209/209 [=====] - 0s 134us/step - loss: 0.0379 - accuracy: 1.0000  
Epoch 1293/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0379 - accuracy: 1.0000  
Epoch 1294/2450  
209/209 [=====] - 0s 140us/step - loss: 0.0378 - accuracy: 1.0000  
Epoch 1295/2450  
209/209 [=====] - 0s 96us/step - loss: 0.0378 - accuracy: 1.0000  
Epoch 1296/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0376 - accuracy: 1.0000  
Epoch 1297/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0376 - accuracy: 1.0000  
Epoch 1298/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0376 - accuracy: 1.0000  
Epoch 1299/2450  
209/209 [=====] - 0s 99us/step - loss: 0.0376 - accuracy: 1.0000  
Epoch 1300/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0375 - accuracy: 1.0000  
Epoch 1301/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0374 - accuracy: 1.0000  
Epoch 1302/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0373 - accuracy: 1.0000  
Epoch 1303/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0373 - accuracy: 1.0000  
Epoch 1304/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0373 - accuracy: 1.0000  
Epoch 1305/2450  
209/209 [=====] - 0s 168us/step - loss: 0.0372 - accuracy: 1.0000

Epoch 1306/2450  
209/209 [=====] - 0s 176us/step - loss: 0.0371 - accuracy: 1.0000  
Epoch 1307/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0371 - accuracy: 1.0000  
Epoch 1308/2450  
209/209 [=====] - 0s 178us/step - loss: 0.0370 - accuracy: 1.0000  
Epoch 1309/2450  
209/209 [=====] - 0s 92us/step - loss: 0.0370 - accuracy: 1.0000  
Epoch 1310/2450  
209/209 [=====] - 0s 119us/step - loss: 0.0369 - accuracy: 1.0000  
Epoch 1311/2450  
209/209 [=====] - 0s 253us/step - loss: 0.0369 - accuracy: 1.0000  
Epoch 1312/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0369 - accuracy: 1.0000  
Epoch 1313/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0369 - accuracy: 1.0000  
Epoch 1314/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0370 - accuracy: 1.0000  
Epoch 1315/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0369 - accuracy: 1.0000  
Epoch 1316/2450  
209/209 [=====] - 0s 130us/step - loss: 0.0368 - accuracy: 1.0000  
Epoch 1317/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0367 - accuracy: 1.0000  
Epoch 1318/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0366 - accuracy: 1.0000  
Epoch 1319/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0366 - accuracy: 1.0000  
Epoch 1320/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0365 - accuracy: 1.0000  
Epoch 1321/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0366 - accuracy: 1.0000  
Epoch 1322/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0365 - accuracy: 1.0000  
Epoch 1323/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0364 - accuracy: 1.0000  
Epoch 1324/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0366 - accuracy: 1.0000  
Epoch 1325/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0365 - accuracy: 1.0000  
Epoch 1326/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0363 - accuracy: 1.0000  
Epoch 1327/2450  
209/209 [=====] - 0s 87us/step - loss: 0.0362 - accuracy: 1.0000  
Epoch 1328/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0360 - accuracy: 1.0000  
Epoch 1329/2450  
209/209 [=====] - 0s 86us/step - loss: 0.0359 - accuracy: 1.0000  
Epoch 1330/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0358 - accuracy: 1.0000  
Epoch 1331/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0357 - accuracy: 1.0000  
Epoch 1332/2450  
209/209 [=====] - 0s 94us/step - loss: 0.0356 - accuracy: 1.0000  
Epoch 1333/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0356 - accuracy: 1.0000  
Epoch 1334/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0355 - accuracy: 1.0000  
Epoch 1335/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0355 - accuracy: 1.0000  
Epoch 1336/2450  
209/209 [=====] - 0s 153us/step - loss: 0.0354 - accuracy: 1.0000  
Epoch 1337/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0353 - accuracy: 1.0000  
Epoch 1338/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0352 - accuracy: 1.0000  
Epoch 1339/2450  
209/209 [=====] - 0s 164us/step - loss: 0.0352 - accuracy: 1.0000  
Epoch 1340/2450  
209/209 [=====] - 0s 161us/step - loss: 0.0352 - accuracy: 1.0000  
Epoch 1341/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0352 - accuracy: 1.0000  
Epoch 1342/2450  
209/209 [=====] - 0s 317us/step - loss: 0.0351 - accuracy: 1.0000  
Epoch 1343/2450  
209/209 [=====] - 0s 418us/step - loss: 0.0351 - accuracy: 1.0000  
Epoch 1344/2450  
209/209 [=====] - 0s 264us/step - loss: 0.0350 - accuracy: 1.0000  
Epoch 1345/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0349 - accuracy: 1.0000  
Epoch 1346/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0348 - accuracy: 1.0000  
Epoch 1347/2450

209/209 [=====] - 0s 201us/step - loss: 0.0348 - accuracy: 1.0000  
Epoch 1348/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0347 - accuracy: 1.0000  
Epoch 1349/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0347 - accuracy: 1.0000  
Epoch 1350/2450  
209/209 [=====] - 0s 141us/step - loss: 0.0346 - accuracy: 1.0000  
Epoch 1351/2450  
209/209 [=====] - 0s 94us/step - loss: 0.0346 - accuracy: 1.0000  
Epoch 1352/2450  
209/209 [=====] - 0s 171us/step - loss: 0.0345 - accuracy: 1.0000  
Epoch 1353/2450  
209/209 [=====] - 0s 122us/step - loss: 0.0345 - accuracy: 1.0000  
Epoch 1354/2450  
209/209 [=====] - 0s 89us/step - loss: 0.0344 - accuracy: 1.0000  
Epoch 1355/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0344 - accuracy: 1.0000  
Epoch 1356/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0345 - accuracy: 1.0000  
Epoch 1357/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0344 - accuracy: 1.0000  
Epoch 1358/2450  
209/209 [=====] - 0s 159us/step - loss: 0.0343 - accuracy: 1.0000  
Epoch 1359/2450  
209/209 [=====] - 0s 153us/step - loss: 0.0343 - accuracy: 1.0000  
Epoch 1360/2450  
209/209 [=====] - 0s 151us/step - loss: 0.0342 - accuracy: 1.0000  
Epoch 1361/2450  
209/209 [=====] - 0s 180us/step - loss: 0.0342 - accuracy: 1.0000  
Epoch 1362/2450  
209/209 [=====] - 0s 165us/step - loss: 0.0342 - accuracy: 1.0000  
Epoch 1363/2450  
209/209 [=====] - 0s 169us/step - loss: 0.0341 - accuracy: 1.0000  
Epoch 1364/2450  
209/209 [=====] - 0s 137us/step - loss: 0.0340 - accuracy: 1.0000  
Epoch 1365/2450  
209/209 [=====] - 0s 148us/step - loss: 0.0340 - accuracy: 1.0000  
Epoch 1366/2450  
209/209 [=====] - 0s 145us/step - loss: 0.0341 - accuracy: 1.0000  
Epoch 1367/2450  
209/209 [=====] - 0s 136us/step - loss: 0.0340 - accuracy: 1.0000  
Epoch 1368/2450  
209/209 [=====] - 0s 333us/step - loss: 0.0339 - accuracy: 1.0000  
Epoch 1369/2450  
209/209 [=====] - 0s 262us/step - loss: 0.0338 - accuracy: 1.0000  
Epoch 1370/2450  
209/209 [=====] - 0s 356us/step - loss: 0.0336 - accuracy: 1.0000  
Epoch 1371/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0336 - accuracy: 1.0000  
Epoch 1372/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0335 - accuracy: 1.0000  
Epoch 1373/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0334 - accuracy: 1.0000  
Epoch 1374/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0334 - accuracy: 1.0000  
Epoch 1375/2450  
209/209 [=====] - 0s 156us/step - loss: 0.0333 - accuracy: 1.0000  
Epoch 1376/2450  
209/209 [=====] - 0s 146us/step - loss: 0.0333 - accuracy: 1.0000  
Epoch 1377/2450  
209/209 [=====] - 0s 89us/step - loss: 0.0333 - accuracy: 1.0000  
Epoch 1378/2450  
209/209 [=====] - 0s 85us/step - loss: 0.0332 - accuracy: 1.0000  
Epoch 1379/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0332 - accuracy: 1.0000  
Epoch 1380/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0331 - accuracy: 1.0000  
Epoch 1381/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0330 - accuracy: 1.0000  
Epoch 1382/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0330 - accuracy: 1.0000  
Epoch 1383/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0330 - accuracy: 1.0000  
Epoch 1384/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0330 - accuracy: 1.0000  
Epoch 1385/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0330 - accuracy: 1.0000  
Epoch 1386/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0329 - accuracy: 1.0000  
Epoch 1387/2450  
209/209 [=====] - 0s 131us/step - loss: 0.0329 - accuracy: 1.0000  
Epoch 1388/2450  
209/209 [=====] - 0s 136us/step - loss: 0.0328 - accuracy: 1.0000

Epoch 1389/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0328 - accuracy: 1.0000  
Epoch 1390/2450  
209/209 [=====] - 0s 229us/step - loss: 0.0327 - accuracy: 1.0000  
Epoch 1391/2450  
209/209 [=====] - 0s 163us/step - loss: 0.0327 - accuracy: 1.0000  
Epoch 1392/2450  
209/209 [=====] - 0s 160us/step - loss: 0.0327 - accuracy: 1.0000  
Epoch 1393/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0325 - accuracy: 1.0000  
Epoch 1394/2450  
209/209 [=====] - 0s 148us/step - loss: 0.0324 - accuracy: 1.0000  
Epoch 1395/2450  
209/209 [=====] - 0s 162us/step - loss: 0.0324 - accuracy: 1.0000  
Epoch 1396/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0323 - accuracy: 1.0000  
Epoch 1397/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0323 - accuracy: 1.0000  
Epoch 1398/2450  
209/209 [=====] - 0s 186us/step - loss: 0.0323 - accuracy: 1.0000  
Epoch 1399/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0322 - accuracy: 1.0000  
Epoch 1400/2450  
209/209 [=====] - 0s 190us/step - loss: 0.0321 - accuracy: 1.0000  
Epoch 1401/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0321 - accuracy: 1.0000  
Epoch 1402/2450  
209/209 [=====] - 0s 166us/step - loss: 0.0320 - accuracy: 1.0000  
Epoch 1403/2450  
209/209 [=====] - 0s 150us/step - loss: 0.0320 - accuracy: 1.0000  
Epoch 1404/2450  
209/209 [=====] - 0s 153us/step - loss: 0.0319 - accuracy: 1.0000  
Epoch 1405/2450  
209/209 [=====] - 0s 264us/step - loss: 0.0319 - accuracy: 1.0000  
Epoch 1406/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0319 - accuracy: 1.0000  
Epoch 1407/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0318 - accuracy: 1.0000  
Epoch 1408/2450  
209/209 [=====] - 0s 130us/step - loss: 0.0318 - accuracy: 1.0000  
Epoch 1409/2450  
209/209 [=====] - 0s 147us/step - loss: 0.0318 - accuracy: 1.0000  
Epoch 1410/2450  
209/209 [=====] - 0s 145us/step - loss: 0.0317 - accuracy: 1.0000  
Epoch 1411/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0317 - accuracy: 1.0000  
Epoch 1412/2450  
209/209 [=====] - 0s 153us/step - loss: 0.0318 - accuracy: 1.0000  
Epoch 1413/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0317 - accuracy: 1.0000  
Epoch 1414/2450  
209/209 [=====] - 0s 123us/step - loss: 0.0316 - accuracy: 1.0000  
Epoch 1415/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0316 - accuracy: 1.0000  
Epoch 1416/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0315 - accuracy: 1.0000  
Epoch 1417/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0315 - accuracy: 1.0000  
Epoch 1418/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0313 - accuracy: 1.0000  
Epoch 1419/2450  
209/209 [=====] - 0s 123us/step - loss: 0.0313 - accuracy: 1.0000  
Epoch 1420/2450  
209/209 [=====] - 0s 133us/step - loss: 0.0312 - accuracy: 1.0000  
Epoch 1421/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0312 - accuracy: 1.0000  
Epoch 1422/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0312 - accuracy: 1.0000  
Epoch 1423/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0311 - accuracy: 1.0000  
Epoch 1424/2450  
209/209 [=====] - 0s 153us/step - loss: 0.0310 - accuracy: 1.0000  
Epoch 1425/2450  
209/209 [=====] - 0s 186us/step - loss: 0.0310 - accuracy: 1.0000  
Epoch 1426/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0309 - accuracy: 1.0000  
Epoch 1427/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0309 - accuracy: 1.0000  
Epoch 1428/2450  
209/209 [=====] - 0s 181us/step - loss: 0.0309 - accuracy: 1.0000  
Epoch 1429/2450  
209/209 [=====] - 0s 88us/step - loss: 0.0309 - accuracy: 1.0000  
Epoch 1430/2450

209/209 [=====] - 0s 102us/step - loss: 0.0308 - accuracy: 1.0000  
Epoch 1431/2450  
209/209 [=====] - 0s 248us/step - loss: 0.0308 - accuracy: 1.0000  
Epoch 1432/2450  
209/209 [=====] - 0s 149us/step - loss: 0.0308 - accuracy: 1.0000  
Epoch 1433/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0308 - accuracy: 1.0000  
Epoch 1434/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0308 - accuracy: 1.0000  
Epoch 1435/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0307 - accuracy: 1.0000  
Epoch 1436/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0306 - accuracy: 1.0000  
Epoch 1437/2450  
209/209 [=====] - 0s 93us/step - loss: 0.0306 - accuracy: 1.0000  
Epoch 1438/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0305 - accuracy: 1.0000  
Epoch 1439/2450  
209/209 [=====] - 0s 96us/step - loss: 0.0305 - accuracy: 1.0000  
Epoch 1440/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0305 - accuracy: 1.0000  
Epoch 1441/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0305 - accuracy: 1.0000  
Epoch 1442/2450  
209/209 [=====] - 0s 97us/step - loss: 0.0304 - accuracy: 1.0000  
Epoch 1443/2450  
209/209 [=====] - 0s 135us/step - loss: 0.0303 - accuracy: 1.0000  
Epoch 1444/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0302 - accuracy: 1.0000  
Epoch 1445/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0301 - accuracy: 1.0000  
Epoch 1446/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0301 - accuracy: 1.0000  
Epoch 1447/2450  
209/209 [=====] - 0s 122us/step - loss: 0.0301 - accuracy: 1.0000  
Epoch 1448/2450  
209/209 [=====] - 0s 143us/step - loss: 0.0300 - accuracy: 1.0000  
Epoch 1449/2450  
209/209 [=====] - 0s 150us/step - loss: 0.0300 - accuracy: 1.0000  
Epoch 1450/2450  
209/209 [=====] - 0s 156us/step - loss: 0.0299 - accuracy: 1.0000  
Epoch 1451/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0299 - accuracy: 1.0000  
Epoch 1452/2450  
209/209 [=====] - 0s 125us/step - loss: 0.0298 - accuracy: 1.0000  
Epoch 1453/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0298 - accuracy: 1.0000  
Epoch 1454/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0297 - accuracy: 1.0000  
Epoch 1455/2450  
209/209 [=====] - 0s 180us/step - loss: 0.0297 - accuracy: 1.0000  
Epoch 1456/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0297 - accuracy: 1.0000  
Epoch 1457/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0297 - accuracy: 1.0000  
Epoch 1458/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0297 - accuracy: 1.0000  
Epoch 1459/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0296 - accuracy: 1.0000  
Epoch 1460/2450  
209/209 [=====] - 0s 148us/step - loss: 0.0296 - accuracy: 1.0000  
Epoch 1461/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0295 - accuracy: 1.0000  
Epoch 1462/2450  
209/209 [=====] - 0s 141us/step - loss: 0.0295 - accuracy: 1.0000  
Epoch 1463/2450  
209/209 [=====] - 0s 216us/step - loss: 0.0295 - accuracy: 1.0000  
Epoch 1464/2450  
209/209 [=====] - 0s 195us/step - loss: 0.0295 - accuracy: 1.0000  
Epoch 1465/2450  
209/209 [=====] - 0s 142us/step - loss: 0.0294 - accuracy: 1.0000  
Epoch 1466/2450  
209/209 [=====] - 0s 148us/step - loss: 0.0293 - accuracy: 1.0000  
Epoch 1467/2450  
209/209 [=====] - 0s 96us/step - loss: 0.0293 - accuracy: 1.0000  
Epoch 1468/2450  
209/209 [=====] - 0s 95us/step - loss: 0.0292 - accuracy: 1.0000  
Epoch 1469/2450  
209/209 [=====] - 0s 101us/step - loss: 0.0292 - accuracy: 1.0000  
Epoch 1470/2450  
209/209 [=====] - 0s 90us/step - loss: 0.0291 - accuracy: 1.0000  
Epoch 1471/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0291 - accuracy: 1.0000

Epoch 1472/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0290 - accuracy: 1.0000  
Epoch 1473/2450  
209/209 [=====] - 0s 101us/step - loss: 0.0290 - accuracy: 1.0000  
Epoch 1474/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0289 - accuracy: 1.0000  
Epoch 1475/2450  
209/209 [=====] - 0s 93us/step - loss: 0.0289 - accuracy: 1.0000  
Epoch 1476/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0289 - accuracy: 1.0000  
Epoch 1477/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0289 - accuracy: 1.0000  
Epoch 1478/2450  
209/209 [=====] - 0s 117us/step - loss: 0.0288 - accuracy: 1.0000  
Epoch 1479/2450  
209/209 [=====] - 0s 99us/step - loss: 0.0288 - accuracy: 1.0000  
Epoch 1480/2450  
209/209 [=====] - 0s 106us/step - loss: 0.0288 - accuracy: 1.0000  
Epoch 1481/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0288 - accuracy: 1.0000  
Epoch 1482/2450  
209/209 [=====] - 0s 90us/step - loss: 0.0288 - accuracy: 1.0000  
Epoch 1483/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0287 - accuracy: 1.0000  
Epoch 1484/2450  
209/209 [=====] - 0s 116us/step - loss: 0.0287 - accuracy: 1.0000  
Epoch 1485/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0286 - accuracy: 1.0000  
Epoch 1486/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0286 - accuracy: 1.0000  
Epoch 1487/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0285 - accuracy: 1.0000  
Epoch 1488/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0285 - accuracy: 1.0000  
Epoch 1489/2450  
209/209 [=====] - 0s 115us/step - loss: 0.0284 - accuracy: 1.0000  
Epoch 1490/2450  
209/209 [=====] - 0s 158us/step - loss: 0.0284 - accuracy: 1.0000  
Epoch 1491/2450  
209/209 [=====] - 0s 158us/step - loss: 0.0283 - accuracy: 1.0000  
Epoch 1492/2450  
209/209 [=====] - 0s 133us/step - loss: 0.0283 - accuracy: 1.0000  
Epoch 1493/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0282 - accuracy: 1.0000  
Epoch 1494/2450  
209/209 [=====] - 0s 185us/step - loss: 0.0281 - accuracy: 1.0000  
Epoch 1495/2450  
209/209 [=====] - 0s 136us/step - loss: 0.0281 - accuracy: 1.0000  
Epoch 1496/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0281 - accuracy: 1.0000  
Epoch 1497/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0280 - accuracy: 1.0000  
Epoch 1498/2450  
209/209 [=====] - 0s 253us/step - loss: 0.0280 - accuracy: 1.0000  
Epoch 1499/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0279 - accuracy: 1.0000  
Epoch 1500/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0279 - accuracy: 1.0000  
Epoch 1501/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0279 - accuracy: 1.0000  
Epoch 1502/2450  
209/209 [=====] - 0s 99us/step - loss: 0.0278 - accuracy: 1.0000  
Epoch 1503/2450  
209/209 [=====] - 0s 96us/step - loss: 0.0278 - accuracy: 1.0000  
Epoch 1504/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0278 - accuracy: 1.0000  
Epoch 1505/2450  
209/209 [=====] - 0s 99us/step - loss: 0.0278 - accuracy: 1.0000  
Epoch 1506/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0278 - accuracy: 1.0000  
Epoch 1507/2450  
209/209 [=====] - 0s 119us/step - loss: 0.0277 - accuracy: 1.0000  
Epoch 1508/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0277 - accuracy: 1.0000  
Epoch 1509/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0277 - accuracy: 1.0000  
Epoch 1510/2450  
209/209 [=====] - 0s 140us/step - loss: 0.0276 - accuracy: 1.0000  
Epoch 1511/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0276 - accuracy: 1.0000  
Epoch 1512/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0276 - accuracy: 1.0000  
Epoch 1513/2450

209/209 [=====]	- 0s	201us/step	- loss: 0.0275	- accuracy: 1.0000
Epoch 1514/2450				
209/209 [=====]	- 0s	104us/step	- loss: 0.0275	- accuracy: 1.0000
Epoch 1515/2450				
209/209 [=====]	- 0s	144us/step	- loss: 0.0275	- accuracy: 1.0000
Epoch 1516/2450				
209/209 [=====]	- 0s	215us/step	- loss: 0.0274	- accuracy: 1.0000
Epoch 1517/2450				
209/209 [=====]	- 0s	120us/step	- loss: 0.0274	- accuracy: 1.0000
Epoch 1518/2450				
209/209 [=====]	- 0s	105us/step	- loss: 0.0273	- accuracy: 1.0000
Epoch 1519/2450				
209/209 [=====]	- 0s	113us/step	- loss: 0.0273	- accuracy: 1.0000
Epoch 1520/2450				
209/209 [=====]	- 0s	109us/step	- loss: 0.0273	- accuracy: 1.0000
Epoch 1521/2450				
209/209 [=====]	- 0s	169us/step	- loss: 0.0272	- accuracy: 1.0000
Epoch 1522/2450				
209/209 [=====]	- 0s	186us/step	- loss: 0.0271	- accuracy: 1.0000
Epoch 1523/2450				
209/209 [=====]	- 0s	152us/step	- loss: 0.0271	- accuracy: 1.0000
Epoch 1524/2450				
209/209 [=====]	- 0s	191us/step	- loss: 0.0271	- accuracy: 1.0000
Epoch 1525/2450				
209/209 [=====]	- 0s	100us/step	- loss: 0.0271	- accuracy: 1.0000
Epoch 1526/2450				
209/209 [=====]	- 0s	104us/step	- loss: 0.0270	- accuracy: 1.0000
Epoch 1527/2450				
209/209 [=====]	- 0s	112us/step	- loss: 0.0270	- accuracy: 1.0000
Epoch 1528/2450				
209/209 [=====]	- 0s	112us/step	- loss: 0.0270	- accuracy: 1.0000
Epoch 1529/2450				
209/209 [=====]	- 0s	200us/step	- loss: 0.0269	- accuracy: 1.0000
Epoch 1530/2450				
209/209 [=====]	- 0s	105us/step	- loss: 0.0269	- accuracy: 1.0000
Epoch 1531/2450				
209/209 [=====]	- 0s	108us/step	- loss: 0.0269	- accuracy: 1.0000
Epoch 1532/2450				
209/209 [=====]	- 0s	107us/step	- loss: 0.0268	- accuracy: 1.0000
Epoch 1533/2450				
209/209 [=====]	- 0s	96us/step	- loss: 0.0268	- accuracy: 1.0000
Epoch 1534/2450				
209/209 [=====]	- 0s	104us/step	- loss: 0.0268	- accuracy: 1.0000
Epoch 1535/2450				
209/209 [=====]	- 0s	95us/step	- loss: 0.0268	- accuracy: 1.0000
Epoch 1536/2450				
209/209 [=====]	- 0s	109us/step	- loss: 0.0267	- accuracy: 1.0000
Epoch 1537/2450				
209/209 [=====]	- 0s	109us/step	- loss: 0.0267	- accuracy: 1.0000
Epoch 1538/2450				
209/209 [=====]	- 0s	96us/step	- loss: 0.0267	- accuracy: 1.0000
Epoch 1539/2450				
209/209 [=====]	- 0s	91us/step	- loss: 0.0266	- accuracy: 1.0000
Epoch 1540/2450				
209/209 [=====]	- 0s	97us/step	- loss: 0.0266	- accuracy: 1.0000
Epoch 1541/2450				
209/209 [=====]	- 0s	92us/step	- loss: 0.0266	- accuracy: 1.0000
Epoch 1542/2450				
209/209 [=====]	- 0s	100us/step	- loss: 0.0266	- accuracy: 1.0000
Epoch 1543/2450				
209/209 [=====]	- 0s	127us/step	- loss: 0.0265	- accuracy: 1.0000
Epoch 1544/2450				
209/209 [=====]	- 0s	133us/step	- loss: 0.0264	- accuracy: 1.0000
Epoch 1545/2450				
209/209 [=====]	- 0s	113us/step	- loss: 0.0264	- accuracy: 1.0000
Epoch 1546/2450				
209/209 [=====]	- 0s	86us/step	- loss: 0.0263	- accuracy: 1.0000
Epoch 1547/2450				
209/209 [=====]	- 0s	107us/step	- loss: 0.0263	- accuracy: 1.0000
Epoch 1548/2450				
209/209 [=====]	- 0s	99us/step	- loss: 0.0262	- accuracy: 1.0000
Epoch 1549/2450				
209/209 [=====]	- 0s	114us/step	- loss: 0.0262	- accuracy: 1.0000
Epoch 1550/2450				
209/209 [=====]	- 0s	111us/step	- loss: 0.0262	- accuracy: 1.0000
Epoch 1551/2450				
209/209 [=====]	- 0s	118us/step	- loss: 0.0261	- accuracy: 1.0000
Epoch 1552/2450				
209/209 [=====]	- 0s	107us/step	- loss: 0.0261	- accuracy: 1.0000
Epoch 1553/2450				
209/209 [=====]	- 0s	103us/step	- loss: 0.0261	- accuracy: 1.0000

Epoch 1555/2450  
209/209 [=====] - 0s 100us/step - loss: 0.0260 - accuracy: 1.0000  
Epoch 1556/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0260 - accuracy: 1.0000  
Epoch 1557/2450  
209/209 [=====] - 0s 101us/step - loss: 0.0260 - accuracy: 1.0000  
Epoch 1558/2450  
209/209 [=====] - 0s 119us/step - loss: 0.0259 - accuracy: 1.0000  
Epoch 1559/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0259 - accuracy: 1.0000  
Epoch 1560/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0259 - accuracy: 1.0000  
Epoch 1561/2450  
209/209 [=====] - 0s 94us/step - loss: 0.0259 - accuracy: 1.0000  
Epoch 1562/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0258 - accuracy: 1.0000  
Epoch 1563/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0258 - accuracy: 1.0000  
Epoch 1564/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0258 - accuracy: 1.0000  
Epoch 1565/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0257 - accuracy: 1.0000  
Epoch 1566/2450  
209/209 [=====] - 0s 327us/step - loss: 0.0257 - accuracy: 1.0000  
Epoch 1567/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0257 - accuracy: 1.0000  
Epoch 1568/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0256 - accuracy: 1.0000  
Epoch 1569/2450  
209/209 [=====] - 0s 136us/step - loss: 0.0256 - accuracy: 1.0000  
Epoch 1570/2450  
209/209 [=====] - 0s 135us/step - loss: 0.0255 - accuracy: 1.0000  
Epoch 1571/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0255 - accuracy: 1.0000  
Epoch 1572/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0255 - accuracy: 1.0000  
Epoch 1573/2450  
209/209 [=====] - 0s 103us/step - loss: 0.0255 - accuracy: 1.0000  
Epoch 1574/2450  
209/209 [=====] - 0s 113us/step - loss: 0.0254 - accuracy: 1.0000  
Epoch 1575/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0254 - accuracy: 1.0000  
Epoch 1576/2450  
209/209 [=====] - 0s 129us/step - loss: 0.0253 - accuracy: 1.0000  
Epoch 1577/2450  
209/209 [=====] - 0s 249us/step - loss: 0.0253 - accuracy: 1.0000  
Epoch 1578/2450  
209/209 [=====] - 0s 162us/step - loss: 0.0253 - accuracy: 1.0000  
Epoch 1579/2450  
209/209 [=====] - 0s 127us/step - loss: 0.0253 - accuracy: 1.0000  
Epoch 1580/2450  
209/209 [=====] - 0s 163us/step - loss: 0.0252 - accuracy: 1.0000  
Epoch 1581/2450  
209/209 [=====] - 0s 120us/step - loss: 0.0252 - accuracy: 1.0000  
Epoch 1582/2450  
209/209 [=====] - 0s 142us/step - loss: 0.0253 - accuracy: 1.0000  
Epoch 1583/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0252 - accuracy: 1.0000  
Epoch 1584/2450  
209/209 [=====] - 0s 90us/step - loss: 0.0251 - accuracy: 1.0000  
Epoch 1585/2450  
209/209 [=====] - 0s 99us/step - loss: 0.0251 - accuracy: 1.0000  
Epoch 1586/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0251 - accuracy: 1.0000  
Epoch 1587/2450  
209/209 [=====] - 0s 95us/step - loss: 0.0250 - accuracy: 1.0000  
Epoch 1588/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0250 - accuracy: 1.0000  
Epoch 1589/2450  
209/209 [=====] - 0s 112us/step - loss: 0.0250 - accuracy: 1.0000  
Epoch 1590/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0250 - accuracy: 1.0000  
Epoch 1591/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0249 - accuracy: 1.0000  
Epoch 1592/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0248 - accuracy: 1.0000  
Epoch 1593/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0248 - accuracy: 1.0000  
Epoch 1594/2450  
209/209 [=====] - 0s 111us/step - loss: 0.0248 - accuracy: 1.0000  
Epoch 1595/2450  
209/209 [=====] - 0s 108us/step - loss: 0.0247 - accuracy: 1.0000  
Epoch 1596/2450



209/209	[=====]	- 0s	123us/step	- loss: 0.0247	- accuracy: 1.0000
Epoch 1597/2450					
209/209	[=====]	- 0s	114us/step	- loss: 0.0247	- accuracy: 1.0000
Epoch 1598/2450					
209/209	[=====]	- 0s	258us/step	- loss: 0.0246	- accuracy: 1.0000
Epoch 1599/2450					
209/209	[=====]	- 0s	136us/step	- loss: 0.0246	- accuracy: 1.0000
Epoch 1600/2450					
209/209	[=====]	- 0s	106us/step	- loss: 0.0246	- accuracy: 1.0000
Epoch 1601/2450					
209/209	[=====]	- 0s	128us/step	- loss: 0.0246	- accuracy: 1.0000
Epoch 1602/2450					
209/209	[=====]	- 0s	168us/step	- loss: 0.0246	- accuracy: 1.0000
Epoch 1603/2450					
209/209	[=====]	- 0s	131us/step	- loss: 0.0245	- accuracy: 1.0000
Epoch 1604/2450					
209/209	[=====]	- 0s	112us/step	- loss: 0.0245	- accuracy: 1.0000
Epoch 1605/2450					
209/209	[=====]	- 0s	149us/step	- loss: 0.0245	- accuracy: 1.0000
Epoch 1606/2450					
209/209	[=====]	- 0s	137us/step	- loss: 0.0245	- accuracy: 1.0000
Epoch 1607/2450					
209/209	[=====]	- 0s	122us/step	- loss: 0.0244	- accuracy: 1.0000
Epoch 1608/2450					
209/209	[=====]	- 0s	107us/step	- loss: 0.0244	- accuracy: 1.0000
Epoch 1609/2450					
209/209	[=====]	- 0s	100us/step	- loss: 0.0244	- accuracy: 1.0000
Epoch 1610/2450					
209/209	[=====]	- 0s	92us/step	- loss: 0.0244	- accuracy: 1.0000
Epoch 1611/2450					
209/209	[=====]	- 0s	117us/step	- loss: 0.0243	- accuracy: 1.0000
Epoch 1612/2450					
209/209	[=====]	- 0s	108us/step	- loss: 0.0243	- accuracy: 1.0000
Epoch 1613/2450					
209/209	[=====]	- 0s	121us/step	- loss: 0.0242	- accuracy: 1.0000
Epoch 1614/2450					
209/209	[=====]	- 0s	123us/step	- loss: 0.0242	- accuracy: 1.0000
Epoch 1615/2450					
209/209	[=====]	- 0s	99us/step	- loss: 0.0242	- accuracy: 1.0000
Epoch 1616/2450					
209/209	[=====]	- 0s	119us/step	- loss: 0.0241	- accuracy: 1.0000
Epoch 1617/2450					
209/209	[=====]	- 0s	142us/step	- loss: 0.0241	- accuracy: 1.0000
Epoch 1618/2450					
209/209	[=====]	- 0s	116us/step	- loss: 0.0241	- accuracy: 1.0000
Epoch 1619/2450					
209/209	[=====]	- 0s	113us/step	- loss: 0.0240	- accuracy: 1.0000
Epoch 1620/2450					
209/209	[=====]	- 0s	125us/step	- loss: 0.0240	- accuracy: 1.0000
Epoch 1621/2450					
209/209	[=====]	- 0s	136us/step	- loss: 0.0240	- accuracy: 1.0000
Epoch 1622/2450					
209/209	[=====]	- 0s	145us/step	- loss: 0.0239	- accuracy: 1.0000
Epoch 1623/2450					
209/209	[=====]	- 0s	115us/step	- loss: 0.0239	- accuracy: 1.0000
Epoch 1624/2450					
209/209	[=====]	- 0s	104us/step	- loss: 0.0239	- accuracy: 1.0000
Epoch 1625/2450					
209/209	[=====]	- 0s	141us/step	- loss: 0.0238	- accuracy: 1.0000
Epoch 1626/2450					
209/209	[=====]	- 0s	128us/step	- loss: 0.0238	- accuracy: 1.0000
Epoch 1627/2450					
209/209	[=====]	- 0s	135us/step	- loss: 0.0238	- accuracy: 1.0000
Epoch 1628/2450					
209/209	[=====]	- 0s	138us/step	- loss: 0.0238	- accuracy: 1.0000
Epoch 1629/2450					
209/209	[=====]	- 0s	119us/step	- loss: 0.0238	- accuracy: 1.0000
Epoch 1630/2450					
209/209	[=====]	- 0s	118us/step	- loss: 0.0238	- accuracy: 1.0000
Epoch 1631/2450					
209/209	[=====]	- 0s	138us/step	- loss: 0.0237	- accuracy: 1.0000
Epoch 1632/2450					
209/209	[=====]	- 0s	113us/step	- loss: 0.0237	- accuracy: 1.0000
Epoch 1633/2450					
209/209	[=====]	- 0s	140us/step	- loss: 0.0237	- accuracy: 1.000

[illegible]

209/209 [=====]	- 0s	100us/step	- loss: 0.0224	- accuracy: 1.0000
Epoch 1680/2450				
209/209 [=====]	- 0s	112us/step	- loss: 0.0224	- accuracy: 1.0000
Epoch 1681/2450				
209/209 [=====]	- 0s	101us/step	- loss: 0.0224	- accuracy: 1.0000
Epoch 1682/2450				
209/209 [=====]	- 0s	96us/step	- loss: 0.0223	- accuracy: 1.0000
Epoch 1683/2450				
209/209 [=====]	- 0s	91us/step	- loss: 0.0223	- accuracy: 1.0000
Epoch 1684/2450				
209/209 [=====]	- 0s	125us/step	- loss: 0.0223	- accuracy: 1.0000
Epoch 1685/2450				
209/209 [=====]	- 0s	111us/step	- loss: 0.0223	- accuracy: 1.0000
Epoch 1686/2450				
209/209 [=====]	- 0s	120us/step	- loss: 0.0223	- accuracy: 1.0000
Epoch 1687/2450				
209/209 [=====]	- 0s	104us/step	- loss: 0.0222	- accuracy: 1.0000
Epoch 1688/2450				
209/209 [=====]	- 0s	100us/step	- loss: 0.0222	- accuracy: 1.0000
Epoch 1689/2450				
209/209 [=====]	- 0s	103us/step	- loss: 0.0221	- accuracy: 1.0000
Epoch 1690/2450				
209/209 [=====]	- 0s	101us/step	- loss: 0.0221	- accuracy: 1.0000
Epoch 1691/2450				
209/209 [=====]	- 0s	120us/step	- loss: 0.0221	- accuracy: 1.0000
Epoch 1692/2450				
209/209 [=====]	- 0s	100us/step	- loss: 0.0220	- accuracy: 1.0000
Epoch 1693/2450				
209/209 [=====]	- 0s	119us/step	- loss: 0.0220	- accuracy: 1.0000
Epoch 1694/2450				
209/209 [=====]	- 0s	132us/step	- loss: 0.0220	- accuracy: 1.0000
Epoch 1695/2450				
209/209 [=====]	- 0s	122us/step	- loss: 0.0220	- accuracy: 1.0000
Epoch 1696/2450				
209/209 [=====]	- 0s	102us/step	- loss: 0.0220	- accuracy: 1.0000
Epoch 1697/2450				
209/209 [=====]	- 0s	190us/step	- loss: 0.0220	- accuracy: 1.0000
Epoch 1698/2450				
209/209 [=====]	- 0s	128us/step	- loss: 0.0220	- accuracy: 1.0000
Epoch 1699/2450				
209/209 [=====]	- 0s	139us/step	- loss: 0.0219	- accuracy: 1.0000
Epoch 1700/2450				
209/209 [=====]	- 0s	130us/step	- loss: 0.0219	- accuracy: 1.0000
Epoch 1701/2450				
209/209 [=====]	- 0s	130us/step	- loss: 0.0219	- accuracy: 1.0000
Epoch 1702/2450				
209/209 [=====]	- 0s	202us/step	- loss: 0.0218	- accuracy: 1.0000
Epoch 1703/2450				
209/209 [=====]	- 0s	104us/step	- loss: 0.0218	- accuracy: 1.0000
Epoch 1704/2450				
209/209 [=====]	- 0s	102us/step	- loss: 0.0218	- accuracy: 1.0000
Epoch 1705/2450				
209/209 [=====]	- 0s	136us/step	- loss: 0.0218	- accuracy: 1.0000
Epoch 1706/2450				
209/209 [=====]	- 0s	108us/step	- loss: 0.0218	- accuracy: 1.0000
Epoch 1707/2450				
209/209 [=====]	- 0s	96us/step	- loss: 0.0217	- accuracy: 1.0000
Epoch 1708/2450				
209/209 [=====]	- 0s	104us/step	- loss: 0.0217	- accuracy: 1.0000
Epoch 1709/2450				
209/209 [=====]	- 0s	93us/step	- loss: 0.0216	- accuracy: 1.0000
Epoch 1710/2450				
209/209 [=====]	- 0s	116us/step	- loss: 0.0216	- accuracy: 1.0000
Epoch 1711/2450				
209/209 [=====]	- 0s	110us/step	- loss: 0.0216	- accuracy: 1.0000
Epoch 1712/2450				
209/209 [=====]	- 0s	92us/step	- loss: 0.0216	- accuracy: 1.0000
Epoch 1713/2450				
209/209 [=====]	- 0s	108us/step	- loss: 0.0215	- accuracy: 1.0000
Epoch 1714/2450				
209/209 [=====]	- 0s	115us/step	- loss: 0.0215	- accuracy: 1.0000
Epoch 1715/2450				
209/209 [=====]	- 0s	109us/step	- loss: 0.0215	- accuracy: 1.0000
Epoch 1716/2450				
209/209 [=====]	- 0s	97us/step	- loss: 0.0215	- accuracy: 1.0000
Epoch 1717/2450				
209/209 [=====]	- 0s	124us/step	- loss: 0.0214	- accuracy: 1.0000
Epoch 1718/2450				
209/209 [=====]	- 0s	84us/step	- loss: 0.0214	- accuracy: 1.0000
Epoch 1719/2450				
209/209 [=====]	- 0s	101us/step	- loss: 0.0214	- accuracy: 1.0000</

Epoch 1721/2450					
209/209 [=====]	- 0s	127us/step	- loss: 0.0213	- accuracy: 1.0000	
Epoch 1722/2450					
209/209 [=====]	- 0s	106us/step	- loss: 0.0213	- accuracy: 1.0000	
Epoch 1723/2450					
209/209 [=====]	- 0s	161us/step	- loss: 0.0213	- accuracy: 1.0000	
Epoch 1724/2450					
209/209 [=====]	- 0s	151us/step	- loss: 0.0213	- accuracy: 1.0000	
Epoch 1725/2450					
209/209 [=====]	- 0s	129us/step	- loss: 0.0212	- accuracy: 1.0000	
Epoch 1726/2450					
209/209 [=====]	- 0s	112us/step	- loss: 0.0212	- accuracy: 1.0000	
Epoch 1727/2450					
209/209 [=====]	- 0s	155us/step	- loss: 0.0212	- accuracy: 1.0000	
Epoch 1728/2450					
209/209 [=====]	- 0s	115us/step	- loss: 0.0212	- accuracy: 1.0000	
Epoch 1729/2450					
209/209 [=====]	- 0s	106us/step	- loss: 0.0212	- accuracy: 1.0000	
Epoch 1730/2450					
209/209 [=====]	- 0s	113us/step	- loss: 0.0212	- accuracy: 1.0000	
Epoch 1731/2450					
209/209 [=====]	- 0s	96us/step	- loss: 0.0211	- accuracy: 1.0000	
Epoch 1732/2450					
209/209 [=====]	- 0s	207us/step	- loss: 0.0211	- accuracy: 1.0000	
Epoch 1733/2450					
209/209 [=====]	- 0s	124us/step	- loss: 0.0211	- accuracy: 1.0000	
Epoch 1734/2450					
209/209 [=====]	- 0s	115us/step	- loss: 0.0211	- accuracy: 1.0000	
Epoch 1735/2450					
209/209 [=====]	- 0s	102us/step	- loss: 0.0211	- accuracy: 1.0000	
Epoch 1736/2450					
209/209 [=====]	- 0s	97us/step	- loss: 0.0210	- accuracy: 1.0000	
Epoch 1737/2450					
209/209 [=====]	- 0s	87us/step	- loss: 0.0210	- accuracy: 1.0000	
Epoch 1738/2450					
209/209 [=====]	- 0s	103us/step	- loss: 0.0210	- accuracy: 1.0000	
Epoch 1739/2450					
209/209 [=====]	- 0s	99us/step	- loss: 0.0210	- accuracy: 1.0000	
Epoch 1740/2450					
209/209 [=====]	- 0s	93us/step	- loss: 0.0209	- accuracy: 1.0000	
Epoch 1741/2450					
209/209 [=====]	- 0s	99us/step	- loss: 0.0209	- accuracy: 1.0000	
Epoch 1742/2450					
209/209 [=====]	- 0s	96us/step	- loss: 0.0209	- accuracy: 1.0000	
Epoch 1743/2450					
209/209 [=====]	- 0s	105us/step	- loss: 0.0209	- accuracy: 1.0000	
Epoch 1744/2450					
209/209 [=====]	- 0s	108us/step	- loss: 0.0208	- accuracy: 1.0000	
Epoch 1745/2450					
209/209 [=====]	- 0s	108us/step	- loss: 0.0208	- accuracy: 1.0000	
Epoch 1746/2450					
209/209 [=====]	- 0s	111us/step	- loss: 0.0208	- accuracy: 1.0000	
Epoch 1747/2450					
209/209 [=====]	- 0s	111us/step	- loss: 0.0208	- accuracy: 1.0000	
Epoch 1748/2450					
209/209 [=====]	- 0s	96us/step	- loss: 0.0207	- accuracy: 1.0000	
Epoch 1749/2450					
209/209 [=====]	- 0s	123us/step	- loss: 0.0207	- accuracy: 1.0000	
Epoch 1750/2450					
209/209 [=====]	- 0s	130us/step	- loss: 0.0207	- accuracy: 1.0000	
Epoch 1751/2450					
209/209 [=====]	- 0s	109us/step	- loss: 0.0206	- accuracy: 1.0000	
Epoch 1752/2450					
209/209 [=====]	- 0s	110us/step	- loss: 0.0206	- accuracy: 1.0000	
Epoch 1753/2450					
209/209 [=====]	- 0s	116us/step	- loss: 0.0206	- accuracy: 1.0000	
Epoch 1754/2450					
209/209 [=====]	- 0s	96us/step	- loss: 0.0206	- accuracy: 1.0000	
Epoch 1755/2450					
209/209 [=====]	- 0s	124us/step	- loss: 0.0206	- accuracy: 1.0000	
Epoch 1756/2450					
209/209 [=====]	- 0s	110us/step	- loss: 0.0206	- accuracy: 1.0000	
Epoch 1757/2450					
209/209 [=====]	- 0s	110us/step	- loss: 0.0205	- accuracy: 1.0000	
Epoch 1758/2450					
209/209 [=====]	- 0s	105us			

209/209 [=====] - 0s 99us/step - loss: 0.0204 - accuracy: 1.0000  
Epoch 1763/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0204 - accuracy: 1.0000  
Epoch 1764/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0204 - accuracy: 1.0000  
Epoch 1765/2450  
209/209 [=====] - 0s 97us/step - loss: 0.0203 - accuracy: 1.0000  
Epoch 1766/2450  
209/209 [=====] - 0s 118us/step - loss: 0.0203 - accuracy: 1.0000  
Epoch 1767/2450  
209/209 [=====] - 0s 136us/step - loss: 0.0203 - accuracy: 1.0000  
Epoch 1768/2450  
209/209 [=====] - 0s 157us/step - loss: 0.0203 - accuracy: 1.0000  
Epoch 1769/2450  
209/209 [=====] - 0s 538us/step - loss: 0.0203 - accuracy: 1.0000  
Epoch 1770/2450  
209/209 [=====] - 0s 206us/step - loss: 0.0202 - accuracy: 1.0000  
Epoch 1771/2450  
209/209 [=====] - 0s 140us/step - loss: 0.0202 - accuracy: 1.0000  
Epoch 1772/2450  
209/209 [=====] - 0s 110us/step - loss: 0.0202 - accuracy: 1.0000  
Epoch 1773/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0202 - accuracy: 1.0000  
Epoch 1774/2450  
209/209 [=====] - 0s 124us/step - loss: 0.0201 - accuracy: 1.0000  
Epoch 1775/2450  
209/209 [=====] - 0s 138us/step - loss: 0.0201 - accuracy: 1.0000  
Epoch 1776/2450  
209/209 [=====] - 0s 131us/step - loss: 0.0201 - accuracy: 1.0000  
Epoch 1777/2450  
209/209 [=====] - 0s 190us/step - loss: 0.0201 - accuracy: 1.0000  
Epoch 1778/2450  
209/209 [=====] - 0s 99us/step - loss: 0.0201 - accuracy: 1.0000  
Epoch 1779/2450  
209/209 [=====] - 0s 126us/step - loss: 0.0200 - accuracy: 1.0000  
Epoch 1780/2450  
209/209 [=====] - 0s 91us/step - loss: 0.0200 - accuracy: 1.0000  
Epoch 1781/2450  
209/209 [=====] - 0s 119us/step - loss: 0.0200 - accuracy: 1.0000  
Epoch 1782/2450  
209/209 [=====] - 0s 85us/step - loss: 0.0200 - accuracy: 1.0000  
Epoch 1783/2450  
209/209 [=====] - 0s 95us/step - loss: 0.0200 - accuracy: 1.0000  
Epoch 1784/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0199 - accuracy: 1.0000  
Epoch 1785/2450  
209/209 [=====] - 0s 94us/step - loss: 0.0199 - accuracy: 1.0000  
Epoch 1786/2450  
209/209 [=====] - 0s 105us/step - loss: 0.0199 - accuracy: 1.0000  
Epoch 1787/2450  
209/209 [=====] - 0s 86us/step - loss: 0.0199 - accuracy: 1.0000  
Epoch 1788/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0199 - accuracy: 1.0000  
Epoch 1789/2450  
209/209 [=====] - 0s 97us/step - loss: 0.0198 - accuracy: 1.0000  
Epoch 1790/2450  
209/209 [=====] - 0s 114us/step - loss: 0.0199 - accuracy: 1.0000  
Epoch 1791/2450  
209/209 [=====] - 0s 102us/step - loss: 0.0198 - accuracy: 1.0000  
Epoch 1792/2450  
209/209 [=====] - 0s 107us/step - loss: 0.0198 - accuracy: 1.0000  
Epoch 1793/2450  
209/209 [=====] - 0s 128us/step - loss: 0.0197 - accuracy: 1.0000  
Epoch 1794/2450  
209/209 [=====] - 0s 172us/step - loss: 0.0197 - accuracy: 1.0000  
Epoch 1795/2450  
209/209 [=====] - 0s 157us/step - loss: 0.0197 - accuracy: 1.0000  
Epoch 1796/2450  
209/209 [=====] - 0s 93us/step - loss: 0.0197 - accuracy: 1.0000  
Epoch 1797/2450  
209/209 [=====] - 0s 104us/step - loss: 0.0196 - accuracy: 1.0000  
Epoch 1798/2450  
209/209 [=====] - 0s 89us/step - loss: 0.0196 - accuracy: 1.0000  
Epoch 1799/2450  
209/209 [=====] - 0s 121us/step - loss: 0.0196 - accuracy: 1.0000  
Epoch 1800/2450  
209/209 [=====] - 0s 192us/step - loss: 0.0196 - accuracy: 1.0000  
Epoch 1801/2450  
209/209 [=====] - 0s 123us/step - loss: 0.0196 - accuracy: 1.0000  
Epoch 1802/2450  
209/209 [=====] - 0s 109us/step - loss: 0.0196 - accuracy: 1.0000  
Epoch 1803/2450  
209/209 [=====] - 0s 98us/step - loss: 0.0195 - accuracy: 1.0000

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209/209	[=====]	- 0s	120us/step	- loss: 0.0187	- accuracy: 1.0000
Epoch 1846/2450					
209/209	[=====]	- 0s	124us/step	- loss: 0.0187	- accuracy: 1.0000
Epoch 1847/2450					
209/209	[=====]	- 0s	125us/step	- loss: 0.0186	- accuracy: 1.0000
Epoch 1848/2450					
209/209	[=====]	- 0s	132us/step	- loss: 0.0186	- accuracy: 1.0000
Epoch 1849/2450					
209/209	[=====]	- 0s	113us/step	- loss: 0.0186	- accuracy: 1.0000
Epoch 1850/2450					
209/209	[=====]	- 0s	120us/step	- loss: 0.0186	- accuracy: 1.0000
Epoch 1851/2450					
209/209	[=====]	- 0s	121us/step	- loss: 0.0186	- accuracy: 1.0000
Epoch 1852/2450					
209/209	[=====]	- 0s	109us/step	- loss: 0.0186	- accuracy: 1.0000
Epoch 1853/2450					
209/209	[=====]	- 0s	114us/step	- loss: 0.0185	- accuracy: 1.0000
Epoch 1854/2450					
209/209	[=====]	- 0s	117us/step	- loss: 0.0185	- accuracy: 1.0000
Epoch 1855/2450					
209/209	[=====]	- 0s	105us/step	- loss: 0.0185	- accuracy: 1.0000
Epoch 1856/2450					
209/209	[=====]	- 0s	115us/step	- loss: 0.0185	- accuracy: 1.0000
Epoch 1857/2450					
209/209	[=====]	- 0s	116us/step	- loss: 0.0185	- accuracy: 1.0000
Epoch 1858/2450					
209/209	[=====]	- 0s	100us/step	- loss: 0.0185	- accuracy: 1.0000
Epoch 1859/2450					
209/209	[=====]	- 0s	110us/step	- loss: 0.0185	- accuracy: 1.0000
Epoch 1860/2450					
209/209	[=====]	- 0s	104us/step	- loss: 0.0184	- accuracy: 1.0000
Epoch 1861/2450					
209/209	[=====]	- 0s	115us/step	- loss: 0.0184	- accuracy: 1.0000
Epoch 1862/2450					
209/209	[=====]	- 0s	109us/step	- loss: 0.0184	- accuracy: 1.0000
Epoch 1863/2450					
209/209	[=====]	- 0s	112us/step	- loss: 0.0183	- accuracy: 1.0000
Epoch 1864/2450					
209/209	[=====]	- 0s	91us/step	- loss: 0.0183	- accuracy: 1.0000
Epoch 1865/2450					
209/209	[=====]	- 0s	95us/step	- loss: 0.0183	- accuracy: 1.0000
Epoch 1866/2450					
209/209	[=====]	- 0s	94us/step	- loss: 0.0183	- accuracy: 1.0000
Epoch 1867/2450					
209/209	[=====]	- 0s	121us/step	- loss: 0.0183	- accuracy: 1.0000
Epoch 1868/2450					
209/209	[=====]	- 0s	130us/step	- loss: 0.0183	- accuracy: 1.0000
Epoch 1869/2450					
209/209	[=====]	- 0s	136us/step	- loss: 0.0182	- accuracy: 1.0000
Epoch 1870/2450					
209/209	[=====]	- 0s	148us/step	- loss: 0.0182	- accuracy: 1.0000
Epoch 1871/2450					
209/209	[=====]	- 0s	153us/step	- loss: 0.0182	- accuracy: 1.0000
Epoch 1872/2450					
209/209	[=====]	- 0s	253us/step	- loss: 0.0182	- accuracy: 1.0000
Epoch 1873/2450					
209/209	[=====]	- 0s	202us/step	- loss: 0.0182	- accuracy: 1.0000
Epoch 1874/2450					
209/209	[=====]	- 0s	125us/step	- loss: 0.0181	- accuracy: 1.0000
Epoch 1875/2450					
209/209	[=====]	- 0s	101us/step	- loss: 0.0181	- accuracy: 1.0000
Epoch 1876/2450					
209/209	[=====]	- 0s	99us/step	- loss: 0.0181	- accuracy: 1.0000
Epoch 1877/2450					
209/209	[=====]	- 0s	101us/step	- loss: 0.0181	- accuracy: 1.0000
Epoch 1878/2450					
209/209	[=====]	- 0s	110us/step	- loss: 0.0181	- accuracy: 1.0000
Epoch 1879/2450					
209/209	[=====]	- 0s	93us/step	- loss: 0.0181	- accuracy: 1.0000
Epoch 1880/2450					
209/209	[=====]	- 0s	94us/step	- loss: 0.0181	- accuracy: 1.0000
Epoch 1881/2450					
209/209	[=====]	- 0s	88us/step	- loss: 0.0180	- accuracy: 1.0000
Epoch 1882/2450					
209/209	[=====]	- 0s	91us/step	- loss: 0.0181	- accuracy: 1.0000

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Epoch 209/209	[=====]	- 0s	97us/step	- loss:	0.0172	- accuracy:	1.0000
Epoch 1929/2450							
Epoch 209/209	[=====]	- 0s	103us/step	- loss:	0.0172	- accuracy:	1.0000
Epoch 1930/2450							
Epoch 209/209	[=====]	- 0s	111us/step	- loss:	0.0172	- accuracy:	1.0000
Epoch 1931/2450							
Epoch 209/209	[=====]	- 0s	105us/step	- loss:	0.0172	- accuracy:	1.0000
Epoch 1932/2450							
Epoch 209/209	[=====]	- 0s	104us/step	- loss:	0.0172	- accuracy:	1.0000
Epoch 1933/2450							
Epoch 209/209	[=====]	- 0s	95us/step	- loss:	0.0171	- accuracy:	1.0000
Epoch 1934/2450							
Epoch 209/209	[=====]	- 0s	111us/step	- loss:	0.0171	- accuracy:	1.0000
Epoch 1935/2450							
Epoch 209/209	[=====]	- 0s	108us/step	- loss:	0.0171	- accuracy:	1.0000
Epoch 1936/2450							
Epoch 209/209	[=====]	- 0s	103us/step	- loss:	0.0171	- accuracy:	1.0000
Epoch 1937/2450							
Epoch 209/209	[=====]	- 0s	110us/step	- loss:	0.0171	- accuracy:	1.0000
Epoch 1938/2450							
Epoch 209/209	[=====]	- 0s	104us/step	- loss:	0.0170	- accuracy:	1.0000
Epoch 1939/2450							
Epoch 209/209	[=====]	- 0s	98us/step	- loss:	0.0170	- accuracy:	1.0000
Epoch 1940/2450							
Epoch 209/209	[=====]	- 0s	117us/step	- loss:	0.0170	- accuracy:	1.0000
Epoch 1941/2450							
Epoch 209/209	[=====]	- 0s	224us/step	- loss:	0.0170	- accuracy:	1.0000
Epoch 1942/2450							
Epoch 209/209	[=====]	- 0s	170us/step	- loss:	0.0170	- accuracy:	1.0000
Epoch 1943/2450							
Epoch 209/209	[=====]	- 0s	131us/step	- loss:	0.0170	- accuracy:	1.0000
Epoch 1944/2450							
Epoch 209/209	[=====]	- 0s	134us/step	- loss:	0.0170	- accuracy:	1.0000
Epoch 1945/2450							
Epoch 209/209	[=====]	- 0s	109us/step	- loss:	0.0169	- accuracy:	1.0000
Epoch 1946/2450							
Epoch 209/209	[=====]	- 0s	99us/step	- loss:	0.0169	- accuracy:	1.0000
Epoch 1947/2450							
Epoch 209/209	[=====]	- 0s	123us/step	- loss:	0.0169	- accuracy:	1.0000
Epoch 1948/2450							
Epoch 209/209	[=====]	- 0s	106us/step	- loss:	0.0169	- accuracy:	1.0000
Epoch 1949/2450							
Epoch 209/209	[=====]	- 0s	87us/step	- loss:	0.0169	- accuracy:	1.0000
Epoch 1950/2450							
Epoch 209/209	[=====]	- 0s	118us/step	- loss:	0.0169	- accuracy:	1.0000
Epoch 1951/2450							
Epoch 209/209	[=====]	- 0s	133us/step	- loss:	0.0168	- accuracy:	1.0000
Epoch 1952/2450							
Epoch 209/209	[=====]	- 0s	110us/step	- loss:	0.0168	- accuracy:	1.0000
Epoch 1953/2450							
Epoch 209/209	[=====]	- 0s	126us/step	- loss:	0.0168	- accuracy:	1.0000
Epoch 1954/2450							
Epoch 209/209	[=====]	- 0s	116us/step	- loss:	0.0168	- accuracy:	1.0000
Epoch 1955/2450							
Epoch 209/209	[=====]	- 0s	97us/step	- loss:	0.0168	- accuracy:	1.0000
Epoch 1956/2450							
Epoch 209/209	[=====]	- 0s	97us/step	- loss:	0.0168	- accuracy:	1.0000
Epoch 1957/2450							
Epoch 209/209	[=====]	- 0s	120us/step	- loss:	0.0167	- accuracy:	1.0000
Epoch 1958/2450							
Epoch 209/209	[=====]	- 0s	125us/step	- loss:	0.0167	- accuracy:	1.0000
Epoch 1959/2450							
Epoch 209/209	[=====]	- 0s	95us/step	- loss:	0.0167	- accuracy:	1.0000
Epoch 1960/2450							
Epoch 209/209	[=====]	- 0s	129us/step	- loss:	0.0167	- accuracy:	1.0000
Epoch 1961/2450							

Epoch 1970/2450					
209/209 [=====]	- 0s	114us/step	- loss: 0.0165	- accuracy: 1.0000	
Epoch 1971/2450					
209/209 [=====]	- 0s	110us/step	- loss: 0.0165	- accuracy: 1.0000	
Epoch 1972/2450					
209/209 [=====]	- 0s	113us/step	- loss: 0.0165	- accuracy: 1.0000	
Epoch 1973/2450					
209/209 [=====]	- 0s	116us/step	- loss: 0.0165	- accuracy: 1.0000	
Epoch 1974/2450					
209/209 [=====]	- 0s	132us/step	- loss: 0.0165	- accuracy: 1.0000	
Epoch 1975/2450					
209/209 [=====]	- 0s	113us/step	- loss: 0.0165	- accuracy: 1.0000	
Epoch 1976/2450					
209/209 [=====]	- 0s	324us/step	- loss: 0.0165	- accuracy: 1.0000	
Epoch 1977/2450					
209/209 [=====]	- 0s	132us/step	- loss: 0.0164	- accuracy: 1.0000	
Epoch 1978/2450					
209/209 [=====]	- 0s	100us/step	- loss: 0.0164	- accuracy: 1.0000	
Epoch 1979/2450					
209/209 [=====]	- 0s	127us/step	- loss: 0.0164	- accuracy: 1.0000	
Epoch 1980/2450					
209/209 [=====]	- 0s	131us/step	- loss: 0.0164	- accuracy: 1.0000	
Epoch 1981/2450					
209/209 [=====]	- 0s	128us/step	- loss: 0.0164	- accuracy: 1.0000	
Epoch 1982/2450					
209/209 [=====]	- 0s	110us/step	- loss: 0.0163	- accuracy: 1.0000	
Epoch 1983/2450					
209/209 [=====]	- 0s	108us/step	- loss: 0.0163	- accuracy: 1.0000	
Epoch 1984/2450					
209/209 [=====]	- 0s	113us/step	- loss: 0.0163	- accuracy: 1.0000	
Epoch 1985/2450					
209/209 [=====]	- 0s	104us/step	- loss: 0.0163	- accuracy: 1.0000	
Epoch 1986/2450					
209/209 [=====]	- 0s	96us/step	- loss: 0.0163	- accuracy: 1.0000	
Epoch 1987/2450					
209/209 [=====]	- 0s	116us/step	- loss: 0.0163	- accuracy: 1.0000	
Epoch 1988/2450					
209/209 [=====]	- 0s	156us/step	- loss: 0.0163	- accuracy: 1.0000	
Epoch 1989/2450					
209/209 [=====]	- 0s	124us/step	- loss: 0.0163	- accuracy: 1.0000	
Epoch 1990/2450					
209/209 [=====]	- 0s	125us/step	- loss: 0.0162	- accuracy: 1.0000	
Epoch 1991/2450					
209/209 [=====]	- 0s	124us/step	- loss: 0.0162	- accuracy: 1.0000	
Epoch 1992/2450					
209/209 [=====]	- 0s	127us/step	- loss: 0.0162	- accuracy: 1.0000	
Epoch 1993/2450					
209/209 [=====]	- 0s	148us/step	- loss: 0.0162	- accuracy: 1.0000	
Epoch 1994/2450					
209/209 [=====]	- 0s	210us/step	- loss: 0.0162	- accuracy: 1.0000	
Epoch 1995/2450					
209/209 [=====]	- 0s	254us/step	- loss: 0.0162	- accuracy: 1.0000	
Epoch 1996/2450					
209/209 [=====]	- 0s	147us/step	- loss: 0.0162	- accuracy: 1.0000	
Epoch 1997/2450					
209/209 [=====]	- 0s	135us/step	- loss: 0.0161	- accuracy: 1.0000	
Epoch 1998/2450					
209/209 [=====]	- 0s	143us/step	- loss: 0.0161	- accuracy: 1.0000	
Epoch 1999/2450					
209/209 [=====]	- 0s	113us/step	- loss: 0.0161	- accuracy: 1.0000	
Epoch 2000/2450					
209/209 [=====]	- 0s	124us/step	- loss: 0.0161	- accuracy: 1.0000	
Epoch 2001/2450					
209/209 [=====]	- 0s	96us/step	- loss: 0.0161	- accuracy: 1.0000	
Epoch 2002/2450					
209/209 [=====]	- 0s	135us/step	- loss: 0.0160	- accuracy: 1.0000	
Epoch 2003/2450					
209/209 [=====]	- 0s	101us/step	- loss: 0.0160	- accuracy: 1.0000	
Epoch 2004/2450					
209/209 [=====]	- 0s	82us/step	- loss: 0.0160	- accuracy: 1.0000	
Epoch 2005/2450					
209/209 [=====]	- 0s	101us/step	- loss: 0.0160	- accuracy: 1.0000	
Epoch 2006/2450					
209/209 [=====]	- 0s	98us/step	- loss: 0.0160	- accuracy: 1.0000	
Epoch 2007/2450					
209/209 [=====]	- 0s				

[illegible]

[illegible]

[illegible]

[illegible]

209/209	[=====]	- 0s	88us/step	- loss: 0.0138	- accuracy: 1.0000
Epoch 2178/2450					
209/209	[=====]	- 0s	94us/step	- loss: 0.0138	- accuracy: 1.0000
Epoch 2179/2450					
209/209	[=====]	- 0s	78us/step	- loss: 0.0138	- accuracy: 1.0000
Epoch 2180/2450					
209/209	[=====]	- 0s	94us/step	- loss: 0.0138	- accuracy: 1.0000
Epoch 2181/2450					
209/209	[=====]	- 0s	84us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2182/2450					
209/209	[=====]	- 0s	95us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2183/2450					
209/209	[=====]	- 0s	106us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2184/2450					
209/209	[=====]	- 0s	96us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2185/2450					
209/209	[=====]	- 0s	96us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2186/2450					
209/209	[=====]	- 0s	96us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2187/2450					
209/209	[=====]	- 0s	97us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2188/2450					
209/209	[=====]	- 0s	88us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2189/2450					
209/209	[=====]	- 0s	95us/step	- loss: 0.0137	- accuracy: 1.0000
Epoch 2190/2450					
209/209	[=====]	- 0s	92us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2191/2450					
209/209	[=====]	- 0s	95us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2192/2450					
209/209	[=====]	- 0s	107us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2193/2450					
209/209	[=====]	- 0s	106us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2194/2450					
209/209	[=====]	- 0s	97us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2195/2450					
209/209	[=====]	- 0s	108us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2196/2450					
209/209	[=====]	- 0s	99us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2197/2450					
209/209	[=====]	- 0s	106us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2198/2450					
209/209	[=====]	- 0s	115us/step	- loss: 0.0136	- accuracy: 1.0000
Epoch 2199/2450					
209/209	[=====]	- 0s	120us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2200/2450					
209/209	[=====]	- 0s	103us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2201/2450					
209/209	[=====]	- 0s	130us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2202/2450					
209/209	[=====]	- 0s	157us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2203/2450					
209/209	[=====]	- 0s	140us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2204/2450					
209/209	[=====]	- 0s	157us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2205/2450					
209/209	[=====]	- 0s	121us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2206/2450					
209/209	[=====]	- 0s	128us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2207/2450					
209/209	[=====]	- 0s	265us/step	- loss: 0.0135	- accuracy: 1.0000
Epoch 2208/2450					
209/209	[=====]	- 0s	125us/step	- loss: 0.0134	- accuracy: 1.0000
Epoch 2209/2450					
209/209	[=====]	- 0s	130us/step	- loss: 0.0134	- accuracy: 1.0000
Epoch 2210/2450					
209/209	[=====]	- 0s	145us/step	- loss: 0.0134	- accuracy: 1.0000
Epoch 2211/2450					
209/209	[=====]	- 0s	121us/step	- loss: 0.0134	- accuracy: 1.0000
Epoch 2212/2450					
209/209	[=====]	- 0s	129us/step	- loss: 0.0134	- accuracy: 1.0000
Epoch 2213/2450					
209/209	[=====]	- 0s	114us/step	- loss: 0.0134	- accuracy: 1.0000
Epoch 2214/2450					
209/209	[=====]	- 0s	94us/step	- loss: 0.0134	- accuracy: 1.0000
Epoch 221					

Epoch 2219/2450					
209/209 [=====]	-	0s 106us/step	-	loss: 0.0133	- accuracy: 1.0000
Epoch 2220/2450					
209/209 [=====]	-	0s 186us/step	-	loss: 0.0133	- accuracy: 1.0000
Epoch 2221/2450					
209/209 [=====]	-	0s 159us/step	-	loss: 0.0133	- accuracy: 1.0000
Epoch 2222/2450					
209/209 [=====]	-	0s 157us/step	-	loss: 0.0133	- accuracy: 1.0000
Epoch 2223/2450					
209/209 [=====]	-	0s 157us/step	-	loss: 0.0133	- accuracy: 1.0000
Epoch 2224/2450					
209/209 [=====]	-	0s 121us/step	-	loss: 0.0133	- accuracy: 1.0000
Epoch 2225/2450					
209/209 [=====]	-	0s 127us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2226/2450					
209/209 [=====]	-	0s 98us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2227/2450					
209/209 [=====]	-	0s 113us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2228/2450					
209/209 [=====]	-	0s 101us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2229/2450					
209/209 [=====]	-	0s 92us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2230/2450					
209/209 [=====]	-	0s 97us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2231/2450					
209/209 [=====]	-	0s 132us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2232/2450					
209/209 [=====]	-	0s 129us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2233/2450					
209/209 [=====]	-	0s 104us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2234/2450					
209/209 [=====]	-	0s 107us/step	-	loss: 0.0132	- accuracy: 1.0000
Epoch 2235/2450					
209/209 [=====]	-	0s 100us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2236/2450					
209/209 [=====]	-	0s 137us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2237/2450					
209/209 [=====]	-	0s 129us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2238/2450					
209/209 [=====]	-	0s 111us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2239/2450					
209/209 [=====]	-	0s 90us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2240/2450					
209/209 [=====]	-	0s 218us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2241/2450					
209/209 [=====]	-	0s 237us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2242/2450					
209/209 [=====]	-	0s 165us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2243/2450					
209/209 [=====]	-	0s 108us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2244/2450					
209/209 [=====]	-	0s 102us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2245/2450					
209/209 [=====]	-	0s 125us/step	-	loss: 0.0131	- accuracy: 1.0000
Epoch 2246/2450					
209/209 [=====]	-	0s 100us/step	-	loss: 0.0130	- accuracy: 1.0000
Epoch 2247/2450					
209/209 [=====]	-	0s 103us/step	-	loss: 0.0130	- accuracy: 1.0000
Epoch 2248/2450					
209/209 [=====]	-	0s 100us/step	-	loss: 0.0130	- accuracy: 1.0000
Epoch 2249/2450					
209/209 [=====]	-	0s 116us/step	-	loss: 0.0130	- accuracy: 1.0000
Epoch 2250/2450					
209/209 [=====]	-	0s 104us/step	-	loss: 0.0130	- accuracy: 1.0000
Epoch 2251/2450					
209/209 [=====]	-	0s 109us/step	-	loss: 0.0130	- accuracy: 1.0000
Epoch 2252/2450					
209/209 [=====]	-	0s 97us/step	-	loss: 0.0130	- accuracy: 1.0000
Epoch 2253/2450					
209/209 [=====]	-	0s 95us/step	-	loss: 0.0130	- accuracy: 1.0000
Epoch 2254/2450					
209/209 [=====]	-	0s 98us/step	-	loss: 0.0129	- accuracy: 1.0000
Epoch 2255/2450					
209/209 [=====]	-	0s 98us/step	-	loss: 0.0129	- accuracy: 1.0000
Epoch 2256/2450				</	



209/209	[=====]	- 0s	103us/step	- loss: 0.0129	- accuracy: 1.0000
Epoch 2261/2450					
209/209	[=====]	- 0s	112us/step	- loss: 0.0129	- accuracy: 1.0000
Epoch 2262/2450					
209/209	[=====]	- 0s	104us/step	- loss: 0.0129	- accuracy: 1.0000
Epoch 2263/2450					
209/209	[=====]	- 0s	113us/step	- loss: 0.0129	- accuracy: 1.0000
Epoch 2264/2450					
209/209	[=====]	- 0s	104us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2265/2450					
209/209	[=====]	- 0s	101us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2266/2450					
209/209	[=====]	- 0s	108us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2267/2450					
209/209	[=====]	- 0s	120us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2268/2450					
209/209	[=====]	- 0s	147us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2269/2450					
209/209	[=====]	- 0s	138us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2270/2450					
209/209	[=====]	- 0s	251us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2271/2450					
209/209	[=====]	- 0s	146us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2272/2450					
209/209	[=====]	- 0s	271us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2273/2450					
209/209	[=====]	- 0s	137us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2274/2450					
209/209	[=====]	- 0s	141us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2275/2450					
209/209	[=====]	- 0s	134us/step	- loss: 0.0128	- accuracy: 1.0000
Epoch 2276/2450					
209/209	[=====]	- 0s	156us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2277/2450					
209/209	[=====]	- 0s	174us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2278/2450					
209/209	[=====]	- 0s	122us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2279/2450					
209/209	[=====]	- 0s	201us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2280/2450					
209/209	[=====]	- 0s	232us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2281/2450					
209/209	[=====]	- 0s	145us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2282/2450					
209/209	[=====]	- 0s	166us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2283/2450					
209/209	[=====]	- 0s	108us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2284/2450					
209/209	[=====]	- 0s	115us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2285/2450					
209/209	[=====]	- 0s	119us/step	- loss: 0.0127	- accuracy: 1.0000
Epoch 2286/2450					
209/209	[=====]	- 0s	102us/step	- loss: 0.0126	- accuracy: 1.0000
Epoch 2287/2450					
209/209	[=====]	- 0s	109us/step	- loss: 0.0126	- accuracy: 1.0000
Epoch 2288/2450					
209/209	[=====]	- 0s	95us/step	- loss: 0.0126	- accuracy: 1.0000
Epoch 2289/2450					
209/209	[=====]	- 0s	113us/step	- loss: 0.0126	- accuracy: 1.0000
Epoch 2290/2450					
209/209	[=====]	- 0s	135us/step	- loss: 0.0126	- accuracy: 1.0000
Epoch 2291/2450					
209/209	[=====]	- 0s	128us/step	- loss: 0.0126	- accuracy: 1.0000
Epoch 2292/2450					
209/209	[=====]	- 0s	97us/step	- loss: 0.0126	- accuracy: 1.0000
Epoch 2293/2450					
209/209	[=====]	- 0s	148us/step	- loss: 0.0126	- accuracy: 1.0000
Epoch 2294/2450					
209/209	[=====]	- 0s	123us/step	- loss: 0.0125	- accuracy: 1.0000
Epoch 2295/2450					
209/209	[=====]	- 0s	202us/step	- loss: 0.0125	- accuracy: 1.0000
Epoch 2296/2450					
209/209	[=====]	- 0s	100us/step	- loss: 0.0125	- accuracy: 1.0000
Epoch 2297/2450					
209/209	[=====]	- 0s	111us/step	- loss: 0.0125	- accuracy: 1.000

Epoch 2302/2450					
209/209 [=====]	-	0s 95us/step	-	loss: 0.0125	- accuracy: 1.0000
Epoch 2303/2450					
209/209 [=====]	-	0s 224us/step	-	loss: 0.0125	- accuracy: 1.0000
Epoch 2304/2450					
209/209 [=====]	-	0s 127us/step	-	loss: 0.0125	- accuracy: 1.0000
Epoch 2305/2450					
209/209 [=====]	-	0s 99us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2306/2450					
209/209 [=====]	-	0s 109us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2307/2450					
209/209 [=====]	-	0s 97us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2308/2450					
209/209 [=====]	-	0s 123us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2309/2450					
209/209 [=====]	-	0s 122us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2310/2450					
209/209 [=====]	-	0s 97us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2311/2450					
209/209 [=====]	-	0s 110us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2312/2450					
209/209 [=====]	-	0s 105us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2313/2450					
209/209 [=====]	-	0s 110us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2314/2450					
209/209 [=====]	-	0s 101us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2315/2450					
209/209 [=====]	-	0s 110us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2316/2450					
209/209 [=====]	-	0s 102us/step	-	loss: 0.0124	- accuracy: 1.0000
Epoch 2317/2450					
209/209 [=====]	-	0s 105us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2318/2450					
209/209 [=====]	-	0s 92us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2319/2450					
209/209 [=====]	-	0s 95us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2320/2450					
209/209 [=====]	-	0s 86us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2321/2450					
209/209 [=====]	-	0s 97us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2322/2450					
209/209 [=====]	-	0s 119us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2323/2450					
209/209 [=====]	-	0s 112us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2324/2450					
209/209 [=====]	-	0s 101us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2325/2450					
209/209 [=====]	-	0s 112us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2326/2450					
209/209 [=====]	-	0s 96us/step	-	loss: 0.0123	- accuracy: 1.0000
Epoch 2327/2450					
209/209 [=====]	-	0s 90us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2328/2450					
209/209 [=====]	-	0s 103us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2329/2450					
209/209 [=====]	-	0s 109us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2330/2450					
209/209 [=====]	-	0s 117us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2331/2450					
209/209 [=====]	-	0s 186us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2332/2450					
209/209 [=====]	-	0s 94us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2333/2450					
209/209 [=====]	-	0s 110us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2334/2450					
209/209 [=====]	-	0s 104us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2335/2450					
209/209 [=====]	-	0s 119us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2336/2450					
209/209 [=====]	-	0s 114us/step	-	loss: 0.0122	- accuracy: 1.0000
Epoch 2337/2450					
209/209 [=====]	-	0s 120us/step	-	loss: 0.0121	- accuracy: 1.0000
Epoch 2338/2450					
209/209 [=====]	-	0s 104us/step	-	loss: 0.0121	- accuracy: 1.0000
Epoch 2339/2450					

[illegible]

[illegible]

```
209/209 [=====] - 0s 99us/step - loss: 0.0114 - accuracy: 1.0000
Epoch 2427/2450
209/209 [=====] - 0s 93us/step - loss: 0.0114 - accuracy: 1.0000
Epoch 2428/2450
209/209 [=====] - 0s 84us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2429/2450
209/209 [=====] - 0s 113us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2430/2450
209/209 [=====] - 0s 116us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2431/2450
209/209 [=====] - 0s 110us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2432/2450
209/209 [=====] - 0s 120us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2433/2450
209/209 [=====] - 0s 152us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2434/2450
209/209 [=====] - 0s 249us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2435/2450
209/209 [=====] - 0s 275us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2436/2450
209/209 [=====] - 0s 384us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2437/2450
209/209 [=====] - 0s 216us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2438/2450
209/209 [=====] - 0s 109us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2439/2450
209/209 [=====] - 0s 126us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2440/2450
209/209 [=====] - 0s 114us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2441/2450
209/209 [=====] - 0s 137us/step - loss: 0.0113 - accuracy: 1.0000
Epoch 2442/2450
209/209 [=====] - 0s 159us/step - loss: 0.0112 - accuracy: 1.0000
Epoch 2443/2450
209/209 [=====] - 0s 142us/step - loss: 0.0112 - accuracy: 1.0000
Epoch 2444/2450
209/209 [=====] - 0s 140us/step - loss: 0.0112 - accuracy: 1.0000
Epoch 2445/2450
209/209 [=====] - 0s 189us/step - loss: 0.0112 - accuracy: 1.0000
Epoch 2446/2450
209/209 [=====] - 0s 226us/step - loss: 0.0112 - accuracy: 1.0000
Epoch 2447/2450
209/209 [=====] - 0s 284us/step - loss: 0.0112 - accuracy: 1.0000
Epoch 2448/2450
209/209 [=====] - 0s 187us/step - loss: 0.0112 - accuracy: 1.0000
Epoch 2449/2450
209/209 [=====] - 0s 205us/step - loss: 0.0112 - accuracy: 1.0000
Epoch 2450/2450
209/209 [=====] - 0s 183us/step - loss: 0.0112 - accuracy: 1.0000
```

## Testing Model

In [45]:

```
# evaluate the keras model
_, accuracy = model1.evaluate(test_x.T, test_y.T)
print('Accuracy: %.2f' % (accuracy*100))
```

```
50/50 [=====] - 0s 631us/step
Accuracy: 78.00
```

## Model - IMDB Reviews

### Importing Packages

In [48]:

```
import re
```

### Loading Data

In [49]:

```
def load_data(train_file, test_file):
    train_dataset = []
    test_dataset = []

    # Read the training dataset file line by line
    for line in open(train_file, 'r'):
        train_dataset.append(line.strip())

    for line in open(test_file, 'r'):
        test_dataset.append(line.strip())

    return train_dataset, test_dataset
```

In [50]:

```
train_file = "data/train_imdb.txt"
test_file = "data/test_imdb.txt"
train_dataset, test_dataset = load_data(train_file, test_file)
y = [1 if i < len(train_dataset)*0.5 else 0 for i in range(len(train_dataset))]
```

## Pre-Processing Data

In [51]:

```
REPLACE_NO_SPACE = re.compile("(\.)|(\;)|(\:)|(\!)|(\')|(\?)|(\,)|(\")|(\(|)|(\)|)|(\[|)|(\]|)|(\d+)")
REPLACE_WITH_SPACE = re.compile("<br\s*/><br\s*/>|(\-)|(\/)")
NO_SPACE = ""
SPACE = " "

def preprocess_reviews(reviews):

    reviews = [REPLACE_NO_SPACE.sub(NO_SPACE, line.lower()) for line in reviews]
    reviews = [REPLACE_WITH_SPACE.sub(SPACE, line) for line in reviews]

    return reviews

train_dataset_clean = preprocess_reviews(train_dataset)
test_dataset_clean = preprocess_reviews(test_dataset)
```

## Vectorization

In [54]:

```
from sklearn.feature_extraction.text import CountVectorizer
cv = CountVectorizer(binary=True, stop_words="english", max_features=2000)
cv.fit(train_dataset_clean)
X = cv.transform(train_dataset_clean)

X_test = cv.transform(test_dataset_clean)
X = np.array(X.todense()).astype(float)
X_test = np.array(X_test.todense()).astype(float)
y = np.array(y)
```

## Building Model

In [124]:

```
from sklearn.metrics import accuracy_score
from sklearn.model_selection import train_test_split
X_train, X_val, y_train, y_val = train_test_split(
    X, y, train_size = 0.80
)

X_train = X_train.T
X_val = X_val.T
y_train = y_train.reshape(1,-1)
y_val = y_val.reshape(1,-1)

n_x = X_train.shape[0]
n_h = 5
n_y = 1
layers_dims = (n_x, n_h, n_y)

model2 = buildModel(layers_dims)
## using stochastic gradient descent
from keras.optimizers import SGD
opt = SGD(lr=0.02)
model2.compile(loss='binary_crossentropy', optimizer=opt, metrics=['accuracy'])
```

## Training Model

In [125]:

```
history = History()
history = model2.fit(X_train.T, y_train.T, verbose=1, epochs=2600, batch_size=X_train.shape[0], shuffle=False)
```

```
Epoch 1/2600
800/800 [=====] - 0s 99us/step - loss: 0.7080 - accuracy: 0.4663
Epoch 2/2600
800/800 [=====] - 0s 15us/step - loss: 0.7069 - accuracy: 0.4725
Epoch 3/2600
800/800 [=====] - 0s 13us/step - loss: 0.7059 - accuracy: 0.4737
Epoch 4/2600
800/800 [=====] - 0s 19us/step - loss: 0.7048 - accuracy: 0.4750
Epoch 5/2600
800/800 [=====] - 0s 17us/step - loss: 0.7038 - accuracy: 0.4812
Epoch 6/2600
800/800 [=====] - 0s 13us/step - loss: 0.7028 - accuracy: 0.4850
Epoch 7/2600
800/800 [=====] - 0s 18us/step - loss: 0.7018 - accuracy: 0.4850
Epoch 8/2600
800/800 [=====] - 0s 17us/step - loss: 0.7009 - accuracy: 0.4850
Epoch 9/2600
800/800 [=====] - 0s 14us/step - loss: 0.6999 - accuracy: 0.4900
Epoch 10/2600
800/800 [=====] - 0s 14us/step - loss: 0.6990 - accuracy: 0.4913
Epoch 11/2600
800/800 [=====] - 0s 19us/step - loss: 0.6980 - accuracy: 0.4938
Epoch 12/2600
800/800 [=====] - 0s 17us/step - loss: 0.6971 - accuracy: 0.4975
Epoch 13/2600
800/800 [=====] - 0s 12us/step - loss: 0.6962 - accuracy: 0.5038
Epoch 14/2600
800/800 [=====] - 0s 14us/step - loss: 0.6953 - accuracy: 0.5100
Epoch 15/2600
800/800 [=====] - 0s 14us/step - loss: 0.6945 - accuracy: 0.5113
Epoch 16/2600
800/800 [=====] - 0s 40us/step - loss: 0.6936 - accuracy: 0.5125
Epoch 17/2600
800/800 [=====] - 0s 30us/step - loss: 0.6928 - accuracy: 0.5175
Epoch 18/2600
800/800 [=====] - 0s 38us/step - loss: 0.6919 - accuracy: 0.5188
Epoch 19/2600
800/800 [=====] - 0s 29us/step - loss: 0.6911 - accuracy: 0.5213
Epoch 20/2600
800/800 [=====] - 0s 23us/step - loss: 0.6903 - accuracy: 0.5275
Epoch 21/2600
800/800 [=====] - 0s 24us/step - loss: 0.6894 - accuracy: 0.5300
Epoch 22/2600
800/800 [=====] - 0s 17us/step - loss: 0.6886 - accuracy: 0.5362
Epoch 23/2600
800/800 [=====] - 0s 33us/step - loss: 0.6878 - accuracy: 0.5425
Epoch 24/2600
800/800 [=====] - 0s 13us/step - loss: 0.6870 - accuracy: 0.5475
Epoch 25/2600
800/800 [=====] - 0s 82us/step - loss: 0.6862 - accuracy: 0.5537
Epoch 26/2600
800/800 [=====] - 0s 19us/step - loss: 0.6854 - accuracy: 0.5562
Epoch 27/2600
800/800 [=====] - 0s 22us/step - loss: 0.6846 - accuracy: 0.5575
Epoch 28/2600
800/800 [=====] - 0s 21us/step - loss: 0.6838 - accuracy: 0.5612
Epoch 29/2600
800/800 [=====] - 0s 13us/step - loss: 0.6830 - accuracy: 0.5650
Epoch 30/2600
800/800 [=====] - 0s 16us/step - loss: 0.6823 - accuracy: 0.5650
Epoch 31/2600
800/800 [=====] - 0s 15us/step - loss: 0.6815 - accuracy: 0.5638
Epoch 32/2600
800/800 [=====] - 0s 22us/step - loss: 0.6807 - accuracy: 0.5663
Epoch 33/2600
800/800 [=====] - 0s 25us/step - loss: 0.6799 - accuracy: 0.5688
Epoch 34/2600
800/800 [=====] - 0s 22us/step - loss: 0.6791 - accuracy: 0.5713
Epoch 35/2600
800/800 [=====] - 0s 24us/step - loss: 0.6783 - accuracy: 0.5725
Epoch 36/2600
800/800 [=====] - 0s 16us/step - loss: 0.6776 - accuracy: 0.5775
Epoch 37/2600
800/800 [=====] - 0s 14us/step - loss: 0.6768 - accuracy: 0.5825
Epoch 38/2600
```

800/800 [=====] - 0s 14us/step - loss: 0.6760 - accuracy: 0.5863  
Epoch 39/2600  
800/800 [=====] - 0s 17us/step - loss: 0.6752 - accuracy: 0.5900  
Epoch 40/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6744 - accuracy: 0.5925  
Epoch 41/2600  
800/800 [=====] - 0s 15us/step - loss: 0.6736 - accuracy: 0.5987  
Epoch 42/2600  
800/800 [=====] - 0s 19us/step - loss: 0.6729 - accuracy: 0.6000  
Epoch 43/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6721 - accuracy: 0.6025  
Epoch 44/2600  
800/800 [=====] - 0s 19us/step - loss: 0.6713 - accuracy: 0.6062  
Epoch 45/2600  
800/800 [=====] - 0s 17us/step - loss: 0.6705 - accuracy: 0.6087  
Epoch 46/2600  
800/800 [=====] - 0s 19us/step - loss: 0.6697 - accuracy: 0.6137  
Epoch 47/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6689 - accuracy: 0.6150  
Epoch 48/2600  
800/800 [=====] - 0s 27us/step - loss: 0.6681 - accuracy: 0.6150  
Epoch 49/2600  
800/800 [=====] - 0s 17us/step - loss: 0.6673 - accuracy: 0.6175  
Epoch 50/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6665 - accuracy: 0.6200  
Epoch 51/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6657 - accuracy: 0.6237  
Epoch 52/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6648 - accuracy: 0.6263  
Epoch 53/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6640 - accuracy: 0.6275  
Epoch 54/2600  
800/800 [=====] - 0s 34us/step - loss: 0.6632 - accuracy: 0.6325  
Epoch 55/2600  
800/800 [=====] - 0s 34us/step - loss: 0.6624 - accuracy: 0.6350  
Epoch 56/2600  
800/800 [=====] - 0s 40us/step - loss: 0.6615 - accuracy: 0.6388  
Epoch 57/2600  
800/800 [=====] - 0s 32us/step - loss: 0.6607 - accuracy: 0.6413  
Epoch 58/2600  
800/800 [=====] - 0s 24us/step - loss: 0.6599 - accuracy: 0.6488  
Epoch 59/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6590 - accuracy: 0.6500  
Epoch 60/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6582 - accuracy: 0.6538  
Epoch 61/2600  
800/800 [=====] - 0s 19us/step - loss: 0.6573 - accuracy: 0.6550  
Epoch 62/2600  
800/800 [=====] - 0s 18us/step - loss: 0.6565 - accuracy: 0.6612  
Epoch 63/2600  
800/800 [=====] - 0s 17us/step - loss: 0.6556 - accuracy: 0.6662  
Epoch 64/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6547 - accuracy: 0.6687  
Epoch 65/2600  
800/800 [=====] - 0s 17us/step - loss: 0.6539 - accuracy: 0.6687  
Epoch 66/2600  
800/800 [=====] - 0s 19us/step - loss: 0.6530 - accuracy: 0.6700  
Epoch 67/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6521 - accuracy: 0.6725  
Epoch 68/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6512 - accuracy: 0.6737  
Epoch 69/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6503 - accuracy: 0.6750  
Epoch 70/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6494 - accuracy: 0.6775  
Epoch 71/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6485 - accuracy: 0.6812  
Epoch 72/2600  
800/800 [=====] - 0s 27us/step - loss: 0.6476 - accuracy: 0.6825  
Epoch 73/2600  
800/800 [=====] - 0s 36us/step - loss: 0.6467 - accuracy: 0.6837  
Epoch 74/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6458 - accuracy: 0.6837  
Epoch 75/2600  
800/800 [=====] - 0s 15us/step - loss: 0.6449 - accuracy: 0.6850  
Epoch 76/2600  
800/800 [=====] - 0s 19us/step - loss: 0.6439 - accuracy: 0.6913  
Epoch 77/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6430 - accuracy: 0.6950  
Epoch 78/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6421 - accuracy: 0.6975  
Epoch 79/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6411 - accuracy: 0.7013



Epoch 80/2600  
800/800 [=====] - 0s 16us/step - loss: 0.6402 - accuracy: 0.7050  
Epoch 81/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6392 - accuracy: 0.7075  
Epoch 82/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6383 - accuracy: 0.7100  
Epoch 83/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6373 - accuracy: 0.7138  
Epoch 84/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6364 - accuracy: 0.7150  
Epoch 85/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6354 - accuracy: 0.7150  
Epoch 86/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6344 - accuracy: 0.7188  
Epoch 87/2600  
800/800 [=====] - 0s 11us/step - loss: 0.6335 - accuracy: 0.7212  
Epoch 88/2600  
800/800 [=====] - 0s 11us/step - loss: 0.6325 - accuracy: 0.7225  
Epoch 89/2600  
800/800 [=====] - 0s 11us/step - loss: 0.6315 - accuracy: 0.7237  
Epoch 90/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6306 - accuracy: 0.7225  
Epoch 91/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6296 - accuracy: 0.7237  
Epoch 92/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6286 - accuracy: 0.7262  
Epoch 93/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6277 - accuracy: 0.7275  
Epoch 94/2600  
800/800 [=====] - 0s 11us/step - loss: 0.6267 - accuracy: 0.7325  
Epoch 95/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6257 - accuracy: 0.7337  
Epoch 96/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6248 - accuracy: 0.7350  
Epoch 97/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6238 - accuracy: 0.7362  
Epoch 98/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6228 - accuracy: 0.7375  
Epoch 99/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6219 - accuracy: 0.7400  
Epoch 100/2600  
800/800 [=====] - 0s 15us/step - loss: 0.6209 - accuracy: 0.7400  
Epoch 101/2600  
800/800 [=====] - 0s 11us/step - loss: 0.6199 - accuracy: 0.7412  
Epoch 102/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6190 - accuracy: 0.7425  
Epoch 103/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6180 - accuracy: 0.7437  
Epoch 104/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6170 - accuracy: 0.7450  
Epoch 105/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6160 - accuracy: 0.7450  
Epoch 106/2600  
800/800 [=====] - 0s 15us/step - loss: 0.6150 - accuracy: 0.7475  
Epoch 107/2600  
800/800 [=====] - 0s 12us/step - loss: 0.6140 - accuracy: 0.7487  
Epoch 108/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6130 - accuracy: 0.7487  
Epoch 109/2600  
800/800 [=====] - 0s 11us/step - loss: 0.6120 - accuracy: 0.7525  
Epoch 110/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6110 - accuracy: 0.7513  
Epoch 111/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6100 - accuracy: 0.7513  
Epoch 112/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6090 - accuracy: 0.7513  
Epoch 113/2600  
800/800 [=====] - 0s 15us/step - loss: 0.6079 - accuracy: 0.7538  
Epoch 114/2600  
800/800 [=====] - 0s 38us/step - loss: 0.6069 - accuracy: 0.7575  
Epoch 115/2600  
800/800 [=====] - 0s 26us/step - loss: 0.6059 - accuracy: 0.7575  
Epoch 116/2600  
800/800 [=====] - 0s 15us/step - loss: 0.6049 - accuracy: 0.7575  
Epoch 117/2600  
800/800 [=====] - 0s 14us/step - loss: 0.6038 - accuracy: 0.7588  
Epoch 118/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6028 - accuracy: 0.7588  
Epoch 119/2600  
800/800 [=====] - 0s 10us/step - loss: 0.6018 - accuracy: 0.7600  
Epoch 120/2600  
800/800 [=====] - 0s 13us/step - loss: 0.6007 - accuracy: 0.7613  
Epoch 121/2600

800/800 [=====] - 0s 14us/step - loss: 0.5997 - accuracy: 0.7638  
Epoch 122/2600  
800/800 [=====] - 0s 16us/step - loss: 0.5987 - accuracy: 0.7638  
Epoch 123/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5977 - accuracy: 0.7638  
Epoch 124/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5966 - accuracy: 0.7650  
Epoch 125/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5956 - accuracy: 0.7713  
Epoch 126/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5945 - accuracy: 0.7725  
Epoch 127/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5935 - accuracy: 0.7725  
Epoch 128/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5924 - accuracy: 0.7775  
Epoch 129/2600  
800/800 [=====] - 0s 11us/step - loss: 0.5913 - accuracy: 0.7800  
Epoch 130/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5903 - accuracy: 0.7825  
Epoch 131/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5892 - accuracy: 0.7837  
Epoch 132/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5882 - accuracy: 0.7850  
Epoch 133/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5871 - accuracy: 0.7875  
Epoch 134/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5861 - accuracy: 0.7887  
Epoch 135/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5850 - accuracy: 0.7912  
Epoch 136/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5839 - accuracy: 0.7912  
Epoch 137/2600  
800/800 [=====] - 0s 43us/step - loss: 0.5829 - accuracy: 0.7937  
Epoch 138/2600  
800/800 [=====] - 0s 16us/step - loss: 0.5818 - accuracy: 0.7937  
Epoch 139/2600  
800/800 [=====] - 0s 11us/step - loss: 0.5808 - accuracy: 0.7937  
Epoch 140/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5797 - accuracy: 0.7937  
Epoch 141/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5786 - accuracy: 0.7937  
Epoch 142/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5776 - accuracy: 0.7962  
Epoch 143/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5765 - accuracy: 0.7975  
Epoch 144/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5754 - accuracy: 0.8000  
Epoch 145/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5743 - accuracy: 0.8000  
Epoch 146/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5732 - accuracy: 0.8012  
Epoch 147/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5722 - accuracy: 0.8025  
Epoch 148/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5711 - accuracy: 0.8037  
Epoch 149/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5700 - accuracy: 0.8075  
Epoch 150/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5689 - accuracy: 0.8112  
Epoch 151/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5679 - accuracy: 0.8125  
Epoch 152/2600  
800/800 [=====] - 0s 17us/step - loss: 0.5668 - accuracy: 0.8125  
Epoch 153/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5657 - accuracy: 0.8138  
Epoch 154/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5646 - accuracy: 0.8138  
Epoch 155/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5635 - accuracy: 0.8163  
Epoch 156/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5624 - accuracy: 0.8163  
Epoch 157/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5614 - accuracy: 0.8175  
Epoch 158/2600  
800/800 [=====] - 0s 40us/step - loss: 0.5603 - accuracy: 0.8175  
Epoch 159/2600  
800/800 [=====] - 0s 21us/step - loss: 0.5592 - accuracy: 0.8163  
Epoch 160/2600  
800/800 [=====] - 0s 20us/step - loss: 0.5581 - accuracy: 0.8175  
Epoch 161/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5571 - accuracy: 0.8188  
Epoch 162/2600  
800/800 [=====] - 0s 21us/step - loss: 0.5560 - accuracy: 0.8188

Epoch 163/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5549 - accuracy: 0.8188  
Epoch 164/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5538 - accuracy: 0.8213  
Epoch 165/2600  
800/800 [=====] - 0s 11us/step - loss: 0.5528 - accuracy: 0.8263  
Epoch 166/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5517 - accuracy: 0.8263  
Epoch 167/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5506 - accuracy: 0.8275  
Epoch 168/2600  
800/800 [=====] - 0s 20us/step - loss: 0.5495 - accuracy: 0.8275  
Epoch 169/2600  
800/800 [=====] - 0s 11us/step - loss: 0.5485 - accuracy: 0.8288  
Epoch 170/2600  
800/800 [=====] - 0s 9us/step - loss: 0.5474 - accuracy: 0.8288  
Epoch 171/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5463 - accuracy: 0.8300  
Epoch 172/2600  
800/800 [=====] - 0s 11us/step - loss: 0.5452 - accuracy: 0.8325  
Epoch 173/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5441 - accuracy: 0.8338  
Epoch 174/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5431 - accuracy: 0.8350  
Epoch 175/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5420 - accuracy: 0.8350  
Epoch 176/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5409 - accuracy: 0.8350  
Epoch 177/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5398 - accuracy: 0.8350  
Epoch 178/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5388 - accuracy: 0.8388  
Epoch 179/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5377 - accuracy: 0.8388  
Epoch 180/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5366 - accuracy: 0.8400  
Epoch 181/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5355 - accuracy: 0.8438  
Epoch 182/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5345 - accuracy: 0.8425  
Epoch 183/2600  
800/800 [=====] - 0s 11us/step - loss: 0.5334 - accuracy: 0.8425  
Epoch 184/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5323 - accuracy: 0.8425  
Epoch 185/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5312 - accuracy: 0.8438  
Epoch 186/2600  
800/800 [=====] - 0s 16us/step - loss: 0.5301 - accuracy: 0.8438  
Epoch 187/2600  
800/800 [=====] - 0s 11us/step - loss: 0.5290 - accuracy: 0.8438  
Epoch 188/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5280 - accuracy: 0.8438  
Epoch 189/2600  
800/800 [=====] - 0s 10us/step - loss: 0.5269 - accuracy: 0.8450  
Epoch 190/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5258 - accuracy: 0.8462  
Epoch 191/2600  
800/800 [=====] - 0s 17us/step - loss: 0.5247 - accuracy: 0.8462  
Epoch 192/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5236 - accuracy: 0.8462  
Epoch 193/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5226 - accuracy: 0.8487  
Epoch 194/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5215 - accuracy: 0.8500  
Epoch 195/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5204 - accuracy: 0.8500  
Epoch 196/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5193 - accuracy: 0.8500  
Epoch 197/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5182 - accuracy: 0.8512  
Epoch 198/2600  
800/800 [=====] - 0s 21us/step - loss: 0.5171 - accuracy: 0.8512  
Epoch 199/2600  
800/800 [=====] - 0s 15us/step - loss: 0.5161 - accuracy: 0.8512  
Epoch 200/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5150 - accuracy: 0.8512  
Epoch 201/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5139 - accuracy: 0.8512  
Epoch 202/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5128 - accuracy: 0.8512  
Epoch 203/2600  
800/800 [=====] - 0s 11us/step - loss: 0.5118 - accuracy: 0.8525  
Epoch 204/2600

800/800 [=====] - 0s 12us/step - loss: 0.5107 - accuracy: 0.8525  
Epoch 205/2600  
800/800 [=====] - 0s 47us/step - loss: 0.5096 - accuracy: 0.8537  
Epoch 206/2600  
800/800 [=====] - 0s 17us/step - loss: 0.5086 - accuracy: 0.8550  
Epoch 207/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5075 - accuracy: 0.8562  
Epoch 208/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5064 - accuracy: 0.8575  
Epoch 209/2600  
800/800 [=====] - 0s 13us/step - loss: 0.5053 - accuracy: 0.8600  
Epoch 210/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5043 - accuracy: 0.8600  
Epoch 211/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5032 - accuracy: 0.8612  
Epoch 212/2600  
800/800 [=====] - 0s 14us/step - loss: 0.5021 - accuracy: 0.8612  
Epoch 213/2600  
800/800 [=====] - 0s 18us/step - loss: 0.5011 - accuracy: 0.8625  
Epoch 214/2600  
800/800 [=====] - 0s 12us/step - loss: 0.5000 - accuracy: 0.8637  
Epoch 215/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4989 - accuracy: 0.8650  
Epoch 216/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4979 - accuracy: 0.8650  
Epoch 217/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4968 - accuracy: 0.8650  
Epoch 218/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4957 - accuracy: 0.8650  
Epoch 219/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4947 - accuracy: 0.8662  
Epoch 220/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4936 - accuracy: 0.8662  
Epoch 221/2600  
800/800 [=====] - 0s 19us/step - loss: 0.4926 - accuracy: 0.8662  
Epoch 222/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4915 - accuracy: 0.8662  
Epoch 223/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4905 - accuracy: 0.8675  
Epoch 224/2600  
800/800 [=====] - 0s 15us/step - loss: 0.4894 - accuracy: 0.8700  
Epoch 225/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4884 - accuracy: 0.8712  
Epoch 226/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4873 - accuracy: 0.8725  
Epoch 227/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4863 - accuracy: 0.8737  
Epoch 228/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4853 - accuracy: 0.8737  
Epoch 229/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4842 - accuracy: 0.8737  
Epoch 230/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4832 - accuracy: 0.8737  
Epoch 231/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4821 - accuracy: 0.8737  
Epoch 232/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4811 - accuracy: 0.8725  
Epoch 233/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4801 - accuracy: 0.8737  
Epoch 234/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4790 - accuracy: 0.8750  
Epoch 235/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4780 - accuracy: 0.8763  
Epoch 236/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4770 - accuracy: 0.8763  
Epoch 237/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4760 - accuracy: 0.8763  
Epoch 238/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4749 - accuracy: 0.8763  
Epoch 239/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4739 - accuracy: 0.8775  
Epoch 240/2600  
800/800 [=====] - 0s 17us/step - loss: 0.4729 - accuracy: 0.8788  
Epoch 241/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4719 - accuracy: 0.8788  
Epoch 242/2600  
800/800 [=====] - 0s 9us/step - loss: 0.4708 - accuracy: 0.8788  
Epoch 243/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4698 - accuracy: 0.8800  
Epoch 244/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4688 - accuracy: 0.8813  
Epoch 245/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4678 - accuracy: 0.8813

Epoch 246/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4668 - accuracy: 0.8813  
Epoch 247/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4658 - accuracy: 0.8825  
Epoch 248/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4648 - accuracy: 0.8825  
Epoch 249/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4637 - accuracy: 0.8825  
Epoch 250/2600  
800/800 [=====] - 0s 16us/step - loss: 0.4627 - accuracy: 0.8825  
Epoch 251/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4617 - accuracy: 0.8825  
Epoch 252/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4607 - accuracy: 0.8850  
Epoch 253/2600  
800/800 [=====] - 0s 17us/step - loss: 0.4597 - accuracy: 0.8850  
Epoch 254/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4587 - accuracy: 0.8850  
Epoch 255/2600  
800/800 [=====] - 0s 15us/step - loss: 0.4577 - accuracy: 0.8850  
Epoch 256/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4567 - accuracy: 0.8850  
Epoch 257/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4558 - accuracy: 0.8863  
Epoch 258/2600  
800/800 [=====] - 0s 18us/step - loss: 0.4548 - accuracy: 0.8863  
Epoch 259/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4538 - accuracy: 0.8875  
Epoch 260/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4528 - accuracy: 0.8875  
Epoch 261/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4518 - accuracy: 0.8888  
Epoch 262/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4508 - accuracy: 0.8900  
Epoch 263/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4499 - accuracy: 0.8938  
Epoch 264/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4489 - accuracy: 0.8938  
Epoch 265/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4479 - accuracy: 0.8938  
Epoch 266/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4469 - accuracy: 0.8938  
Epoch 267/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4460 - accuracy: 0.8938  
Epoch 268/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4450 - accuracy: 0.8950  
Epoch 269/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4440 - accuracy: 0.8950  
Epoch 270/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4431 - accuracy: 0.8950  
Epoch 271/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4421 - accuracy: 0.8975  
Epoch 272/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4411 - accuracy: 0.8975  
Epoch 273/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4402 - accuracy: 0.8988  
Epoch 274/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4392 - accuracy: 0.8988  
Epoch 275/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4383 - accuracy: 0.8988  
Epoch 276/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4373 - accuracy: 0.8988  
Epoch 277/2600  
800/800 [=====] - 0s 48us/step - loss: 0.4364 - accuracy: 0.8988  
Epoch 278/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4354 - accuracy: 0.9000  
Epoch 279/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4345 - accuracy: 0.9013  
Epoch 280/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4335 - accuracy: 0.9013  
Epoch 281/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4326 - accuracy: 0.9025  
Epoch 282/2600  
800/800 [=====] - 0s 15us/step - loss: 0.4316 - accuracy: 0.9038  
Epoch 283/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4307 - accuracy: 0.9038  
Epoch 284/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4298 - accuracy: 0.9038  
Epoch 285/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4288 - accuracy: 0.9038  
Epoch 286/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4279 - accuracy: 0.9038  
Epoch 287/2600

800/800 [=====] - 0s 12us/step - loss: 0.4270 - accuracy: 0.9038  
Epoch 288/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4261 - accuracy: 0.9038  
Epoch 289/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4251 - accuracy: 0.9050  
Epoch 290/2600  
800/800 [=====] - 0s 15us/step - loss: 0.4242 - accuracy: 0.9050  
Epoch 291/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4233 - accuracy: 0.9050  
Epoch 292/2600  
800/800 [=====] - 0s 16us/step - loss: 0.4224 - accuracy: 0.9050  
Epoch 293/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4215 - accuracy: 0.9062  
Epoch 294/2600  
800/800 [=====] - 0s 16us/step - loss: 0.4206 - accuracy: 0.9062  
Epoch 295/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4197 - accuracy: 0.9075  
Epoch 296/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4187 - accuracy: 0.9075  
Epoch 297/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4178 - accuracy: 0.9075  
Epoch 298/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4169 - accuracy: 0.9075  
Epoch 299/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4160 - accuracy: 0.9075  
Epoch 300/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4151 - accuracy: 0.9075  
Epoch 301/2600  
800/800 [=====] - 0s 12us/step - loss: 0.4142 - accuracy: 0.9075  
Epoch 302/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4133 - accuracy: 0.9075  
Epoch 303/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4125 - accuracy: 0.9075  
Epoch 304/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4116 - accuracy: 0.9075  
Epoch 305/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4107 - accuracy: 0.9075  
Epoch 306/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4098 - accuracy: 0.9075  
Epoch 307/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4089 - accuracy: 0.9075  
Epoch 308/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4080 - accuracy: 0.9075  
Epoch 309/2600  
800/800 [=====] - 0s 11us/step - loss: 0.4071 - accuracy: 0.9087  
Epoch 310/2600  
800/800 [=====] - 0s 16us/step - loss: 0.4063 - accuracy: 0.9087  
Epoch 311/2600  
800/800 [=====] - 0s 14us/step - loss: 0.4054 - accuracy: 0.9087  
Epoch 312/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4045 - accuracy: 0.9100  
Epoch 313/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4036 - accuracy: 0.9100  
Epoch 314/2600  
800/800 [=====] - 0s 18us/step - loss: 0.4028 - accuracy: 0.9100  
Epoch 315/2600  
800/800 [=====] - 0s 13us/step - loss: 0.4019 - accuracy: 0.9100  
Epoch 316/2600  
800/800 [=====] - 0s 15us/step - loss: 0.4011 - accuracy: 0.9112  
Epoch 317/2600  
800/800 [=====] - 0s 10us/step - loss: 0.4002 - accuracy: 0.9112  
Epoch 318/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3993 - accuracy: 0.9112  
Epoch 319/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3985 - accuracy: 0.9125  
Epoch 320/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3976 - accuracy: 0.9125  
Epoch 321/2600  
800/800 [=====] - 0s 10us/step - loss: 0.3968 - accuracy: 0.9125  
Epoch 322/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3959 - accuracy: 0.9125  
Epoch 323/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3951 - accuracy: 0.9150  
Epoch 324/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3942 - accuracy: 0.9150  
Epoch 325/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3934 - accuracy: 0.9150  
Epoch 326/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3925 - accuracy: 0.9150  
Epoch 327/2600  
800/800 [=====] - 0s 11us/step - loss: 0.3917 - accuracy: 0.9150  
Epoch 328/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3909 - accuracy: 0.9150

Epoch 329/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3900 - accuracy: 0.9162  
Epoch 330/2600  
800/800 [=====] - 0s 11us/step - loss: 0.3892 - accuracy: 0.9162  
Epoch 331/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3884 - accuracy: 0.9162  
Epoch 332/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3876 - accuracy: 0.9162  
Epoch 333/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3867 - accuracy: 0.9162  
Epoch 334/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3859 - accuracy: 0.9162  
Epoch 335/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3851 - accuracy: 0.9162  
Epoch 336/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3843 - accuracy: 0.9162  
Epoch 337/2600  
800/800 [=====] - 0s 11us/step - loss: 0.3834 - accuracy: 0.9162  
Epoch 338/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3826 - accuracy: 0.9162  
Epoch 339/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3818 - accuracy: 0.9162  
Epoch 340/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3810 - accuracy: 0.9162  
Epoch 341/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3802 - accuracy: 0.9162  
Epoch 342/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3794 - accuracy: 0.9187  
Epoch 343/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3786 - accuracy: 0.9187  
Epoch 344/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3778 - accuracy: 0.9187  
Epoch 345/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3770 - accuracy: 0.9187  
Epoch 346/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3762 - accuracy: 0.9187  
Epoch 347/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3754 - accuracy: 0.9187  
Epoch 348/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3746 - accuracy: 0.9187  
Epoch 349/2600  
800/800 [=====] - 0s 48us/step - loss: 0.3738 - accuracy: 0.9187  
Epoch 350/2600  
800/800 [=====] - 0s 27us/step - loss: 0.3730 - accuracy: 0.9187  
Epoch 351/2600  
800/800 [=====] - 0s 21us/step - loss: 0.3722 - accuracy: 0.9187  
Epoch 352/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3714 - accuracy: 0.9200  
Epoch 353/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3706 - accuracy: 0.9200  
Epoch 354/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3698 - accuracy: 0.9200  
Epoch 355/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3690 - accuracy: 0.9200  
Epoch 356/2600  
800/800 [=====] - 0s 19us/step - loss: 0.3682 - accuracy: 0.9200  
Epoch 357/2600  
800/800 [=====] - 0s 11us/step - loss: 0.3675 - accuracy: 0.9200  
Epoch 358/2600  
800/800 [=====] - 0s 10us/step - loss: 0.3667 - accuracy: 0.9200  
Epoch 359/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3659 - accuracy: 0.9200  
Epoch 360/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3651 - accuracy: 0.9200  
Epoch 361/2600  
800/800 [=====] - 0s 9us/step - loss: 0.3643 - accuracy: 0.9200  
Epoch 362/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3636 - accuracy: 0.9200  
Epoch 363/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3628 - accuracy: 0.9200  
Epoch 364/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3620 - accuracy: 0.9200  
Epoch 365/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3613 - accuracy: 0.9200  
Epoch 366/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3605 - accuracy: 0.9212  
Epoch 367/2600  
800/800 [=====] - 0s 9us/step - loss: 0.3597 - accuracy: 0.9212  
Epoch 368/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3590 - accuracy: 0.9212  
Epoch 369/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3582 - accuracy: 0.9212  
Epoch 370/2600

800/800 [=====] - 0s 11us/step - loss: 0.3575 - accuracy: 0.9225  
Epoch 371/2600  
800/800 [=====] - 0s 10us/step - loss: 0.3567 - accuracy: 0.9225  
Epoch 372/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3560 - accuracy: 0.9225  
Epoch 373/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3552 - accuracy: 0.9225  
Epoch 374/2600  
800/800 [=====] - 0s 10us/step - loss: 0.3545 - accuracy: 0.9225  
Epoch 375/2600  
800/800 [=====] - 0s 11us/step - loss: 0.3537 - accuracy: 0.9225  
Epoch 376/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3530 - accuracy: 0.9225  
Epoch 377/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3522 - accuracy: 0.9225  
Epoch 378/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3515 - accuracy: 0.9225  
Epoch 379/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3508 - accuracy: 0.9225  
Epoch 380/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3500 - accuracy: 0.9225  
Epoch 381/2600  
800/800 [=====] - 0s 10us/step - loss: 0.3493 - accuracy: 0.9225  
Epoch 382/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3486 - accuracy: 0.9225  
Epoch 383/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3478 - accuracy: 0.9225  
Epoch 384/2600  
800/800 [=====] - 0s 18us/step - loss: 0.3471 - accuracy: 0.9225  
Epoch 385/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3464 - accuracy: 0.9237  
Epoch 386/2600  
800/800 [=====] - 0s 18us/step - loss: 0.3457 - accuracy: 0.9250  
Epoch 387/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3449 - accuracy: 0.9250  
Epoch 388/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3442 - accuracy: 0.9250  
Epoch 389/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3435 - accuracy: 0.9250  
Epoch 390/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3428 - accuracy: 0.9250  
Epoch 391/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3421 - accuracy: 0.9250  
Epoch 392/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3414 - accuracy: 0.9250  
Epoch 393/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3407 - accuracy: 0.9262  
Epoch 394/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3399 - accuracy: 0.9275  
Epoch 395/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3392 - accuracy: 0.9275  
Epoch 396/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3385 - accuracy: 0.9275  
Epoch 397/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3378 - accuracy: 0.9275  
Epoch 398/2600  
800/800 [=====] - 0s 26us/step - loss: 0.3371 - accuracy: 0.9287  
Epoch 399/2600  
800/800 [=====] - 0s 29us/step - loss: 0.3364 - accuracy: 0.9300  
Epoch 400/2600  
800/800 [=====] - 0s 26us/step - loss: 0.3357 - accuracy: 0.9300  
Epoch 401/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3350 - accuracy: 0.9300  
Epoch 402/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3343 - accuracy: 0.9300  
Epoch 403/2600  
800/800 [=====] - 0s 19us/step - loss: 0.3337 - accuracy: 0.9300  
Epoch 404/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3330 - accuracy: 0.9300  
Epoch 405/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3323 - accuracy: 0.9300  
Epoch 406/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3316 - accuracy: 0.9300  
Epoch 407/2600  
800/800 [=====] - 0s 18us/step - loss: 0.3309 - accuracy: 0.9300  
Epoch 408/2600  
800/800 [=====] - 0s 19us/step - loss: 0.3302 - accuracy: 0.9300  
Epoch 409/2600  
800/800 [=====] - 0s 20us/step - loss: 0.3296 - accuracy: 0.9300  
Epoch 410/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3289 - accuracy: 0.9300  
Epoch 411/2600  
800/800 [=====] - 0s 19us/step - loss: 0.3282 - accuracy: 0.9300



Epoch 412/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3275 - accuracy: 0.9312  
Epoch 413/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3269 - accuracy: 0.9325  
Epoch 414/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3262 - accuracy: 0.9325  
Epoch 415/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3255 - accuracy: 0.9325  
Epoch 416/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3249 - accuracy: 0.9337  
Epoch 417/2600  
800/800 [=====] - 0s 22us/step - loss: 0.3242 - accuracy: 0.9337  
Epoch 418/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3235 - accuracy: 0.9337  
Epoch 419/2600  
800/800 [=====] - 0s 19us/step - loss: 0.3229 - accuracy: 0.9337  
Epoch 420/2600  
800/800 [=====] - 0s 27us/step - loss: 0.3222 - accuracy: 0.9337  
Epoch 421/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3215 - accuracy: 0.9337  
Epoch 422/2600  
800/800 [=====] - 0s 19us/step - loss: 0.3209 - accuracy: 0.9337  
Epoch 423/2600  
800/800 [=====] - 0s 25us/step - loss: 0.3202 - accuracy: 0.9337  
Epoch 424/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3196 - accuracy: 0.9350  
Epoch 425/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3189 - accuracy: 0.9350  
Epoch 426/2600  
800/800 [=====] - 0s 12us/step - loss: 0.3183 - accuracy: 0.9350  
Epoch 427/2600  
800/800 [=====] - 0s 11us/step - loss: 0.3176 - accuracy: 0.9350  
Epoch 428/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3170 - accuracy: 0.9350  
Epoch 429/2600  
800/800 [=====] - 0s 23us/step - loss: 0.3163 - accuracy: 0.9350  
Epoch 430/2600  
800/800 [=====] - 0s 37us/step - loss: 0.3157 - accuracy: 0.9350  
Epoch 431/2600  
800/800 [=====] - 0s 28us/step - loss: 0.3151 - accuracy: 0.9350  
Epoch 432/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3144 - accuracy: 0.9350  
Epoch 433/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3138 - accuracy: 0.9362  
Epoch 434/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3131 - accuracy: 0.9375  
Epoch 435/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3125 - accuracy: 0.9388  
Epoch 436/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3119 - accuracy: 0.9388  
Epoch 437/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3112 - accuracy: 0.9388  
Epoch 438/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3106 - accuracy: 0.9388  
Epoch 439/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3100 - accuracy: 0.9400  
Epoch 440/2600  
800/800 [=====] - 0s 18us/step - loss: 0.3094 - accuracy: 0.9400  
Epoch 441/2600  
800/800 [=====] - 0s 15us/step - loss: 0.3087 - accuracy: 0.9413  
Epoch 442/2600  
800/800 [=====] - 0s 10us/step - loss: 0.3081 - accuracy: 0.9425  
Epoch 443/2600  
800/800 [=====] - 0s 14us/step - loss: 0.3075 - accuracy: 0.9425  
Epoch 444/2600  
800/800 [=====] - 0s 18us/step - loss: 0.3069 - accuracy: 0.9425  
Epoch 445/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3062 - accuracy: 0.9425  
Epoch 446/2600  
800/800 [=====] - 0s 19us/step - loss: 0.3056 - accuracy: 0.9425  
Epoch 447/2600  
800/800 [=====] - 0s 16us/step - loss: 0.3050 - accuracy: 0.9425  
Epoch 448/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3044 - accuracy: 0.9425  
Epoch 449/2600  
800/800 [=====] - 0s 13us/step - loss: 0.3038 - accuracy: 0.9425  
Epoch 450/2600  
800/800 [=====] - 0s 20us/step - loss: 0.3032 - accuracy: 0.9425  
Epoch 451/2600  
800/800 [=====] - 0s 17us/step - loss: 0.3026 - accuracy: 0.9425  
Epoch 452/2600  
800/800 [=====] - 0s 19us/step - loss: 0.3020 - accuracy: 0.9425  
Epoch 453/2600

800/800 [=====] - 0s 17us/step - loss: 0.3014 - accuracy: 0.9438  
Epoch 454/2600  
800/800 [=====] - 0s 20us/step - loss: 0.3008 - accuracy: 0.9450  
Epoch 455/2600  
800/800 [=====] - 0s 57us/step - loss: 0.3001 - accuracy: 0.9450  
Epoch 456/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2995 - accuracy: 0.9450  
Epoch 457/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2989 - accuracy: 0.9450  
Epoch 458/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2984 - accuracy: 0.9450  
Epoch 459/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2978 - accuracy: 0.9450  
Epoch 460/2600  
800/800 [=====] - 0s 28us/step - loss: 0.2972 - accuracy: 0.9450  
Epoch 461/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2966 - accuracy: 0.9450  
Epoch 462/2600  
800/800 [=====] - 0s 31us/step - loss: 0.2960 - accuracy: 0.9450  
Epoch 463/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2954 - accuracy: 0.9450  
Epoch 464/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2948 - accuracy: 0.9450  
Epoch 465/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2942 - accuracy: 0.9450  
Epoch 466/2600  
800/800 [=====] - 0s 47us/step - loss: 0.2936 - accuracy: 0.9450  
Epoch 467/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2930 - accuracy: 0.9450  
Epoch 468/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2925 - accuracy: 0.9450  
Epoch 469/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2919 - accuracy: 0.9450  
Epoch 470/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2913 - accuracy: 0.9450  
Epoch 471/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2907 - accuracy: 0.9450  
Epoch 472/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2901 - accuracy: 0.9450  
Epoch 473/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2896 - accuracy: 0.9450  
Epoch 474/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2890 - accuracy: 0.9450  
Epoch 475/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2884 - accuracy: 0.9450  
Epoch 476/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2879 - accuracy: 0.9463  
Epoch 477/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2873 - accuracy: 0.9463  
Epoch 478/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2867 - accuracy: 0.9463  
Epoch 479/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2862 - accuracy: 0.9463  
Epoch 480/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2856 - accuracy: 0.9463  
Epoch 481/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2850 - accuracy: 0.9463  
Epoch 482/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2845 - accuracy: 0.9463  
Epoch 483/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2839 - accuracy: 0.9463  
Epoch 484/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2834 - accuracy: 0.9463  
Epoch 485/2600  
800/800 [=====] - 0s 12us/step - loss: 0.2828 - accuracy: 0.9463  
Epoch 486/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2822 - accuracy: 0.9463  
Epoch 487/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2817 - accuracy: 0.9463  
Epoch 488/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2811 - accuracy: 0.9488  
Epoch 489/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2806 - accuracy: 0.9488  
Epoch 490/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2800 - accuracy: 0.9488  
Epoch 491/2600  
800/800 [=====] - 0s 30us/step - loss: 0.2795 - accuracy: 0.9488  
Epoch 492/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2789 - accuracy: 0.9488  
Epoch 493/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2784 - accuracy: 0.9488  
Epoch 494/2600  
800/800 [=====] - 0s 23us/step - loss: 0.2779 - accuracy: 0.9488

Epoch 495/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2773 - accuracy: 0.9488  
Epoch 496/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2768 - accuracy: 0.9488  
Epoch 497/2600  
800/800 [=====] - 0s 23us/step - loss: 0.2762 - accuracy: 0.9488  
Epoch 498/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2757 - accuracy: 0.9488  
Epoch 499/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2752 - accuracy: 0.9488  
Epoch 500/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2746 - accuracy: 0.9488  
Epoch 501/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2741 - accuracy: 0.9488  
Epoch 502/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2735 - accuracy: 0.9488  
Epoch 503/2600  
800/800 [=====] - 0s 28us/step - loss: 0.2730 - accuracy: 0.9488  
Epoch 504/2600  
800/800 [=====] - 0s 23us/step - loss: 0.2725 - accuracy: 0.9488  
Epoch 505/2600  
800/800 [=====] - 0s 33us/step - loss: 0.2720 - accuracy: 0.9488  
Epoch 506/2600  
800/800 [=====] - 0s 33us/step - loss: 0.2714 - accuracy: 0.9500  
Epoch 507/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2709 - accuracy: 0.9500  
Epoch 508/2600  
800/800 [=====] - 0s 21us/step - loss: 0.2704 - accuracy: 0.9513  
Epoch 509/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2699 - accuracy: 0.9513  
Epoch 510/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2693 - accuracy: 0.9513  
Epoch 511/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2688 - accuracy: 0.9513  
Epoch 512/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2683 - accuracy: 0.9513  
Epoch 513/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2678 - accuracy: 0.9513  
Epoch 514/2600  
800/800 [=====] - 0s 22us/step - loss: 0.2673 - accuracy: 0.9513  
Epoch 515/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2668 - accuracy: 0.9513  
Epoch 516/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2662 - accuracy: 0.9538  
Epoch 517/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2657 - accuracy: 0.9538  
Epoch 518/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2652 - accuracy: 0.9538  
Epoch 519/2600  
800/800 [=====] - 0s 11us/step - loss: 0.2647 - accuracy: 0.9538  
Epoch 520/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2642 - accuracy: 0.9538  
Epoch 521/2600  
800/800 [=====] - 0s 10us/step - loss: 0.2637 - accuracy: 0.9538  
Epoch 522/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2632 - accuracy: 0.9538  
Epoch 523/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2627 - accuracy: 0.9550  
Epoch 524/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2622 - accuracy: 0.9550  
Epoch 525/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2617 - accuracy: 0.9550  
Epoch 526/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2612 - accuracy: 0.9550  
Epoch 527/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2607 - accuracy: 0.9550  
Epoch 528/2600  
800/800 [=====] - 0s 12us/step - loss: 0.2602 - accuracy: 0.9550  
Epoch 529/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2597 - accuracy: 0.9550  
Epoch 530/2600  
800/800 [=====] - 0s 12us/step - loss: 0.2592 - accuracy: 0.9550  
Epoch 531/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2587 - accuracy: 0.9563  
Epoch 532/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2582 - accuracy: 0.9563  
Epoch 533/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2577 - accuracy: 0.9563  
Epoch 534/2600  
800/800 [=====] - 0s 27us/step - loss: 0.2572 - accuracy: 0.9563  
Epoch 535/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2567 - accuracy: 0.9563  
Epoch 536/2600

800/800 [=====] - 0s 18us/step - loss: 0.2562 - accuracy: 0.9563  
Epoch 537/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2558 - accuracy: 0.9563  
Epoch 538/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2553 - accuracy: 0.9563  
Epoch 539/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2548 - accuracy: 0.9563  
Epoch 540/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2543 - accuracy: 0.9563  
Epoch 541/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2538 - accuracy: 0.9563  
Epoch 542/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2533 - accuracy: 0.9563  
Epoch 543/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2529 - accuracy: 0.9563  
Epoch 544/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2524 - accuracy: 0.9575  
Epoch 545/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2519 - accuracy: 0.9575  
Epoch 546/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2514 - accuracy: 0.9588  
Epoch 547/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2510 - accuracy: 0.9600  
Epoch 548/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2505 - accuracy: 0.9613  
Epoch 549/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2500 - accuracy: 0.9613  
Epoch 550/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2495 - accuracy: 0.9613  
Epoch 551/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2491 - accuracy: 0.9613  
Epoch 552/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2486 - accuracy: 0.9613  
Epoch 553/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2481 - accuracy: 0.9613  
Epoch 554/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2477 - accuracy: 0.9613  
Epoch 555/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2472 - accuracy: 0.9613  
Epoch 556/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2468 - accuracy: 0.9613  
Epoch 557/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2463 - accuracy: 0.9613  
Epoch 558/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2458 - accuracy: 0.9613  
Epoch 559/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2454 - accuracy: 0.9613  
Epoch 560/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2449 - accuracy: 0.9613  
Epoch 561/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2445 - accuracy: 0.9613  
Epoch 562/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2440 - accuracy: 0.9613  
Epoch 563/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2435 - accuracy: 0.9613  
Epoch 564/2600  
800/800 [=====] - 0s 21us/step - loss: 0.2431 - accuracy: 0.9613  
Epoch 565/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2426 - accuracy: 0.9613  
Epoch 566/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2422 - accuracy: 0.9613  
Epoch 567/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2417 - accuracy: 0.9613  
Epoch 568/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2413 - accuracy: 0.9613  
Epoch 569/2600  
800/800 [=====] - 0s 26us/step - loss: 0.2408 - accuracy: 0.9613  
Epoch 570/2600  
800/800 [=====] - 0s 35us/step - loss: 0.2404 - accuracy: 0.9613  
Epoch 571/2600  
800/800 [=====] - 0s 27us/step - loss: 0.2399 - accuracy: 0.9613  
Epoch 572/2600  
800/800 [=====] - 0s 35us/step - loss: 0.2395 - accuracy: 0.9613  
Epoch 573/2600  
800/800 [=====] - 0s 65us/step - loss: 0.2391 - accuracy: 0.9613  
Epoch 574/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2386 - accuracy: 0.9613  
Epoch 575/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2382 - accuracy: 0.9613  
Epoch 576/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2377 - accuracy: 0.9613  
Epoch 577/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2373 - accuracy: 0.9613

Epoch 578/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2369 - accuracy: 0.9613  
Epoch 579/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2364 - accuracy: 0.9613  
Epoch 580/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2360 - accuracy: 0.9613  
Epoch 581/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2355 - accuracy: 0.9613  
Epoch 582/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2351 - accuracy: 0.9613  
Epoch 583/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2347 - accuracy: 0.9613  
Epoch 584/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2342 - accuracy: 0.9613  
Epoch 585/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2338 - accuracy: 0.9613  
Epoch 586/2600  
800/800 [=====] - 0s 22us/step - loss: 0.2334 - accuracy: 0.9613  
Epoch 587/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2330 - accuracy: 0.9613  
Epoch 588/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2325 - accuracy: 0.9625  
Epoch 589/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2321 - accuracy: 0.9625  
Epoch 590/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2317 - accuracy: 0.9625  
Epoch 591/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2313 - accuracy: 0.9625  
Epoch 592/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2308 - accuracy: 0.9625  
Epoch 593/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2304 - accuracy: 0.9625  
Epoch 594/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2300 - accuracy: 0.9638  
Epoch 595/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2296 - accuracy: 0.9638  
Epoch 596/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2292 - accuracy: 0.9638  
Epoch 597/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2287 - accuracy: 0.9638  
Epoch 598/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2283 - accuracy: 0.9638  
Epoch 599/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2279 - accuracy: 0.9638  
Epoch 600/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2275 - accuracy: 0.9638  
Epoch 601/2600  
800/800 [=====] - 0s 22us/step - loss: 0.2271 - accuracy: 0.9638  
Epoch 602/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2267 - accuracy: 0.9638  
Epoch 603/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2263 - accuracy: 0.9638  
Epoch 604/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2258 - accuracy: 0.9638  
Epoch 605/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2254 - accuracy: 0.9638  
Epoch 606/2600  
800/800 [=====] - 0s 25us/step - loss: 0.2250 - accuracy: 0.9638  
Epoch 607/2600  
800/800 [=====] - 0s 24us/step - loss: 0.2246 - accuracy: 0.9638  
Epoch 608/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2242 - accuracy: 0.9638  
Epoch 609/2600  
800/800 [=====] - 0s 27us/step - loss: 0.2238 - accuracy: 0.9638  
Epoch 610/2600  
800/800 [=====] - 0s 22us/step - loss: 0.2234 - accuracy: 0.9638  
Epoch 611/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2230 - accuracy: 0.9638  
Epoch 612/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2226 - accuracy: 0.9638  
Epoch 613/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2222 - accuracy: 0.9650  
Epoch 614/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2218 - accuracy: 0.9650  
Epoch 615/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2214 - accuracy: 0.9650  
Epoch 616/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2210 - accuracy: 0.9650  
Epoch 617/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2206 - accuracy: 0.9650  
Epoch 618/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2202 - accuracy: 0.9650  
Epoch 619/2600

800/800 [=====] - 0s 14us/step - loss: 0.2198 - accuracy: 0.9650  
Epoch 620/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2194 - accuracy: 0.9650  
Epoch 621/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2190 - accuracy: 0.9650  
Epoch 622/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2186 - accuracy: 0.9650  
Epoch 623/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2183 - accuracy: 0.9650  
Epoch 624/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2179 - accuracy: 0.9650  
Epoch 625/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2175 - accuracy: 0.9663  
Epoch 626/2600  
800/800 [=====] - 0s 12us/step - loss: 0.2171 - accuracy: 0.9663  
Epoch 627/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2167 - accuracy: 0.9663  
Epoch 628/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2163 - accuracy: 0.9663  
Epoch 629/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2159 - accuracy: 0.9663  
Epoch 630/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2155 - accuracy: 0.9663  
Epoch 631/2600  
800/800 [=====] - 0s 12us/step - loss: 0.2152 - accuracy: 0.9663  
Epoch 632/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2148 - accuracy: 0.9663  
Epoch 633/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2144 - accuracy: 0.9675  
Epoch 634/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2140 - accuracy: 0.9675  
Epoch 635/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2136 - accuracy: 0.9675  
Epoch 636/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2132 - accuracy: 0.9675  
Epoch 637/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2129 - accuracy: 0.9675  
Epoch 638/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2125 - accuracy: 0.9675  
Epoch 639/2600  
800/800 [=====] - 0s 15us/step - loss: 0.2121 - accuracy: 0.9675  
Epoch 640/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2117 - accuracy: 0.9675  
Epoch 641/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2114 - accuracy: 0.9675  
Epoch 642/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2110 - accuracy: 0.9675  
Epoch 643/2600  
800/800 [=====] - 0s 33us/step - loss: 0.2106 - accuracy: 0.9675  
Epoch 644/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2102 - accuracy: 0.9675  
Epoch 645/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2099 - accuracy: 0.9675  
Epoch 646/2600  
800/800 [=====] - 0s 22us/step - loss: 0.2095 - accuracy: 0.9675  
Epoch 647/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2091 - accuracy: 0.9675  
Epoch 648/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2088 - accuracy: 0.9675  
Epoch 649/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2084 - accuracy: 0.9675  
Epoch 650/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2080 - accuracy: 0.9675  
Epoch 651/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2077 - accuracy: 0.9675  
Epoch 652/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2073 - accuracy: 0.9675  
Epoch 653/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2069 - accuracy: 0.9675  
Epoch 654/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2066 - accuracy: 0.9675  
Epoch 655/2600  
800/800 [=====] - 0s 24us/step - loss: 0.2062 - accuracy: 0.9675  
Epoch 656/2600  
800/800 [=====] - 0s 17us/step - loss: 0.2058 - accuracy: 0.9675  
Epoch 657/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2055 - accuracy: 0.9675  
Epoch 658/2600  
800/800 [=====] - 0s 19us/step - loss: 0.2051 - accuracy: 0.9675  
Epoch 659/2600  
800/800 [=====] - 0s 23us/step - loss: 0.2048 - accuracy: 0.9675  
Epoch 660/2600  
800/800 [=====] - 0s 21us/step - loss: 0.2044 - accuracy: 0.9675

Epoch 661/2600  
800/800 [=====] - 0s 18us/step - loss: 0.2040 - accuracy: 0.9675  
Epoch 662/2600  
800/800 [=====] - 0s 12us/step - loss: 0.2037 - accuracy: 0.9688  
Epoch 663/2600  
800/800 [=====] - 0s 11us/step - loss: 0.2033 - accuracy: 0.9688  
Epoch 664/2600  
800/800 [=====] - 0s 20us/step - loss: 0.2030 - accuracy: 0.9688  
Epoch 665/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2026 - accuracy: 0.9700  
Epoch 666/2600  
800/800 [=====] - 0s 22us/step - loss: 0.2023 - accuracy: 0.9712  
Epoch 667/2600  
800/800 [=====] - 0s 14us/step - loss: 0.2019 - accuracy: 0.9712  
Epoch 668/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2016 - accuracy: 0.9712  
Epoch 669/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2012 - accuracy: 0.9712  
Epoch 670/2600  
800/800 [=====] - 0s 13us/step - loss: 0.2009 - accuracy: 0.9712  
Epoch 671/2600  
800/800 [=====] - 0s 16us/step - loss: 0.2005 - accuracy: 0.9712  
Epoch 672/2600  
800/800 [=====] - 0s 22us/step - loss: 0.2002 - accuracy: 0.9712  
Epoch 673/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1998 - accuracy: 0.9712  
Epoch 674/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1995 - accuracy: 0.9712  
Epoch 675/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1991 - accuracy: 0.9712  
Epoch 676/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1988 - accuracy: 0.9712  
Epoch 677/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1984 - accuracy: 0.9712  
Epoch 678/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1981 - accuracy: 0.9712  
Epoch 679/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1977 - accuracy: 0.9712  
Epoch 680/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1974 - accuracy: 0.9712  
Epoch 681/2600  
800/800 [=====] - 0s 50us/step - loss: 0.1971 - accuracy: 0.9712  
Epoch 682/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1967 - accuracy: 0.9725  
Epoch 683/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1964 - accuracy: 0.9725  
Epoch 684/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1960 - accuracy: 0.9725  
Epoch 685/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1957 - accuracy: 0.9725  
Epoch 686/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1954 - accuracy: 0.9737  
Epoch 687/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1950 - accuracy: 0.9737  
Epoch 688/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1947 - accuracy: 0.9737  
Epoch 689/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1944 - accuracy: 0.9737  
Epoch 690/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1940 - accuracy: 0.9737  
Epoch 691/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1937 - accuracy: 0.9750  
Epoch 692/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1934 - accuracy: 0.9750  
Epoch 693/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1930 - accuracy: 0.9750  
Epoch 694/2600  
800/800 [=====] - 0s 22us/step - loss: 0.1927 - accuracy: 0.9750  
Epoch 695/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1924 - accuracy: 0.9750  
Epoch 696/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1920 - accuracy: 0.9750  
Epoch 697/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1917 - accuracy: 0.9750  
Epoch 698/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1914 - accuracy: 0.9750  
Epoch 699/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1910 - accuracy: 0.9750  
Epoch 700/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1907 - accuracy: 0.9750  
Epoch 701/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1904 - accuracy: 0.9750  
Epoch 702/2600

800/800 [=====] - 0s 11us/step - loss: 0.1901 - accuracy: 0.9750  
Epoch 703/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1897 - accuracy: 0.9750  
Epoch 704/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1894 - accuracy: 0.9750  
Epoch 705/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1891 - accuracy: 0.9750  
Epoch 706/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1888 - accuracy: 0.9750  
Epoch 707/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1884 - accuracy: 0.9750  
Epoch 708/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1881 - accuracy: 0.9750  
Epoch 709/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1878 - accuracy: 0.9750  
Epoch 710/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1875 - accuracy: 0.9750  
Epoch 711/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1872 - accuracy: 0.9750  
Epoch 712/2600  
800/800 [=====] - 0s 11us/step - loss: 0.1868 - accuracy: 0.9750  
Epoch 713/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1865 - accuracy: 0.9750  
Epoch 714/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1862 - accuracy: 0.9750  
Epoch 715/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1859 - accuracy: 0.9750  
Epoch 716/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1856 - accuracy: 0.9750  
Epoch 717/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1853 - accuracy: 0.9750  
Epoch 718/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1849 - accuracy: 0.9750  
Epoch 719/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1846 - accuracy: 0.9750  
Epoch 720/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1843 - accuracy: 0.9750  
Epoch 721/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1840 - accuracy: 0.9750  
Epoch 722/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1837 - accuracy: 0.9750  
Epoch 723/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1834 - accuracy: 0.9750  
Epoch 724/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1831 - accuracy: 0.9762  
Epoch 725/2600  
800/800 [=====] - 0s 24us/step - loss: 0.1828 - accuracy: 0.9762  
Epoch 726/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1825 - accuracy: 0.9762  
Epoch 727/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1821 - accuracy: 0.9762  
Epoch 728/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1818 - accuracy: 0.9762  
Epoch 729/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1815 - accuracy: 0.9762  
Epoch 730/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1812 - accuracy: 0.9762  
Epoch 731/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1809 - accuracy: 0.9762  
Epoch 732/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1806 - accuracy: 0.9762  
Epoch 733/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1803 - accuracy: 0.9762  
Epoch 734/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1800 - accuracy: 0.9762  
Epoch 735/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1797 - accuracy: 0.9762  
Epoch 736/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1794 - accuracy: 0.9762  
Epoch 737/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1791 - accuracy: 0.9762  
Epoch 738/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1788 - accuracy: 0.9762  
Epoch 739/2600  
800/800 [=====] - 0s 24us/step - loss: 0.1785 - accuracy: 0.9762  
Epoch 740/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1782 - accuracy: 0.9762  
Epoch 741/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1779 - accuracy: 0.9762  
Epoch 742/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1776 - accuracy: 0.9762  
Epoch 743/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1773 - accuracy: 0.9762



Epoch 744/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1770 - accuracy: 0.9762  
Epoch 745/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1767 - accuracy: 0.9762  
Epoch 746/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1764 - accuracy: 0.9762  
Epoch 747/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1761 - accuracy: 0.9762  
Epoch 748/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1758 - accuracy: 0.9762  
Epoch 749/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1755 - accuracy: 0.9762  
Epoch 750/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1752 - accuracy: 0.9762  
Epoch 751/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1750 - accuracy: 0.9762  
Epoch 752/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1747 - accuracy: 0.9762  
Epoch 753/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1744 - accuracy: 0.9762  
Epoch 754/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1741 - accuracy: 0.9762  
Epoch 755/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1738 - accuracy: 0.9762  
Epoch 756/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1735 - accuracy: 0.9762  
Epoch 757/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1732 - accuracy: 0.9762  
Epoch 758/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1729 - accuracy: 0.9762  
Epoch 759/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1726 - accuracy: 0.9762  
Epoch 760/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1724 - accuracy: 0.9762  
Epoch 761/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1721 - accuracy: 0.9762  
Epoch 762/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1718 - accuracy: 0.9762  
Epoch 763/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1715 - accuracy: 0.9762  
Epoch 764/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1712 - accuracy: 0.9762  
Epoch 765/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1709 - accuracy: 0.9762  
Epoch 766/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1707 - accuracy: 0.9762  
Epoch 767/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1704 - accuracy: 0.9762  
Epoch 768/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1701 - accuracy: 0.9762  
Epoch 769/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1698 - accuracy: 0.9762  
Epoch 770/2600  
800/800 [=====] - 0s 11us/step - loss: 0.1695 - accuracy: 0.9775  
Epoch 771/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1693 - accuracy: 0.9775  
Epoch 772/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1690 - accuracy: 0.9775  
Epoch 773/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1687 - accuracy: 0.9775  
Epoch 774/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1684 - accuracy: 0.9775  
Epoch 775/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1681 - accuracy: 0.9775  
Epoch 776/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1679 - accuracy: 0.9775  
Epoch 777/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1676 - accuracy: 0.9775  
Epoch 778/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1673 - accuracy: 0.9775  
Epoch 779/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1670 - accuracy: 0.9787  
Epoch 780/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1668 - accuracy: 0.9787  
Epoch 781/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1665 - accuracy: 0.9787  
Epoch 782/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1662 - accuracy: 0.9787  
Epoch 783/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1660 - accuracy: 0.9787  
Epoch 784/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1657 - accuracy: 0.9787  
Epoch 785/2600

800/800 [=====] - 0s 14us/step - loss: 0.1654 - accuracy: 0.9800  
Epoch 786/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1651 - accuracy: 0.9800  
Epoch 787/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1649 - accuracy: 0.9800  
Epoch 788/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1646 - accuracy: 0.9800  
Epoch 789/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1643 - accuracy: 0.9800  
Epoch 790/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1641 - accuracy: 0.9800  
Epoch 791/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1638 - accuracy: 0.9800  
Epoch 792/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1635 - accuracy: 0.9800  
Epoch 793/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1633 - accuracy: 0.9800  
Epoch 794/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1630 - accuracy: 0.9800  
Epoch 795/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1627 - accuracy: 0.9800  
Epoch 796/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1625 - accuracy: 0.9800  
Epoch 797/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1622 - accuracy: 0.9800  
Epoch 798/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1620 - accuracy: 0.9800  
Epoch 799/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1617 - accuracy: 0.9800  
Epoch 800/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1614 - accuracy: 0.9800  
Epoch 801/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1612 - accuracy: 0.9800  
Epoch 802/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1609 - accuracy: 0.9800  
Epoch 803/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1606 - accuracy: 0.9800  
Epoch 804/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1604 - accuracy: 0.9800  
Epoch 805/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1601 - accuracy: 0.9800  
Epoch 806/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1599 - accuracy: 0.9800  
Epoch 807/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1596 - accuracy: 0.9812  
Epoch 808/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1594 - accuracy: 0.9812  
Epoch 809/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1591 - accuracy: 0.9812  
Epoch 810/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1588 - accuracy: 0.9812  
Epoch 811/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1586 - accuracy: 0.9812  
Epoch 812/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1583 - accuracy: 0.9812  
Epoch 813/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1581 - accuracy: 0.9812  
Epoch 814/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1578 - accuracy: 0.9812  
Epoch 815/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1576 - accuracy: 0.9812  
Epoch 816/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1573 - accuracy: 0.9812  
Epoch 817/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1571 - accuracy: 0.9812  
Epoch 818/2600  
800/800 [=====] - 0s 22us/step - loss: 0.1568 - accuracy: 0.9812  
Epoch 819/2600  
800/800 [=====] - 0s 33us/step - loss: 0.1566 - accuracy: 0.9812  
Epoch 820/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1563 - accuracy: 0.9812  
Epoch 821/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1561 - accuracy: 0.9812  
Epoch 822/2600  
800/800 [=====] - 0s 26us/step - loss: 0.1558 - accuracy: 0.9812  
Epoch 823/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1556 - accuracy: 0.9812  
Epoch 824/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1553 - accuracy: 0.9812  
Epoch 825/2600  
800/800 [=====] - 0s 11us/step - loss: 0.1551 - accuracy: 0.9812  
Epoch 826/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1548 - accuracy: 0.9812

Epoch 827/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1546 - accuracy: 0.9812  
Epoch 828/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1543 - accuracy: 0.9812  
Epoch 829/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1541 - accuracy: 0.9812  
Epoch 830/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1538 - accuracy: 0.9812  
Epoch 831/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1536 - accuracy: 0.9812  
Epoch 832/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1534 - accuracy: 0.9812  
Epoch 833/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1531 - accuracy: 0.9812  
Epoch 834/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1529 - accuracy: 0.9812  
Epoch 835/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1526 - accuracy: 0.9812  
Epoch 836/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1524 - accuracy: 0.9812  
Epoch 837/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1521 - accuracy: 0.9812  
Epoch 838/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1519 - accuracy: 0.9812  
Epoch 839/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1517 - accuracy: 0.9812  
Epoch 840/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1514 - accuracy: 0.9812  
Epoch 841/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1512 - accuracy: 0.9812  
Epoch 842/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1509 - accuracy: 0.9812  
Epoch 843/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1507 - accuracy: 0.9812  
Epoch 844/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1505 - accuracy: 0.9812  
Epoch 845/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1502 - accuracy: 0.9812  
Epoch 846/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1500 - accuracy: 0.9812  
Epoch 847/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1498 - accuracy: 0.9812  
Epoch 848/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1495 - accuracy: 0.9812  
Epoch 849/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1493 - accuracy: 0.9812  
Epoch 850/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1491 - accuracy: 0.9812  
Epoch 851/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1488 - accuracy: 0.9812  
Epoch 852/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1486 - accuracy: 0.9812  
Epoch 853/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1484 - accuracy: 0.9812  
Epoch 854/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1481 - accuracy: 0.9812  
Epoch 855/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1479 - accuracy: 0.9812  
Epoch 856/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1477 - accuracy: 0.9812  
Epoch 857/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1474 - accuracy: 0.9812  
Epoch 858/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1472 - accuracy: 0.9812  
Epoch 859/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1470 - accuracy: 0.9812  
Epoch 860/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1467 - accuracy: 0.9812  
Epoch 861/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1465 - accuracy: 0.9812  
Epoch 862/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1463 - accuracy: 0.9812  
Epoch 863/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1461 - accuracy: 0.9812  
Epoch 864/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1458 - accuracy: 0.9812  
Epoch 865/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1456 - accuracy: 0.9812  
Epoch 866/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1454 - accuracy: 0.9812  
Epoch 867/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1451 - accuracy: 0.9812  
Epoch 868/2600

800/800 [=====] - 0s 16us/step - loss: 0.1449 - accuracy: 0.9812  
Epoch 869/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1447 - accuracy: 0.9812  
Epoch 870/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1445 - accuracy: 0.9812  
Epoch 871/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1442 - accuracy: 0.9812  
Epoch 872/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1440 - accuracy: 0.9812  
Epoch 873/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1438 - accuracy: 0.9812  
Epoch 874/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1436 - accuracy: 0.9812  
Epoch 875/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1434 - accuracy: 0.9812  
Epoch 876/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1431 - accuracy: 0.9812  
Epoch 877/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1429 - accuracy: 0.9812  
Epoch 878/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1427 - accuracy: 0.9812  
Epoch 879/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1425 - accuracy: 0.9812  
Epoch 880/2600  
800/800 [=====] - 0s 36us/step - loss: 0.1422 - accuracy: 0.9812  
Epoch 881/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1420 - accuracy: 0.9812  
Epoch 882/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1418 - accuracy: 0.9812  
Epoch 883/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1416 - accuracy: 0.9812  
Epoch 884/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1414 - accuracy: 0.9812  
Epoch 885/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1412 - accuracy: 0.9812  
Epoch 886/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1409 - accuracy: 0.9812  
Epoch 887/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1407 - accuracy: 0.9812  
Epoch 888/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1405 - accuracy: 0.9812  
Epoch 889/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1403 - accuracy: 0.9812  
Epoch 890/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1401 - accuracy: 0.9812  
Epoch 891/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1399 - accuracy: 0.9812  
Epoch 892/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1396 - accuracy: 0.9812  
Epoch 893/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1394 - accuracy: 0.9812  
Epoch 894/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1392 - accuracy: 0.9812  
Epoch 895/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1390 - accuracy: 0.9812  
Epoch 896/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1388 - accuracy: 0.9812  
Epoch 897/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1386 - accuracy: 0.9812  
Epoch 898/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1384 - accuracy: 0.9812  
Epoch 899/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1382 - accuracy: 0.9812  
Epoch 900/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1379 - accuracy: 0.9812  
Epoch 901/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1377 - accuracy: 0.9812  
Epoch 902/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1375 - accuracy: 0.9812  
Epoch 903/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1373 - accuracy: 0.9812  
Epoch 904/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1371 - accuracy: 0.9812  
Epoch 905/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1369 - accuracy: 0.9812  
Epoch 906/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1367 - accuracy: 0.9825  
Epoch 907/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1365 - accuracy: 0.9825  
Epoch 908/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1363 - accuracy: 0.9825  
Epoch 909/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1361 - accuracy: 0.9825

Epoch 910/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1359 - accuracy: 0.9825  
Epoch 911/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1356 - accuracy: 0.9825  
Epoch 912/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1354 - accuracy: 0.9825  
Epoch 913/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1352 - accuracy: 0.9825  
Epoch 914/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1350 - accuracy: 0.9825  
Epoch 915/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1348 - accuracy: 0.9825  
Epoch 916/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1346 - accuracy: 0.9825  
Epoch 917/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1344 - accuracy: 0.9825  
Epoch 918/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1342 - accuracy: 0.9825  
Epoch 919/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1340 - accuracy: 0.9825  
Epoch 920/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1338 - accuracy: 0.9825  
Epoch 921/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1336 - accuracy: 0.9825  
Epoch 922/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1334 - accuracy: 0.9837  
Epoch 923/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1332 - accuracy: 0.9837  
Epoch 924/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1330 - accuracy: 0.9837  
Epoch 925/2600  
800/800 [=====] - 0s 60us/step - loss: 0.1328 - accuracy: 0.9837  
Epoch 926/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1326 - accuracy: 0.9837  
Epoch 927/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1324 - accuracy: 0.9850  
Epoch 928/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1322 - accuracy: 0.9850  
Epoch 929/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1320 - accuracy: 0.9850  
Epoch 930/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1318 - accuracy: 0.9850  
Epoch 931/2600  
800/800 [=====] - 0s 24us/step - loss: 0.1316 - accuracy: 0.9850  
Epoch 932/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1314 - accuracy: 0.9850  
Epoch 933/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1312 - accuracy: 0.9850  
Epoch 934/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1310 - accuracy: 0.9850  
Epoch 935/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1308 - accuracy: 0.9850  
Epoch 936/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1306 - accuracy: 0.9850  
Epoch 937/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1304 - accuracy: 0.9850  
Epoch 938/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1302 - accuracy: 0.9850  
Epoch 939/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1300 - accuracy: 0.9850  
Epoch 940/2600  
800/800 [=====] - 0s 49us/step - loss: 0.1298 - accuracy: 0.9850  
Epoch 941/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1297 - accuracy: 0.9850  
Epoch 942/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1295 - accuracy: 0.9850  
Epoch 943/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1293 - accuracy: 0.9850  
Epoch 944/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1291 - accuracy: 0.9850  
Epoch 945/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1289 - accuracy: 0.9850  
Epoch 946/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1287 - accuracy: 0.9850  
Epoch 947/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1285 - accuracy: 0.9850  
Epoch 948/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1283 - accuracy: 0.9850  
Epoch 949/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1281 - accuracy: 0.9850  
Epoch 950/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1279 - accuracy: 0.9850  
Epoch 951/2600

800/800 [=====] - 0s 18us/step - loss: 0.1277 - accuracy: 0.9850  
Epoch 952/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1275 - accuracy: 0.9850  
Epoch 953/2600  
800/800 [=====] - 0s 11us/step - loss: 0.1274 - accuracy: 0.9850  
Epoch 954/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1272 - accuracy: 0.9850  
Epoch 955/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1270 - accuracy: 0.9850  
Epoch 956/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1268 - accuracy: 0.9850  
Epoch 957/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1266 - accuracy: 0.9850  
Epoch 958/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1264 - accuracy: 0.9850  
Epoch 959/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1262 - accuracy: 0.9850  
Epoch 960/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1260 - accuracy: 0.9850  
Epoch 961/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1259 - accuracy: 0.9850  
Epoch 962/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1257 - accuracy: 0.9850  
Epoch 963/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1255 - accuracy: 0.9850  
Epoch 964/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1253 - accuracy: 0.9850  
Epoch 965/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1251 - accuracy: 0.9850  
Epoch 966/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1249 - accuracy: 0.9850  
Epoch 967/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1247 - accuracy: 0.9850  
Epoch 968/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1246 - accuracy: 0.9850  
Epoch 969/2600  
800/800 [=====] - 0s 25us/step - loss: 0.1244 - accuracy: 0.9850  
Epoch 970/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1242 - accuracy: 0.9850  
Epoch 971/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1240 - accuracy: 0.9850  
Epoch 972/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1238 - accuracy: 0.9850  
Epoch 973/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1237 - accuracy: 0.9850  
Epoch 974/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1235 - accuracy: 0.9850  
Epoch 975/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1233 - accuracy: 0.9850  
Epoch 976/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1231 - accuracy: 0.9850  
Epoch 977/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1229 - accuracy: 0.9850  
Epoch 978/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1228 - accuracy: 0.9862  
Epoch 979/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1226 - accuracy: 0.9862  
Epoch 980/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1224 - accuracy: 0.9862  
Epoch 981/2600  
800/800 [=====] - 0s 44us/step - loss: 0.1222 - accuracy: 0.9862  
Epoch 982/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1220 - accuracy: 0.9862  
Epoch 983/2600  
800/800 [=====] - 0s 22us/step - loss: 0.1219 - accuracy: 0.9862  
Epoch 984/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1217 - accuracy: 0.9862  
Epoch 985/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1215 - accuracy: 0.9862  
Epoch 986/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1213 - accuracy: 0.9862  
Epoch 987/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1211 - accuracy: 0.9862  
Epoch 988/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1210 - accuracy: 0.9862  
Epoch 989/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1208 - accuracy: 0.9862  
Epoch 990/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1206 - accuracy: 0.9862  
Epoch 991/2600  
800/800 [=====] - 0s 27us/step - loss: 0.1204 - accuracy: 0.9862  
Epoch 992/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1203 - accuracy: 0.9862

Epoch 993/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1201 - accuracy: 0.9862  
Epoch 994/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1199 - accuracy: 0.9875  
Epoch 995/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1197 - accuracy: 0.9875  
Epoch 996/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1196 - accuracy: 0.9875  
Epoch 997/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1194 - accuracy: 0.9875  
Epoch 998/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1192 - accuracy: 0.9875  
Epoch 999/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1191 - accuracy: 0.9875  
Epoch 1000/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1189 - accuracy: 0.9875  
Epoch 1001/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1187 - accuracy: 0.9875  
Epoch 1002/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1185 - accuracy: 0.9875  
Epoch 1003/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1184 - accuracy: 0.9875  
Epoch 1004/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1182 - accuracy: 0.9875  
Epoch 1005/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1180 - accuracy: 0.9875  
Epoch 1006/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1179 - accuracy: 0.9875  
Epoch 1007/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1177 - accuracy: 0.9875  
Epoch 1008/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1175 - accuracy: 0.9875  
Epoch 1009/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1174 - accuracy: 0.9875  
Epoch 1010/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1172 - accuracy: 0.9875  
Epoch 1011/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1170 - accuracy: 0.9875  
Epoch 1012/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1168 - accuracy: 0.9875  
Epoch 1013/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1167 - accuracy: 0.9887  
Epoch 1014/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1165 - accuracy: 0.9887  
Epoch 1015/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1163 - accuracy: 0.9887  
Epoch 1016/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1162 - accuracy: 0.9887  
Epoch 1017/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1160 - accuracy: 0.9887  
Epoch 1018/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1158 - accuracy: 0.9887  
Epoch 1019/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1157 - accuracy: 0.9887  
Epoch 1020/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1155 - accuracy: 0.9887  
Epoch 1021/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1153 - accuracy: 0.9887  
Epoch 1022/2600  
800/800 [=====] - 0s 20us/step - loss: 0.1152 - accuracy: 0.9887  
Epoch 1023/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1150 - accuracy: 0.9900  
Epoch 1024/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1149 - accuracy: 0.9900  
Epoch 1025/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1147 - accuracy: 0.9900  
Epoch 1026/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1145 - accuracy: 0.9900  
Epoch 1027/2600  
800/800 [=====] - 0s 27us/step - loss: 0.1144 - accuracy: 0.9900  
Epoch 1028/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1142 - accuracy: 0.9900  
Epoch 1029/2600  
800/800 [=====] - 0s 36us/step - loss: 0.1140 - accuracy: 0.9900  
Epoch 1030/2600  
800/800 [=====] - 0s 24us/step - loss: 0.1139 - accuracy: 0.9900  
Epoch 1031/2600  
800/800 [=====] - 0s 31us/step - loss: 0.1137 - accuracy: 0.9900  
Epoch 1032/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1136 - accuracy: 0.9900  
Epoch 1033/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1134 - accuracy: 0.9900  
Epoch 1034/2600

800/800 [=====] - 0s 20us/step - loss: 0.1132 - accuracy: 0.9900  
Epoch 1035/2600  
800/800 [=====] - 0s 22us/step - loss: 0.1131 - accuracy: 0.9900  
Epoch 1036/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1129 - accuracy: 0.9900  
Epoch 1037/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1127 - accuracy: 0.9900  
Epoch 1038/2600  
800/800 [=====] - 0s 35us/step - loss: 0.1126 - accuracy: 0.9900  
Epoch 1039/2600  
800/800 [=====] - 0s 39us/step - loss: 0.1124 - accuracy: 0.9900  
Epoch 1040/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1123 - accuracy: 0.9900  
Epoch 1041/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1121 - accuracy: 0.9900  
Epoch 1042/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1120 - accuracy: 0.9900  
Epoch 1043/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1118 - accuracy: 0.9900  
Epoch 1044/2600  
800/800 [=====] - 0s 29us/step - loss: 0.1116 - accuracy: 0.9900  
Epoch 1045/2600  
800/800 [=====] - 0s 24us/step - loss: 0.1115 - accuracy: 0.9900  
Epoch 1046/2600  
800/800 [=====] - 0s 23us/step - loss: 0.1113 - accuracy: 0.9900  
Epoch 1047/2600  
800/800 [=====] - 0s 32us/step - loss: 0.1112 - accuracy: 0.9900  
Epoch 1048/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1110 - accuracy: 0.9900  
Epoch 1049/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1109 - accuracy: 0.9900  
Epoch 1050/2600  
800/800 [=====] - 0s 26us/step - loss: 0.1107 - accuracy: 0.9900  
Epoch 1051/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1105 - accuracy: 0.9900  
Epoch 1052/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1104 - accuracy: 0.9900  
Epoch 1053/2600  
800/800 [=====] - 0s 11us/step - loss: 0.1102 - accuracy: 0.9900  
Epoch 1054/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1101 - accuracy: 0.9900  
Epoch 1055/2600  
800/800 [=====] - 0s 11us/step - loss: 0.1099 - accuracy: 0.9900  
Epoch 1056/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1098 - accuracy: 0.9900  
Epoch 1057/2600  
800/800 [=====] - 0s 19us/step - loss: 0.1096 - accuracy: 0.9900  
Epoch 1058/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1095 - accuracy: 0.9900  
Epoch 1059/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1093 - accuracy: 0.9900  
Epoch 1060/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1092 - accuracy: 0.9900  
Epoch 1061/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1090 - accuracy: 0.9900  
Epoch 1062/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1088 - accuracy: 0.9900  
Epoch 1063/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1087 - accuracy: 0.9900  
Epoch 1064/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1085 - accuracy: 0.9900  
Epoch 1065/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1084 - accuracy: 0.9900  
Epoch 1066/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1082 - accuracy: 0.9900  
Epoch 1067/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1081 - accuracy: 0.9900  
Epoch 1068/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1079 - accuracy: 0.9900  
Epoch 1069/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1078 - accuracy: 0.9900  
Epoch 1070/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1076 - accuracy: 0.9900  
Epoch 1071/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1075 - accuracy: 0.9900  
Epoch 1072/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1073 - accuracy: 0.9900  
Epoch 1073/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1072 - accuracy: 0.9900  
Epoch 1074/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1070 - accuracy: 0.9900  
Epoch 1075/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1069 - accuracy: 0.9900



Epoch 1076/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1067 - accuracy: 0.9900  
Epoch 1077/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1066 - accuracy: 0.9900  
Epoch 1078/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1064 - accuracy: 0.9900  
Epoch 1079/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1063 - accuracy: 0.9900  
Epoch 1080/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1062 - accuracy: 0.9900  
Epoch 1081/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1060 - accuracy: 0.9900  
Epoch 1082/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1059 - accuracy: 0.9900  
Epoch 1083/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1057 - accuracy: 0.9900  
Epoch 1084/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1056 - accuracy: 0.9900  
Epoch 1085/2600  
800/800 [=====] - 0s 14us/step - loss: 0.1054 - accuracy: 0.9900  
Epoch 1086/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1053 - accuracy: 0.9900  
Epoch 1087/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1051 - accuracy: 0.9900  
Epoch 1088/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1050 - accuracy: 0.9900  
Epoch 1089/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1048 - accuracy: 0.9900  
Epoch 1090/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1047 - accuracy: 0.9900  
Epoch 1091/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1045 - accuracy: 0.9900  
Epoch 1092/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1044 - accuracy: 0.9900  
Epoch 1093/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1043 - accuracy: 0.9900  
Epoch 1094/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1041 - accuracy: 0.9900  
Epoch 1095/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1040 - accuracy: 0.9900  
Epoch 1096/2600  
800/800 [=====] - 0s 39us/step - loss: 0.1038 - accuracy: 0.9900  
Epoch 1097/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1037 - accuracy: 0.9900  
Epoch 1098/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1035 - accuracy: 0.9900  
Epoch 1099/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1034 - accuracy: 0.9900  
Epoch 1100/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1033 - accuracy: 0.9900  
Epoch 1101/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1031 - accuracy: 0.9900  
Epoch 1102/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1030 - accuracy: 0.9900  
Epoch 1103/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1028 - accuracy: 0.9900  
Epoch 1104/2600  
800/800 [=====] - 0s 21us/step - loss: 0.1027 - accuracy: 0.9900  
Epoch 1105/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1026 - accuracy: 0.9900  
Epoch 1106/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1024 - accuracy: 0.9900  
Epoch 1107/2600  
800/800 [=====] - 0s 15us/step - loss: 0.1023 - accuracy: 0.9900  
Epoch 1108/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1021 - accuracy: 0.9900  
Epoch 1109/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1020 - accuracy: 0.9900  
Epoch 1110/2600  
800/800 [=====] - 0s 17us/step - loss: 0.1019 - accuracy: 0.9900  
Epoch 1111/2600  
800/800 [=====] - 0s 49us/step - loss: 0.1017 - accuracy: 0.9900  
Epoch 1112/2600  
800/800 [=====] - 0s 24us/step - loss: 0.1016 - accuracy: 0.9900  
Epoch 1113/2600  
800/800 [=====] - 0s 34us/step - loss: 0.1014 - accuracy: 0.9900  
Epoch 1114/2600  
800/800 [=====] - 0s 24us/step - loss: 0.1013 - accuracy: 0.9900  
Epoch 1115/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1012 - accuracy: 0.9900  
Epoch 1116/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1010 - accuracy: 0.9900  
Epoch 1117/2600

800/800 [=====] - 0s 19us/step - loss: 0.1009 - accuracy: 0.9900  
Epoch 1118/2600  
800/800 [=====] - 0s 18us/step - loss: 0.1008 - accuracy: 0.9900  
Epoch 1119/2600  
800/800 [=====] - 0s 16us/step - loss: 0.1006 - accuracy: 0.9900  
Epoch 1120/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1005 - accuracy: 0.9900  
Epoch 1121/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1004 - accuracy: 0.9900  
Epoch 1122/2600  
800/800 [=====] - 0s 12us/step - loss: 0.1002 - accuracy: 0.9900  
Epoch 1123/2600  
800/800 [=====] - 0s 13us/step - loss: 0.1001 - accuracy: 0.9900  
Epoch 1124/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0999 - accuracy: 0.9900  
Epoch 1125/2600  
800/800 [=====] - 0s 11us/step - loss: 0.0998 - accuracy: 0.9900  
Epoch 1126/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0997 - accuracy: 0.9900  
Epoch 1127/2600  
800/800 [=====] - 0s 19us/step - loss: 0.0995 - accuracy: 0.9900  
Epoch 1128/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0994 - accuracy: 0.9900  
Epoch 1129/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0993 - accuracy: 0.9900  
Epoch 1130/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0991 - accuracy: 0.9900  
Epoch 1131/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0990 - accuracy: 0.9900  
Epoch 1132/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0989 - accuracy: 0.9900  
Epoch 1133/2600  
800/800 [=====] - 0s 29us/step - loss: 0.0987 - accuracy: 0.9900  
Epoch 1134/2600  
800/800 [=====] - 0s 21us/step - loss: 0.0986 - accuracy: 0.9900  
Epoch 1135/2600  
800/800 [=====] - 0s 27us/step - loss: 0.0985 - accuracy: 0.9900  
Epoch 1136/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0983 - accuracy: 0.9900  
Epoch 1137/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0982 - accuracy: 0.9900  
Epoch 1138/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0981 - accuracy: 0.9900  
Epoch 1139/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0979 - accuracy: 0.9900  
Epoch 1140/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0978 - accuracy: 0.9900  
Epoch 1141/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0977 - accuracy: 0.9900  
Epoch 1142/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0975 - accuracy: 0.9900  
Epoch 1143/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0974 - accuracy: 0.9900  
Epoch 1144/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0973 - accuracy: 0.9900  
Epoch 1145/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0972 - accuracy: 0.9900  
Epoch 1146/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0970 - accuracy: 0.9900  
Epoch 1147/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0969 - accuracy: 0.9900  
Epoch 1148/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0968 - accuracy: 0.9900  
Epoch 1149/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0966 - accuracy: 0.9900  
Epoch 1150/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0965 - accuracy: 0.9900  
Epoch 1151/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0964 - accuracy: 0.9900  
Epoch 1152/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0963 - accuracy: 0.9900  
Epoch 1153/2600  
800/800 [=====] - 0s 19us/step - loss: 0.0961 - accuracy: 0.9912  
Epoch 1154/2600  
800/800 [=====] - 0s 27us/step - loss: 0.0960 - accuracy: 0.9912  
Epoch 1155/2600  
800/800 [=====] - 0s 35us/step - loss: 0.0959 - accuracy: 0.9912  
Epoch 1156/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0957 - accuracy: 0.9912  
Epoch 1157/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0956 - accuracy: 0.9912  
Epoch 1158/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0955 - accuracy: 0.9912

[illegible]

800/800 [=====]	-	0s	15us/step	-	loss:	0.0904	-	accuracy:	0.9912
Epoch 1201/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0902	-	accuracy:	0.9912
Epoch 1202/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0901	-	accuracy:	0.9912
Epoch 1203/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0900	-	accuracy:	0.9912
Epoch 1204/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0899	-	accuracy:	0.9912
Epoch 1205/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0898	-	accuracy:	0.9912
Epoch 1206/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0896	-	accuracy:	0.9912
Epoch 1207/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0895	-	accuracy:	0.9912
Epoch 1208/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0894	-	accuracy:	0.9912
Epoch 1209/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0893	-	accuracy:	0.9912
Epoch 1210/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0892	-	accuracy:	0.9912
Epoch 1211/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0891	-	accuracy:	0.9912
Epoch 1212/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0890	-	accuracy:	0.9912
Epoch 1213/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0888	-	accuracy:	0.9912
Epoch 1214/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0887	-	accuracy:	0.9912
Epoch 1215/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0886	-	accuracy:	0.9912
Epoch 1216/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0885	-	accuracy:	0.9912
Epoch 1217/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0884	-	accuracy:	0.9912
Epoch 1218/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0883	-	accuracy:	0.9912
Epoch 1219/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0882	-	accuracy:	0.9912
Epoch 1220/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0880	-	accuracy:	0.9912
Epoch 1221/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0879	-	accuracy:	0.9912
Epoch 1222/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0878	-	accuracy:	0.9912
Epoch 1223/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0877	-	accuracy:	0.9912
Epoch 1224/2600									
800/800 [=====]	-	0s	43us/step	-	loss:	0.0876	-	accuracy:	0.9912
Epoch 1225/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0875	-	accuracy:	0.9912
Epoch 1226/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0874	-	accuracy:	0.9912
Epoch 1227/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0873	-	accuracy:	0.9912
Epoch 1228/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0871	-	accuracy:	0.9912
Epoch 1229/2600									
800/800 [=====]	-	0s	14us/						

Epoch 1242/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0856 - accuracy: 0.9937  
Epoch 1243/2600  
800/800 [=====] - 0s 11us/step - loss: 0.0855 - accuracy: 0.9937  
Epoch 1244/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0854 - accuracy: 0.9937  
Epoch 1245/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0853 - accuracy: 0.9937  
Epoch 1246/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0852 - accuracy: 0.9937  
Epoch 1247/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0851 - accuracy: 0.9937  
Epoch 1248/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0849 - accuracy: 0.9937  
Epoch 1249/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0848 - accuracy: 0.9937  
Epoch 1250/2600  
800/800 [=====] - 0s 21us/step - loss: 0.0847 - accuracy: 0.9937  
Epoch 1251/2600  
800/800 [=====] - 0s 21us/step - loss: 0.0846 - accuracy: 0.9937  
Epoch 1252/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0845 - accuracy: 0.9937  
Epoch 1253/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0844 - accuracy: 0.9937  
Epoch 1254/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0843 - accuracy: 0.9937  
Epoch 1255/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0842 - accuracy: 0.9937  
Epoch 1256/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0841 - accuracy: 0.9937  
Epoch 1257/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0840 - accuracy: 0.9937  
Epoch 1258/2600  
800/800 [=====] - 0s 27us/step - loss: 0.0839 - accuracy: 0.9937  
Epoch 1259/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0838 - accuracy: 0.9937  
Epoch 1260/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0837 - accuracy: 0.9937  
Epoch 1261/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0836 - accuracy: 0.9937  
Epoch 1262/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0835 - accuracy: 0.9937  
Epoch 1263/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0834 - accuracy: 0.9937  
Epoch 1264/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0832 - accuracy: 0.9937  
Epoch 1265/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0831 - accuracy: 0.9937  
Epoch 1266/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0830 - accuracy: 0.9937  
Epoch 1267/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0829 - accuracy: 0.9937  
Epoch 1268/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0828 - accuracy: 0.9937  
Epoch 1269/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0827 - accuracy: 0.9937  
Epoch 1270/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0826 - accuracy: 0.9937  
Epoch 1271/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0825 - accuracy: 0.9937  
Epoch 1272/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0824 - accuracy: 0.9937  
Epoch 1273/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0823 - accuracy: 0.9937  
Epoch 1274/2600  
800/800 [=====] - 0s 19us/step - loss: 0.0822 - accuracy: 0.9937  
Epoch 1275/2600  
800/800 [=====] - 0s 20us/step - loss: 0.0821 - accuracy: 0.9937  
Epoch 1276/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0820 - accuracy: 0.9937  
Epoch 1277/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0819 - accuracy: 0.9937  
Epoch 1278/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0818 - accuracy: 0.9937  
Epoch 1279/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0817 - accuracy: 0.9937  
Epoch 1280/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0816 - accuracy: 0.9937  
Epoch 1281/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0815 - accuracy: 0.9937  
Epoch 1282/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0814 - accuracy: 0.9937  
Epoch 1283/2600

800/800 [=====] - 0s 14us/step - loss: 0.0813 - accuracy: 0.9937  
Epoch 1284/2600  
800/800 [=====] - 0s 11us/step - loss: 0.0812 - accuracy: 0.9937  
Epoch 1285/2600  
800/800 [=====] - 0s 11us/step - loss: 0.0811 - accuracy: 0.9937  
Epoch 1286/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0810 - accuracy: 0.9950  
Epoch 1287/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0809 - accuracy: 0.9950  
Epoch 1288/2600  
800/800 [=====] - 0s 11us/step - loss: 0.0808 - accuracy: 0.9950  
Epoch 1289/2600  
800/800 [=====] - 0s 42us/step - loss: 0.0807 - accuracy: 0.9950  
Epoch 1290/2600  
800/800 [=====] - 0s 19us/step - loss: 0.0806 - accuracy: 0.9950  
Epoch 1291/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0805 - accuracy: 0.9950  
Epoch 1292/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0804 - accuracy: 0.9950  
Epoch 1293/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0803 - accuracy: 0.9950  
Epoch 1294/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0802 - accuracy: 0.9950  
Epoch 1295/2600  
800/800 [=====] - 0s 30us/step - loss: 0.0801 - accuracy: 0.9950  
Epoch 1296/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0800 - accuracy: 0.9950  
Epoch 1297/2600  
800/800 [=====] - 0s 21us/step - loss: 0.0799 - accuracy: 0.9950  
Epoch 1298/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0798 - accuracy: 0.9950  
Epoch 1299/2600  
800/800 [=====] - 0s 22us/step - loss: 0.0797 - accuracy: 0.9950  
Epoch 1300/2600  
800/800 [=====] - 0s 35us/step - loss: 0.0796 - accuracy: 0.9950  
Epoch 1301/2600  
800/800 [=====] - 0s 27us/step - loss: 0.0795 - accuracy: 0.9950  
Epoch 1302/2600  
800/800 [=====] - 0s 20us/step - loss: 0.0794 - accuracy: 0.9950  
Epoch 1303/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0793 - accuracy: 0.9950  
Epoch 1304/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0792 - accuracy: 0.9950  
Epoch 1305/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0791 - accuracy: 0.9950  
Epoch 1306/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0790 - accuracy: 0.9950  
Epoch 1307/2600  
800/800 [=====] - 0s 11us/step - loss: 0.0789 - accuracy: 0.9950  
Epoch 1308/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0788 - accuracy: 0.9950  
Epoch 1309/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0787 - accuracy: 0.9950  
Epoch 1310/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0786 - accuracy: 0.9950  
Epoch 1311/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0785 - accuracy: 0.9950  
Epoch 1312/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0784 - accuracy: 0.9950  
Epoch 1313/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0783 - accuracy: 0.9950  
Epoch 1314/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0782 - accuracy: 0.9950  
Epoch 1315/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0781 - accuracy: 0.9950  
Epoch 1316/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0780 - accuracy: 0.9950  
Epoch 1317/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0780 - accuracy: 0.9950  
Epoch 1318/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0779 - accuracy: 0.9950  
Epoch 1319/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0778 - accuracy: 0.9950  
Epoch 1320/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0777 - accuracy: 0.9950  
Epoch 1321/2600  
800/800 [=====] - 0s 20us/step - loss: 0.0776 - accuracy: 0.9950  
Epoch 1322/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0775 - accuracy: 0.9950  
Epoch 1323/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0774 - accuracy: 0.9950  
Epoch 1324/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0773 - accuracy: 0.9950

Epoch 1325/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0772 - accuracy: 0.9950  
Epoch 1326/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0771 - accuracy: 0.9950  
Epoch 1327/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0770 - accuracy: 0.9950  
Epoch 1328/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0769 - accuracy: 0.9950  
Epoch 1329/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0768 - accuracy: 0.9950  
Epoch 1330/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0767 - accuracy: 0.9950  
Epoch 1331/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0766 - accuracy: 0.9950  
Epoch 1332/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0765 - accuracy: 0.9950  
Epoch 1333/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0764 - accuracy: 0.9950  
Epoch 1334/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0764 - accuracy: 0.9950  
Epoch 1335/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0763 - accuracy: 0.9950  
Epoch 1336/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0762 - accuracy: 0.9950  
Epoch 1337/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0761 - accuracy: 0.9950  
Epoch 1338/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0760 - accuracy: 0.9950  
Epoch 1339/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0759 - accuracy: 0.9950  
Epoch 1340/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0758 - accuracy: 0.9950  
Epoch 1341/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0757 - accuracy: 0.9950  
Epoch 1342/2600  
800/800 [=====] - 0s 11us/step - loss: 0.0756 - accuracy: 0.9950  
Epoch 1343/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0755 - accuracy: 0.9950  
Epoch 1344/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0754 - accuracy: 0.9950  
Epoch 1345/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0753 - accuracy: 0.9962  
Epoch 1346/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0753 - accuracy: 0.9962  
Epoch 1347/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0752 - accuracy: 0.9962  
Epoch 1348/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0751 - accuracy: 0.9962  
Epoch 1349/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0750 - accuracy: 0.9962  
Epoch 1350/2600  
800/800 [=====] - 0s 45us/step - loss: 0.0749 - accuracy: 0.9962  
Epoch 1351/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0748 - accuracy: 0.9962  
Epoch 1352/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0747 - accuracy: 0.9962  
Epoch 1353/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0746 - accuracy: 0.9962  
Epoch 1354/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0745 - accuracy: 0.9962  
Epoch 1355/2600  
800/800 [=====] - 0s 20us/step - loss: 0.0744 - accuracy: 0.9962  
Epoch 1356/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0744 - accuracy: 0.9962  
Epoch 1357/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0743 - accuracy: 0.9962  
Epoch 1358/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0742 - accuracy: 0.9962  
Epoch 1359/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0741 - accuracy: 0.9962  
Epoch 1360/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0740 - accuracy: 0.9962  
Epoch 1361/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0739 - accuracy: 0.9962  
Epoch 1362/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0738 - accuracy: 0.9962  
Epoch 1363/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0737 - accuracy: 0.9962  
Epoch 1364/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0737 - accuracy: 0.9962  
Epoch 1365/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0736 - accuracy: 0.9962  
Epoch 1366/2600

800/800 [=====]	-	0s	14us/step	-	loss:	0.0735	-	accuracy:	0.9962
Epoch 1367/2600									
800/800 [=====]	-	0s	25us/step	-	loss:	0.0734	-	accuracy:	0.9962
Epoch 1368/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0733	-	accuracy:	0.9962
Epoch 1369/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0732	-	accuracy:	0.9962
Epoch 1370/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0731	-	accuracy:	0.9962
Epoch 1371/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0730	-	accuracy:	0.9962
Epoch 1372/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0730	-	accuracy:	0.9962
Epoch 1373/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0729	-	accuracy:	0.9962
Epoch 1374/2600									
800/800 [=====]	-	0s	20us/step	-	loss:	0.0728	-	accuracy:	0.9962
Epoch 1375/2600									
800/800 [=====]	-	0s	24us/step	-	loss:	0.0727	-	accuracy:	0.9962
Epoch 1376/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0726	-	accuracy:	0.9962
Epoch 1377/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0725	-	accuracy:	0.9962
Epoch 1378/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0724	-	accuracy:	0.9962
Epoch 1379/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0724	-	accuracy:	0.9962
Epoch 1380/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0723	-	accuracy:	0.9962
Epoch 1381/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0722	-	accuracy:	0.9962
Epoch 1382/2600									
800/800 [=====]	-	0s	22us/step	-	loss:	0.0721	-	accuracy:	0.9962
Epoch 1383/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0720	-	accuracy:	0.9962
Epoch 1384/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0719	-	accuracy:	0.9962
Epoch 1385/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0718	-	accuracy:	0.9962
Epoch 1386/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0718	-	accuracy:	0.9962
Epoch 1387/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0717	-	accuracy:	0.9962
Epoch 1388/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0716	-	accuracy:	0.9962
Epoch 1389/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0715	-	accuracy:	0.9962
Epoch 1390/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0714	-	accuracy:	0.9962
Epoch 1391/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0713	-	accuracy:	0.9962
Epoch 1392/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0713	-	accuracy:	0.9962
Epoch 1393/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0712	-	accuracy:	0.9962
Epoch 1394/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0711	-	accuracy:	0.9962
Epoch 1395/2600									
800/800 [=====]	-	0s	15us/						



Epoch 1408/2600  
800/800 [=====] - 0s 21us/step - loss: 0.0699 - accuracy: 0.9962  
Epoch 1409/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0698 - accuracy: 0.9962  
Epoch 1410/2600  
800/800 [=====] - 0s 20us/step - loss: 0.0698 - accuracy: 0.9962  
Epoch 1411/2600  
800/800 [=====] - 0s 19us/step - loss: 0.0697 - accuracy: 0.9962  
Epoch 1412/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0696 - accuracy: 0.9962  
Epoch 1413/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0695 - accuracy: 0.9962  
Epoch 1414/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0694 - accuracy: 0.9962  
Epoch 1415/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0694 - accuracy: 0.9962  
Epoch 1416/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0693 - accuracy: 0.9962  
Epoch 1417/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0692 - accuracy: 0.9962  
Epoch 1418/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0691 - accuracy: 0.9962  
Epoch 1419/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0690 - accuracy: 0.9962  
Epoch 1420/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0690 - accuracy: 0.9962  
Epoch 1421/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0689 - accuracy: 0.9962  
Epoch 1422/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0688 - accuracy: 0.9962  
Epoch 1423/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0687 - accuracy: 0.9962  
Epoch 1424/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0686 - accuracy: 0.9962  
Epoch 1425/2600  
800/800 [=====] - 0s 19us/step - loss: 0.0686 - accuracy: 0.9962  
Epoch 1426/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0685 - accuracy: 0.9962  
Epoch 1427/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0684 - accuracy: 0.9975  
Epoch 1428/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0683 - accuracy: 0.9975  
Epoch 1429/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0682 - accuracy: 0.9975  
Epoch 1430/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0682 - accuracy: 0.9975  
Epoch 1431/2600  
800/800 [=====] - 0s 16us/step - loss: 0.0681 - accuracy: 0.9975  
Epoch 1432/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0680 - accuracy: 0.9975  
Epoch 1433/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0679 - accuracy: 0.9975  
Epoch 1434/2600  
800/800 [=====] - 0s 17us/step - loss: 0.0679 - accuracy: 0.9975  
Epoch 1435/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0678 - accuracy: 0.9987  
Epoch 1436/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0677 - accuracy: 0.9987  
Epoch 1437/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0676 - accuracy: 0.9987  
Epoch 1438/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0675 - accuracy: 0.9987  
Epoch 1439/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0675 - accuracy: 0.9987  
Epoch 1440/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0674 - accuracy: 0.9987  
Epoch 1441/2600  
800/800 [=====] - 0s 12us/step - loss: 0.0673 - accuracy: 0.9987  
Epoch 1442/2600  
800/800 [=====] - 0s 20us/step - loss: 0.0672 - accuracy: 0.9987  
Epoch 1443/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0672 - accuracy: 0.9987  
Epoch 1444/2600  
800/800 [=====] - 0s 19us/step - loss: 0.0671 - accuracy: 0.9987  
Epoch 1445/2600  
800/800 [=====] - 0s 14us/step - loss: 0.0670 - accuracy: 0.9987  
Epoch 1446/2600  
800/800 [=====] - 0s 13us/step - loss: 0.0669 - accuracy: 0.9987  
Epoch 1447/2600  
800/800 [=====] - 0s 15us/step - loss: 0.0669 - accuracy: 0.9987  
Epoch 1448/2600  
800/800 [=====] - 0s 18us/step - loss: 0.0668 - accuracy: 0.9987  
Epoch 1449/2600

800/800 [=====]	-	0s	16us/step	-	loss:	0.0667	-	accuracy:	0.9987
Epoch 1450/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0666	-	accuracy:	0.9987
Epoch 1451/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0666	-	accuracy:	0.9987
Epoch 1452/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0665	-	accuracy:	0.9987
Epoch 1453/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0664	-	accuracy:	0.9987
Epoch 1454/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0663	-	accuracy:	0.9987
Epoch 1455/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0662	-	accuracy:	0.9987
Epoch 1456/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0662	-	accuracy:	0.9987
Epoch 1457/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0661	-	accuracy:	0.9987
Epoch 1458/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0660	-	accuracy:	0.9987
Epoch 1459/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0659	-	accuracy:	0.9987
Epoch 1460/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0659	-	accuracy:	0.9987
Epoch 1461/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0658	-	accuracy:	0.9987
Epoch 1462/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0657	-	accuracy:	0.9987
Epoch 1463/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0657	-	accuracy:	0.9987
Epoch 1464/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0656	-	accuracy:	0.9987
Epoch 1465/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0655	-	accuracy:	0.9987
Epoch 1466/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0654	-	accuracy:	0.9987
Epoch 1467/2600									
800/800 [=====]	-	0s	32us/step	-	loss:	0.0654	-	accuracy:	0.9987
Epoch 1468/2600									
800/800 [=====]	-	0s	27us/step	-	loss:	0.0653	-	accuracy:	0.9987
Epoch 1469/2600									
800/800 [=====]	-	0s	27us/step	-	loss:	0.0652	-	accuracy:	0.9987
Epoch 1470/2600									
800/800 [=====]	-	0s	55us/step	-	loss:	0.0651	-	accuracy:	0.9987
Epoch 1471/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0651	-	accuracy:	0.9987
Epoch 1472/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0650	-	accuracy:	0.9987
Epoch 1473/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0649	-	accuracy:	0.9987
Epoch 1474/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0648	-	accuracy:	0.9987
Epoch 1475/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0648	-	accuracy:	0.9987
Epoch 1476/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0647	-	accuracy:	0.9987
Epoch 1477/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0646	-	accuracy:	0.9987
Epoch 1478/2600									
800/800 [=====]	-	0s	15us/						

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800/800 [=====]	-	0s	12us/step	-	loss:	0.0608	-	accuracy:	0.9987
Epoch 1533/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0607	-	accuracy:	0.9987
Epoch 1534/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0607	-	accuracy:	0.9987
Epoch 1535/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0606	-	accuracy:	0.9987
Epoch 1536/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0605	-	accuracy:	0.9987
Epoch 1537/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0605	-	accuracy:	0.9987
Epoch 1538/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0604	-	accuracy:	0.9987
Epoch 1539/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0603	-	accuracy:	0.9987
Epoch 1540/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0603	-	accuracy:	0.9987
Epoch 1541/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0602	-	accuracy:	0.9987
Epoch 1542/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0601	-	accuracy:	0.9987
Epoch 1543/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0601	-	accuracy:	0.9987
Epoch 1544/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0600	-	accuracy:	0.9987
Epoch 1545/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0600	-	accuracy:	0.9987
Epoch 1546/2600									
800/800 [=====]	-	0s	22us/step	-	loss:	0.0599	-	accuracy:	0.9987
Epoch 1547/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0598	-	accuracy:	0.9987
Epoch 1548/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0598	-	accuracy:	0.9987
Epoch 1549/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0597	-	accuracy:	0.9987
Epoch 1550/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0596	-	accuracy:	0.9987
Epoch 1551/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0596	-	accuracy:	0.9987
Epoch 1552/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0595	-	accuracy:	0.9987
Epoch 1553/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0594	-	accuracy:	0.9987
Epoch 1554/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0594	-	accuracy:	0.9987
Epoch 1555/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0593	-	accuracy:	0.9987
Epoch 1556/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0592	-	accuracy:	0.9987
Epoch 1557/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0592	-	accuracy:	0.9987
Epoch 1558/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0591	-	accuracy:	0.9987
Epoch 1559/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0591	-	accuracy:	0.9987
Epoch 1560/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0590	-	accuracy:	0.9987
Epoch 1561/2600									
800/800 [=====]	-	0s	16us/						

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800/800 [=====]	-	0s	14us/step	-	loss:	0.0557	-	accuracy:	1.0000
Epoch 1616/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0556	-	accuracy:	1.0000
Epoch 1617/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0555	-	accuracy:	1.0000
Epoch 1618/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0555	-	accuracy:	1.0000
Epoch 1619/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0554	-	accuracy:	1.0000
Epoch 1620/2600									
800/800 [=====]	-	0s	28us/step	-	loss:	0.0554	-	accuracy:	1.0000
Epoch 1621/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0553	-	accuracy:	1.0000
Epoch 1622/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0552	-	accuracy:	1.0000
Epoch 1623/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0552	-	accuracy:	1.0000
Epoch 1624/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0551	-	accuracy:	1.0000
Epoch 1625/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0551	-	accuracy:	1.0000
Epoch 1626/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0550	-	accuracy:	1.0000
Epoch 1627/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0550	-	accuracy:	1.0000
Epoch 1628/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0549	-	accuracy:	1.0000
Epoch 1629/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0548	-	accuracy:	1.0000
Epoch 1630/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0548	-	accuracy:	1.0000
Epoch 1631/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0547	-	accuracy:	1.0000
Epoch 1632/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0547	-	accuracy:	1.0000
Epoch 1633/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0546	-	accuracy:	1.0000
Epoch 1634/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0546	-	accuracy:	1.0000
Epoch 1635/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0545	-	accuracy:	1.0000
Epoch 1636/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0545	-	accuracy:	1.0000
Epoch 1637/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0544	-	accuracy:	1.0000
Epoch 1638/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0543	-	accuracy:	1.0000
Epoch 1639/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0543	-	accuracy:	1.0000
Epoch 1640/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0542	-	accuracy:	1.0000
Epoch 1641/2600									
800/800 [=====]	-	0s	24us/step	-	loss:	0.0542	-	accuracy:	1.0000
Epoch 1642/2600									
800/800 [=====]	-	0s	29us/step	-	loss:	0.0541	-	accuracy:	1.0000
Epoch 1643/2600									
800/800 [=====]	-	0s	23us/step	-	loss:	0.0541	-	accuracy:	1.0000
Epoch 1644/2600									
800/800 [=====]	-	0s	14us/						

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800/800 [=====]	-	0s	19us/step	-	loss:	0.0511	-	accuracy:	1.0000
Epoch 1699/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0511	-	accuracy:	1.0000
Epoch 1700/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0510	-	accuracy:	1.0000
Epoch 1701/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0510	-	accuracy:	1.0000
Epoch 1702/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0509	-	accuracy:	1.0000
Epoch 1703/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0509	-	accuracy:	1.0000
Epoch 1704/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0508	-	accuracy:	1.0000
Epoch 1705/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0508	-	accuracy:	1.0000
Epoch 1706/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0507	-	accuracy:	1.0000
Epoch 1707/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0507	-	accuracy:	1.0000
Epoch 1708/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0506	-	accuracy:	1.0000
Epoch 1709/2600									
800/800 [=====]	-	0s	50us/step	-	loss:	0.0506	-	accuracy:	1.0000
Epoch 1710/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0505	-	accuracy:	1.0000
Epoch 1711/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0505	-	accuracy:	1.0000
Epoch 1712/2600									
800/800 [=====]	-	0s	20us/step	-	loss:	0.0504	-	accuracy:	1.0000
Epoch 1713/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0504	-	accuracy:	1.0000
Epoch 1714/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0503	-	accuracy:	1.0000
Epoch 1715/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0503	-	accuracy:	1.0000
Epoch 1716/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0502	-	accuracy:	1.0000
Epoch 1717/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0502	-	accuracy:	1.0000
Epoch 1718/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0501	-	accuracy:	1.0000
Epoch 1719/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0501	-	accuracy:	1.0000
Epoch 1720/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0500	-	accuracy:	1.0000
Epoch 1721/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0500	-	accuracy:	1.0000
Epoch 1722/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0499	-	accuracy:	1.0000
Epoch 1723/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0499	-	accuracy:	1.0000
Epoch 1724/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0498	-	accuracy:	1.0000
Epoch 1725/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0498	-	accuracy:	1.0000
Epoch 1726/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0497	-	accuracy:	1.0000
Epoch 1727/2600									
800/800 [=====]	-	0s	17us/						



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800/800 [=====]	-	0s	14us/step	-	loss:	0.0471	-	accuracy:	1.0000
Epoch 1782/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0471	-	accuracy:	1.0000
Epoch 1783/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0470	-	accuracy:	1.0000
Epoch 1784/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0470	-	accuracy:	1.0000
Epoch 1785/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0470	-	accuracy:	1.0000
Epoch 1786/2600									
800/800 [=====]	-	0s	11us/step	-	loss:	0.0469	-	accuracy:	1.0000
Epoch 1787/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0469	-	accuracy:	1.0000
Epoch 1788/2600									
800/800 [=====]	-	0s	20us/step	-	loss:	0.0468	-	accuracy:	1.0000
Epoch 1789/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0468	-	accuracy:	1.0000
Epoch 1790/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0467	-	accuracy:	1.0000
Epoch 1791/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0467	-	accuracy:	1.0000
Epoch 1792/2600									
800/800 [=====]	-	0s	20us/step	-	loss:	0.0466	-	accuracy:	1.0000
Epoch 1793/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0466	-	accuracy:	1.0000
Epoch 1794/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0466	-	accuracy:	1.0000
Epoch 1795/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0465	-	accuracy:	1.0000
Epoch 1796/2600									
800/800 [=====]	-	0s	25us/step	-	loss:	0.0465	-	accuracy:	1.0000
Epoch 1797/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0464	-	accuracy:	1.0000
Epoch 1798/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0464	-	accuracy:	1.0000
Epoch 1799/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0463	-	accuracy:	1.0000
Epoch 1800/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0463	-	accuracy:	1.0000
Epoch 1801/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0463	-	accuracy:	1.0000
Epoch 1802/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0462	-	accuracy:	1.0000
Epoch 1803/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0462	-	accuracy:	1.0000
Epoch 1804/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0461	-	accuracy:	1.0000
Epoch 1805/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0461	-	accuracy:	1.0000
Epoch 1806/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0460	-	accuracy:	1.0000
Epoch 1807/2600									
800/800 [=====]	-	0s	10us/step	-	loss:	0.0460	-	accuracy:	1.0000
Epoch 1808/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0459	-	accuracy:	1.0000
Epoch 1809/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0459	-	accuracy:	1.0000
Epoch 1810/2600									
800/800 [=====]	-	0s	21us/						

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Epoch 1906/2600					
800/800 [=====]	-	0s 19us/step	- loss:	0.0420	- accuracy: 1.0000
Epoch 1907/2600					
800/800 [=====]	-	0s 32us/step	- loss:	0.0419	- accuracy: 1.0000
Epoch 1908/2600					
800/800 [=====]	-	0s 28us/step	- loss:	0.0419	- accuracy: 1.0000
Epoch 1909/2600					
800/800 [=====]	-	0s 17us/step	- loss:	0.0419	- accuracy: 1.0000
Epoch 1910/2600					
800/800 [=====]	-	0s 16us/step	- loss:	0.0418	- accuracy: 1.0000
Epoch 1911/2600					
800/800 [=====]	-	0s 18us/step	- loss:	0.0418	- accuracy: 1.0000
Epoch 1912/2600					
800/800 [=====]	-	0s 22us/step	- loss:	0.0418	- accuracy: 1.0000
Epoch 1913/2600					
800/800 [=====]	-	0s 17us/step	- loss:	0.0417	- accuracy: 1.0000
Epoch 1914/2600					
800/800 [=====]	-	0s 16us/step	- loss:	0.0417	- accuracy: 1.0000
Epoch 1915/2600					
800/800 [=====]	-	0s 20us/step	- loss:	0.0416	- accuracy: 1.0000
Epoch 1916/2600					
800/800 [=====]	-	0s 21us/step	- loss:	0.0416	- accuracy: 1.0000
Epoch 1917/2600					
800/800 [=====]	-	0s 16us/step	- loss:	0.0416	- accuracy: 1.0000
Epoch 1918/2600					
800/800 [=====]	-	0s 24us/step	- loss:	0.0415	- accuracy: 1.0000
Epoch 1919/2600					
800/800 [=====]	-	0s 20us/step	- loss:	0.0415	- accuracy: 1.0000
Epoch 1920/2600					
800/800 [=====]	-	0s 21us/step	- loss:	0.0415	- accuracy: 1.0000
Epoch 1921/2600					
800/800 [=====]	-	0s 48us/step	- loss:	0.0414	- accuracy: 1.0000
Epoch 1922/2600					
800/800 [=====]	-	0s 31us/step	- loss:	0.0414	- accuracy: 1.0000
Epoch 1923/2600					
800/800 [=====]	-	0s 24us/step	- loss:	0.0413	- accuracy: 1.0000
Epoch 1924/2600					
800/800 [=====]	-	0s 26us/step	- loss:	0.0413	- accuracy: 1.0000
Epoch 1925/2600					
800/800 [=====]	-	0s 20us/step	- loss:	0.0413	- accuracy: 1.0000
Epoch 1926/2600					
800/800 [=====]	-	0s 17us/step	- loss:	0.0412	- accuracy: 1.0000
Epoch 1927/2600					
800/800 [=====]	-	0s 20us/step	- loss:	0.0412	- accuracy: 1.0000
Epoch 1928/2600					
800/800 [=====]	-	0s 19us/step	- loss:	0.0412	- accuracy: 1.0000
Epoch 1929/2600					
800/800 [=====]	-	0s 26us/step	- loss:	0.0411	- accuracy: 1.0000
Epoch 1930/2600					
800/800 [=====]	-	0s 20us/step	- loss:	0.0411	- accuracy: 1.0000
Epoch 1931/2600					
800/800 [=====]	-	0s 19us/step	- loss:	0.0411	- accuracy: 1.0000
Epoch 1932/2600					
800/800 [=====]	-	0s 30us/step	- loss:	0.0410	- accuracy: 1.0000
Epoch 1933/2600					
800/800 [=====]	-	0s 16us/step	- loss:	0.0410	- accuracy: 1.0000
Epoch 1934/2600					
800/800 [=====]	-	0s 13us/step	- loss:	0.0409	- accuracy: 1.0000
Epoch 1935/2600					
800/800 [=====]	-	0s 24us/step	- loss:	0.0409	- accuracy: 1.0000
Epoch 1936/2600					
800/800 [=====]	-	0s 15us/step	- loss:	0.0409	- accuracy: 1.0000
Epoch 1937/2600					
800/800 [=====]	-	0s 18us/step	- loss:	0.0408	- accuracy: 1.0000
Epoch 1938/2600					
800/800 [=====]	-	0s 14us/step	- loss:	0.0408	- accuracy: 1.0000
Epoch 1939/2600					
800/800 [=====]	-	0s 24us/step	- loss:	0.0408	- accuracy: 1.0000
Epoch 1940/2600					
800/800 [=====]	-	0s 19us/step	- loss:	0.0407	- accuracy: 1.0000
Epoch 1941/2600					
800/800 [=====]	-	0s 17us/step	- loss:	0.0407	- accuracy: 1.0000
Epoch 1942/2600					
800/800 [=====]	-	0s 15us/step	- loss:	0.0407	- accuracy: 1.0000
Epoch 1943/2600					
800/800 [=====]	-	0s 15us/step	- loss:	0.0406	- accuracy: 1.0000
Epoch 1944/2600			</		

800/800 [=====]	-	0s 59us/step	-	loss: 0.0405	-	accuracy: 1.0000
Epoch 1948/2600						
800/800 [=====]	-	0s 22us/step	-	loss: 0.0404	-	accuracy: 1.0000
Epoch 1949/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0404	-	accuracy: 1.0000
Epoch 1950/2600						
800/800 [=====]	-	0s 19us/step	-	loss: 0.0404	-	accuracy: 1.0000
Epoch 1951/2600						
800/800 [=====]	-	0s 16us/step	-	loss: 0.0403	-	accuracy: 1.0000
Epoch 1952/2600						
800/800 [=====]	-	0s 16us/step	-	loss: 0.0403	-	accuracy: 1.0000
Epoch 1953/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0403	-	accuracy: 1.0000
Epoch 1954/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0402	-	accuracy: 1.0000
Epoch 1955/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0402	-	accuracy: 1.0000
Epoch 1956/2600						
800/800 [=====]	-	0s 14us/step	-	loss: 0.0402	-	accuracy: 1.0000
Epoch 1957/2600						
800/800 [=====]	-	0s 18us/step	-	loss: 0.0401	-	accuracy: 1.0000
Epoch 1958/2600						
800/800 [=====]	-	0s 17us/step	-	loss: 0.0401	-	accuracy: 1.0000
Epoch 1959/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0401	-	accuracy: 1.0000
Epoch 1960/2600						
800/800 [=====]	-	0s 14us/step	-	loss: 0.0400	-	accuracy: 1.0000
Epoch 1961/2600						
800/800 [=====]	-	0s 21us/step	-	loss: 0.0400	-	accuracy: 1.0000
Epoch 1962/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0400	-	accuracy: 1.0000
Epoch 1963/2600						
800/800 [=====]	-	0s 12us/step	-	loss: 0.0399	-	accuracy: 1.0000
Epoch 1964/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0399	-	accuracy: 1.0000
Epoch 1965/2600						
800/800 [=====]	-	0s 27us/step	-	loss: 0.0399	-	accuracy: 1.0000
Epoch 1966/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0398	-	accuracy: 1.0000
Epoch 1967/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0398	-	accuracy: 1.0000
Epoch 1968/2600						
800/800 [=====]	-	0s 14us/step	-	loss: 0.0397	-	accuracy: 1.0000
Epoch 1969/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0397	-	accuracy: 1.0000
Epoch 1970/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0397	-	accuracy: 1.0000
Epoch 1971/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0396	-	accuracy: 1.0000
Epoch 1972/2600						
800/800 [=====]	-	0s 20us/step	-	loss: 0.0396	-	accuracy: 1.0000
Epoch 1973/2600						
800/800 [=====]	-	0s 26us/step	-	loss: 0.0396	-	accuracy: 1.0000
Epoch 1974/2600						
800/800 [=====]	-	0s 26us/step	-	loss: 0.0395	-	accuracy: 1.0000
Epoch 1975/2600						
800/800 [=====]	-	0s 19us/step	-	loss: 0.0395	-	accuracy: 1.0000
Epoch 1976/2600						
800/800 [=====]	-	0s 24us/step	-	loss: 0.0395	-	accuracy: 1.0000
Epoch 1977/2600						
800/800 [=====]	-	0s 12us/step	-	loss: 0.0394	-	accuracy: 1.0000
Epoch 1978/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0394	-	accuracy: 1.0000
Epoch 1979/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0394	-	accuracy: 1.0000
Epoch 1980/2600						
800/800 [=====]	-	0s 12us/step	-	loss: 0.0393	-	accuracy: 1.0000
Epoch 1981/2600						
800/800 [=====]	-	0s 11us/step	-	loss: 0.0393	-	accuracy: 1.0000
Epoch 19						

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800/800 [=====]	-	0s	19us/step	-	loss:	0.0352	-	accuracy:	1.0000
Epoch 2114/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0352	-	accuracy:	1.0000
Epoch 2115/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0351	-	accuracy:	1.0000
Epoch 2116/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0351	-	accuracy:	1.0000
Epoch 2117/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0351	-	accuracy:	1.0000
Epoch 2118/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0351	-	accuracy:	1.0000
Epoch 2119/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0350	-	accuracy:	1.0000
Epoch 2120/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0350	-	accuracy:	1.0000
Epoch 2121/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0350	-	accuracy:	1.0000
Epoch 2122/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0349	-	accuracy:	1.0000
Epoch 2123/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0349	-	accuracy:	1.0000
Epoch 2124/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0349	-	accuracy:	1.0000
Epoch 2125/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0349	-	accuracy:	1.0000
Epoch 2126/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0348	-	accuracy:	1.0000
Epoch 2127/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0348	-	accuracy:	1.0000
Epoch 2128/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0348	-	accuracy:	1.0000
Epoch 2129/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0347	-	accuracy:	1.0000
Epoch 2130/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0347	-	accuracy:	1.0000
Epoch 2131/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0347	-	accuracy:	1.0000
Epoch 2132/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0347	-	accuracy:	1.0000
Epoch 2133/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0346	-	accuracy:	1.0000
Epoch 2134/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0346	-	accuracy:	1.0000
Epoch 2135/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0346	-	accuracy:	1.0000
Epoch 2136/2600									
800/800 [=====]	-	0s	34us/step	-	loss:	0.0346	-	accuracy:	1.0000
Epoch 2137/2600									
800/800 [=====]	-	0s	28us/step	-	loss:	0.0345	-	accuracy:	1.0000
Epoch 2138/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0345	-	accuracy:	1.0000
Epoch 2139/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0345	-	accuracy:	1.0000
Epoch 2140/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0344	-	accuracy:	1.0000
Epoch 2141/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0344	-	accuracy:	1.0000
Epoch 2142/2600									
800/800 [=====]	-	0s	15us/						

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800/800 [=====]	-	0s	14us/step	-	loss:	0.0330	-	accuracy:	1.0000
Epoch 2197/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0329	-	accuracy:	1.0000
Epoch 2198/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0329	-	accuracy:	1.0000
Epoch 2199/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0329	-	accuracy:	1.0000
Epoch 2200/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0329	-	accuracy:	1.0000
Epoch 2201/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0328	-	accuracy:	1.0000
Epoch 2202/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0328	-	accuracy:	1.0000
Epoch 2203/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0328	-	accuracy:	1.0000
Epoch 2204/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0327	-	accuracy:	1.0000
Epoch 2205/2600									
800/800 [=====]	-	0s	47us/step	-	loss:	0.0327	-	accuracy:	1.0000
Epoch 2206/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0327	-	accuracy:	1.0000
Epoch 2207/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0327	-	accuracy:	1.0000
Epoch 2208/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0326	-	accuracy:	1.0000
Epoch 2209/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0326	-	accuracy:	1.0000
Epoch 2210/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0326	-	accuracy:	1.0000
Epoch 2211/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0326	-	accuracy:	1.0000
Epoch 2212/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0325	-	accuracy:	1.0000
Epoch 2213/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0325	-	accuracy:	1.0000
Epoch 2214/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0325	-	accuracy:	1.0000
Epoch 2215/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0325	-	accuracy:	1.0000
Epoch 2216/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0324	-	accuracy:	1.0000
Epoch 2217/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0324	-	accuracy:	1.0000
Epoch 2218/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0324	-	accuracy:	1.0000
Epoch 2219/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0324	-	accuracy:	1.0000
Epoch 2220/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0323	-	accuracy:	1.0000
Epoch 2221/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0323	-	accuracy:	1.0000
Epoch 2222/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0323	-	accuracy:	1.0000
Epoch 2223/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0323	-	accuracy:	1.0000
Epoch 2224/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0322	-	accuracy:	1.0000
Epoch 2225/2600									
800/800 [=====]	-	0s	14us/						

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800/800 [=====]	-	0s 37us/step	-	loss: 0.0309	-	accuracy: 1.0000
Epoch 2280/2600						
800/800 [=====]	-	0s 28us/step	-	loss: 0.0309	-	accuracy: 1.0000
Epoch 2281/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0309	-	accuracy: 1.0000
Epoch 2282/2600						
800/800 [=====]	-	0s 17us/step	-	loss: 0.0309	-	accuracy: 1.0000
Epoch 2283/2600						
800/800 [=====]	-	0s 16us/step	-	loss: 0.0308	-	accuracy: 1.0000
Epoch 2284/2600						
800/800 [=====]	-	0s 21us/step	-	loss: 0.0308	-	accuracy: 1.0000
Epoch 2285/2600						
800/800 [=====]	-	0s 17us/step	-	loss: 0.0308	-	accuracy: 1.0000
Epoch 2286/2600						
800/800 [=====]	-	0s 16us/step	-	loss: 0.0308	-	accuracy: 1.0000
Epoch 2287/2600						
800/800 [=====]	-	0s 33us/step	-	loss: 0.0307	-	accuracy: 1.0000
Epoch 2288/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0307	-	accuracy: 1.0000
Epoch 2289/2600						
800/800 [=====]	-	0s 11us/step	-	loss: 0.0307	-	accuracy: 1.0000
Epoch 2290/2600						
800/800 [=====]	-	0s 14us/step	-	loss: 0.0307	-	accuracy: 1.0000
Epoch 2291/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0307	-	accuracy: 1.0000
Epoch 2292/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0306	-	accuracy: 1.0000
Epoch 2293/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0306	-	accuracy: 1.0000
Epoch 2294/2600						
800/800 [=====]	-	0s 14us/step	-	loss: 0.0306	-	accuracy: 1.0000
Epoch 2295/2600						
800/800 [=====]	-	0s 14us/step	-	loss: 0.0306	-	accuracy: 1.0000
Epoch 2296/2600						
800/800 [=====]	-	0s 13us/step	-	loss: 0.0305	-	accuracy: 1.0000
Epoch 2297/2600						
800/800 [=====]	-	0s 20us/step	-	loss: 0.0305	-	accuracy: 1.0000
Epoch 2298/2600						
800/800 [=====]	-	0s 19us/step	-	loss: 0.0305	-	accuracy: 1.0000
Epoch 2299/2600						
800/800 [=====]	-	0s 24us/step	-	loss: 0.0305	-	accuracy: 1.0000
Epoch 2300/2600						
800/800 [=====]	-	0s 16us/step	-	loss: 0.0304	-	accuracy: 1.0000
Epoch 2301/2600						
800/800 [=====]	-	0s 17us/step	-	loss: 0.0304	-	accuracy: 1.0000
Epoch 2302/2600						
800/800 [=====]	-	0s 17us/step	-	loss: 0.0304	-	accuracy: 1.0000
Epoch 2303/2600						
800/800 [=====]	-	0s 18us/step	-	loss: 0.0304	-	accuracy: 1.0000
Epoch 2304/2600						
800/800 [=====]	-	0s 15us/step	-	loss: 0.0304	-	accuracy: 1.0000
Epoch 2305/2600						
800/800 [=====]	-	0s 17us/step	-	loss: 0.0303	-	accuracy: 1.0000
Epoch 2306/2600						
800/800 [=====]	-	0s 18us/step	-	loss: 0.0303	-	accuracy: 1.0000
Epoch 2307/2600						
800/800 [=====]	-	0s 17us/step	-	loss: 0.0303	-	accuracy: 1.0000
Epoch 2308/2600						
800/800 [=====]	-	0s 26us/step	-	loss: 0.0303	-	accuracy: 1.0000
Epoch 2309/2600						
800/800 [=====]	-	0s 16us/step	-	loss: 0.0302	-	accuracy: 1.0000
Epoch 2310/2600						
800/800 [=====]	-	0s 25us/step	-	loss: 0.0302	-	accuracy: 1.0000
Epoch 2311/2600						
800/800 [=====]	-	0s 51us/step	-	loss: 0.0302	-	accuracy: 1.0000
Epoch 2312/2600						
800/800 [=====]	-	0s 18us/step	-	loss: 0.0302	-	accuracy: 1.0000
Epoch 2313/2600						
800/800 [=====]	-	0s 16us/step	-	loss: 0.0302	-	accuracy: 1.0000
Epoch 23						

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800/800 [=====]	-	0s	18us/step	-	loss:	0.0291	-	accuracy:	1.0000
Epoch 2363/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0291	-	accuracy:	1.0000
Epoch 2364/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0291	-	accuracy:	1.0000
Epoch 2365/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0290	-	accuracy:	1.0000
Epoch 2366/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0290	-	accuracy:	1.0000
Epoch 2367/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0290	-	accuracy:	1.0000
Epoch 2368/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0290	-	accuracy:	1.0000
Epoch 2369/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0290	-	accuracy:	1.0000
Epoch 2370/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0289	-	accuracy:	1.0000
Epoch 2371/2600									
800/800 [=====]	-	0s	24us/step	-	loss:	0.0289	-	accuracy:	1.0000
Epoch 2372/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0289	-	accuracy:	1.0000
Epoch 2373/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0289	-	accuracy:	1.0000
Epoch 2374/2600									
800/800 [=====]	-	0s	34us/step	-	loss:	0.0288	-	accuracy:	1.0000
Epoch 2375/2600									
800/800 [=====]	-	0s	34us/step	-	loss:	0.0288	-	accuracy:	1.0000
Epoch 2376/2600									
800/800 [=====]	-	0s	49us/step	-	loss:	0.0288	-	accuracy:	1.0000
Epoch 2377/2600									
800/800 [=====]	-	0s	31us/step	-	loss:	0.0288	-	accuracy:	1.0000
Epoch 2378/2600									
800/800 [=====]	-	0s	28us/step	-	loss:	0.0288	-	accuracy:	1.0000
Epoch 2379/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0287	-	accuracy:	1.0000
Epoch 2380/2600									
800/800 [=====]	-	0s	24us/step	-	loss:	0.0287	-	accuracy:	1.0000
Epoch 2381/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0287	-	accuracy:	1.0000
Epoch 2382/2600									
800/800 [=====]	-	0s	37us/step	-	loss:	0.0287	-	accuracy:	1.0000
Epoch 2383/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0287	-	accuracy:	1.0000
Epoch 2384/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0286	-	accuracy:	1.0000
Epoch 2385/2600									
800/800 [=====]	-	0s	28us/step	-	loss:	0.0286	-	accuracy:	1.0000
Epoch 2386/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0286	-	accuracy:	1.0000
Epoch 2387/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0286	-	accuracy:	1.0000
Epoch 2388/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0286	-	accuracy:	1.0000
Epoch 2389/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0285	-	accuracy:	1.0000
Epoch 2390/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0285	-	accuracy:	1.0000
Epoch 2391/2600									
800/800 [=====]	-	0s	12us/						



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800/800 [=====]	-	0s	17us/step	-	loss:	0.0274	-	accuracy:	1.0000
Epoch 2446/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0274	-	accuracy:	1.0000
Epoch 2447/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0274	-	accuracy:	1.0000
Epoch 2448/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0274	-	accuracy:	1.0000
Epoch 2449/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0274	-	accuracy:	1.0000
Epoch 2450/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0273	-	accuracy:	1.0000
Epoch 2451/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0273	-	accuracy:	1.0000
Epoch 2452/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0273	-	accuracy:	1.0000
Epoch 2453/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0273	-	accuracy:	1.0000
Epoch 2454/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0273	-	accuracy:	1.0000
Epoch 2455/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0272	-	accuracy:	1.0000
Epoch 2456/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0272	-	accuracy:	1.0000
Epoch 2457/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0272	-	accuracy:	1.0000
Epoch 2458/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0272	-	accuracy:	1.0000
Epoch 2459/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0272	-	accuracy:	1.0000
Epoch 2460/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0272	-	accuracy:	1.0000
Epoch 2461/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0271	-	accuracy:	1.0000
Epoch 2462/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0271	-	accuracy:	1.0000
Epoch 2463/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0271	-	accuracy:	1.0000
Epoch 2464/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0271	-	accuracy:	1.0000
Epoch 2465/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0271	-	accuracy:	1.0000
Epoch 2466/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0270	-	accuracy:	1.0000
Epoch 2467/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0270	-	accuracy:	1.0000
Epoch 2468/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0270	-	accuracy:	1.0000
Epoch 2469/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0270	-	accuracy:	1.0000
Epoch 2470/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0270	-	accuracy:	1.0000
Epoch 2471/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0269	-	accuracy:	1.0000
Epoch 2472/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0269	-	accuracy:	1.0000
Epoch 2473/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0269	-	accuracy:	1.0000
Epoch 2474/2600									
800/800 [=====]	-	0s	12us/						

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800/800 [=====]	-	0s	17us/step	-	loss:	0.0259	-	accuracy:	1.0000
Epoch 2529/2600									
800/800 [=====]	-	0s	45us/step	-	loss:	0.0259	-	accuracy:	1.0000
Epoch 2530/2600									
800/800 [=====]	-	0s	29us/step	-	loss:	0.0259	-	accuracy:	1.0000
Epoch 2531/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0259	-	accuracy:	1.0000
Epoch 2532/2600									
800/800 [=====]	-	0s	48us/step	-	loss:	0.0259	-	accuracy:	1.0000
Epoch 2533/2600									
800/800 [=====]	-	0s	27us/step	-	loss:	0.0258	-	accuracy:	1.0000
Epoch 2534/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0258	-	accuracy:	1.0000
Epoch 2535/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0258	-	accuracy:	1.0000
Epoch 2536/2600									
800/800 [=====]	-	0s	17us/step	-	loss:	0.0258	-	accuracy:	1.0000
Epoch 2537/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0258	-	accuracy:	1.0000
Epoch 2538/2600									
800/800 [=====]	-	0s	16us/step	-	loss:	0.0258	-	accuracy:	1.0000
Epoch 2539/2600									
800/800 [=====]	-	0s	15us/step	-	loss:	0.0257	-	accuracy:	1.0000
Epoch 2540/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0257	-	accuracy:	1.0000
Epoch 2541/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0257	-	accuracy:	1.0000
Epoch 2542/2600									
800/800 [=====]	-	0s	25us/step	-	loss:	0.0257	-	accuracy:	1.0000
Epoch 2543/2600									
800/800 [=====]	-	0s	11us/step	-	loss:	0.0257	-	accuracy:	1.0000
Epoch 2544/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0256	-	accuracy:	1.0000
Epoch 2545/2600									
800/800 [=====]	-	0s	18us/step	-	loss:	0.0256	-	accuracy:	1.0000
Epoch 2546/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0256	-	accuracy:	1.0000
Epoch 2547/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0256	-	accuracy:	1.0000
Epoch 2548/2600									
800/800 [=====]	-	0s	19us/step	-	loss:	0.0256	-	accuracy:	1.0000
Epoch 2549/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0256	-	accuracy:	1.0000
Epoch 2550/2600									
800/800 [=====]	-	0s	13us/step	-	loss:	0.0255	-	accuracy:	1.0000
Epoch 2551/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0255	-	accuracy:	1.0000
Epoch 2552/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0255	-	accuracy:	1.0000
Epoch 2553/2600									
800/800 [=====]	-	0s	21us/step	-	loss:	0.0255	-	accuracy:	1.0000
Epoch 2554/2600									
800/800 [=====]	-	0s	24us/step	-	loss:	0.0255	-	accuracy:	1.0000
Epoch 2555/2600									
800/800 [=====]	-	0s	12us/step	-	loss:	0.0255	-	accuracy:	1.0000
Epoch 2556/2600									
800/800 [=====]	-	0s	14us/step	-	loss:	0.0254	-	accuracy:	1.0000
Epoch 2557/2600									
800/800 [=====]	-	0s	18us/						

```
Epoch 2570/2600
800/800 [=====] - 0s 20us/step - loss: 0.0252 - accuracy: 1.0000
Epoch 2571/2600
800/800 [=====] - 0s 15us/step - loss: 0.0252 - accuracy: 1.0000
Epoch 2572/2600
800/800 [=====] - 0s 19us/step - loss: 0.0252 - accuracy: 1.0000
Epoch 2573/2600
800/800 [=====] - 0s 18us/step - loss: 0.0252 - accuracy: 1.0000
Epoch 2574/2600
800/800 [=====] - 0s 35us/step - loss: 0.0251 - accuracy: 1.0000
Epoch 2575/2600
800/800 [=====] - 0s 40us/step - loss: 0.0251 - accuracy: 1.0000
Epoch 2576/2600
800/800 [=====] - 0s 33us/step - loss: 0.0251 - accuracy: 1.0000
Epoch 2577/2600
800/800 [=====] - 0s 51us/step - loss: 0.0251 - accuracy: 1.0000
Epoch 2578/2600
800/800 [=====] - 0s 16us/step - loss: 0.0251 - accuracy: 1.0000
Epoch 2579/2600
800/800 [=====] - 0s 17us/step - loss: 0.0251 - accuracy: 1.0000
Epoch 2580/2600
800/800 [=====] - 0s 16us/step - loss: 0.0250 - accuracy: 1.0000
Epoch 2581/2600
800/800 [=====] - 0s 20us/step - loss: 0.0250 - accuracy: 1.0000
Epoch 2582/2600
800/800 [=====] - 0s 18us/step - loss: 0.0250 - accuracy: 1.0000
Epoch 2583/2600
800/800 [=====] - 0s 28us/step - loss: 0.0250 - accuracy: 1.0000
Epoch 2584/2600
800/800 [=====] - 0s 17us/step - loss: 0.0250 - accuracy: 1.0000
Epoch 2585/2600
800/800 [=====] - 0s 16us/step - loss: 0.0250 - accuracy: 1.0000
Epoch 2586/2600
800/800 [=====] - 0s 18us/step - loss: 0.0249 - accuracy: 1.0000
Epoch 2587/2600
800/800 [=====] - 0s 19us/step - loss: 0.0249 - accuracy: 1.0000
Epoch 2588/2600
800/800 [=====] - 0s 21us/step - loss: 0.0249 - accuracy: 1.0000
Epoch 2589/2600
800/800 [=====] - 0s 13us/step - loss: 0.0249 - accuracy: 1.0000
Epoch 2590/2600
800/800 [=====] - 0s 17us/step - loss: 0.0249 - accuracy: 1.0000
Epoch 2591/2600
800/800 [=====] - 0s 22us/step - loss: 0.0249 - accuracy: 1.0000
Epoch 2592/2600
800/800 [=====] - 0s 22us/step - loss: 0.0248 - accuracy: 1.0000
Epoch 2593/2600
800/800 [=====] - 0s 40us/step - loss: 0.0248 - accuracy: 1.0000
Epoch 2594/2600
800/800 [=====] - 0s 22us/step - loss: 0.0248 - accuracy: 1.0000
Epoch 2595/2600
800/800 [=====] - 0s 20us/step - loss: 0.0248 - accuracy: 1.0000
Epoch 2596/2600
800/800 [=====] - 0s 21us/step - loss: 0.0248 - accuracy: 1.0000
Epoch 2597/2600
800/800 [=====] - 0s 28us/step - loss: 0.0248 - accuracy: 1.0000
Epoch 2598/2600
800/800 [=====] - 0s 13us/step - loss: 0.0248 - accuracy: 1.0000
Epoch 2599/2600
800/800 [=====] - 0s 13us/step - loss: 0.0247 - accuracy: 1.0000
Epoch 2600/2600
800/800 [=====] - 0s 18us/step - loss: 0.0247 - accuracy: 1.0000
```

## Testing Model

In [126]:

```
# evaluate the keras model
_, accuracy = model2.evaluate(X_val.T, y_val.T)
print('Accuracy: %.2f' % (accuracy*100))
```

```
201/201 [=====] - 0s 142us/step
Accuracy: 90.05
```