Final term project

Team Name

Micky Kumar
Iram
Harold

Import

In [55]:
```
import keras
from keras.models import Sequential
from keras.layers import Dense, Dropout, Flatten
from keras.layers import Conv2D, MaxPooling2D
from tensorflow.keras import regularizers
from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.layers import  Input, Conv2D, MaxPooling2D,GlobalMaxPooling2D,
Flatten, Dense, GlobalAveragePooling2D, Activation, MaxPool2D, AvgPool2D, Dropout, Conv1D, MaxPooling1D
from keras.models import Model
from keras import applications
import tensorflow as tf
from tqdm import tqdm
from sklearn.model_selection import train_test_split
import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)
import matplotlib.pyplot as plt
import seaborn as sns
import cv2
import glob
import os

from sklearn.preprocessing import LabelEncoder
from sklearn.preprocessing import OneHotEncoder

from keras.utils import to_categorical
from numpy import array
from sklearn.preprocessing import LabelBinarizer
from sklearn.preprocessing import OneHotEncoder
from sklearn.compose import ColumnTransformer
from sklearn import preprocessing
from sklearn.utils import shuffle
```

data preparation

Project Overview

Based on the COVID-19 Cases dataset from open data toronto, this project will show detail about covid-19 by the Toronto public health. The details include demographic, geographic, and severity information for all confirmed and likely cases. The images for the X-ray is provided by kaggle. The Kaggle link is below: [https://www.kaggle.com/praveengovi/coronahack-chest-xraydataset/ (https://www.kaggle.com/praveengovi/coronahack-chest-xraydataset/)](https://www.kaggle.com/praveengovi/coronahack-chest-xraydataset/)

Research question and problem framing

Based on this dataset, we are trying to predict the outcome based on age. This will allows people to know what age are getting more affected by COVID-19 and how to support them.

Who: The stakeholders will for this project will be people are creating a medicine for COVID-19, but also everyone will the community.

What: In this problem, we are trying to invesigate about COVID-19 and the affect on it

When: This problem needs to complete as soon as possible because this is affecting everyone daily life and health.

Where: The COVID-19 is affecting worldwide and it is a worldwide pandemic.

Types of features

The dataset that is being used are:

- _id: This created a unique id for the cases that comes in.
- Outbreak Associated: This talks about where the outbreak is occuring in Toronto.
- Age Group: This feature is about age groups for COVID-19
- Neighbourhood Name: This feature talks about Toronto divided into 140 geographically distinct neighborhoods and can be used to understandwhere most cases are coming from
- FSA: This feature creates a unique code based on client postal code and help understand where thae case is occuring.
- Source of Infection: The feature talks aboutbefore symptoms start are potential acquisition sources. this include travels, close contact with a case, institutional setting, healthcare setting, community, pending, unknown/missing, and N/A.
- Classification:The feaure is about categorize the cases as confirmed according to standard criteria
- Episode Date: The feature talks about the date when the symptom occured.
- Reported Date: The feature talks about date on which the case was reported to Toronto Public Health
- Client Gender: The feature that classifies people based on their assigned biological sex
- Outcome: This feature is include fatal(cases with a fatal outcome reported), resolved (case that is more than 14 days or the patient is recoved), Active (All other cases that is remaining)
- Currently Hospitalized: The feature talks about cases that are currently admitted to hospital
- Currently in ICU: The feature is about cases that are currently admitted to the intensive care unit with no discharge date.
- Currently Intubated: The feature is about cases that were intubated.
- Ever Hospitalized:The feature is about cases that were hospitalized.
- Ever in ICU: This feature is the cases that were admitted to the intensive care unit (ICU).
- Ever Intubated: This feature talks about cases that are currently intubated and that have been discharged.

In the Chest_xray_Corona_Metadata.csv, it contains 6 features and 5910 unique values. While the Chest_xray_Corona_dataset_Summary.csv has 5 feature and 7 values.

Explore

In [78]:
```
covid19 = pd.read_csv('C:/Users/Micky/Downloads/COVID19-cases.csv')
train_df = pd.read_csv('C:/Users/Micky/Documents/GitHub/DL-final-project/Chest-xray/Chest_xray_Corona_Metadata.csv')
test_img_dir = 'C:/Users/Micky/Documents/GitHub/DL-final-project/Chest-xray/Coronahack-Chest-XRay-Dataset/Coronahack-Chest-XRay-Datase
t/test'
train_img_dir = 'C:/Users/Micky/Documents//GitHub/DL-final-project/Chest-xray/Coronahack-Chest-XRay-Dataset/Coronahack-Chest-XRay-Data
set/test'
```

In [79]:
```
covid19.shape
```

Out[79]:
```
(14691, 17)
```

In [4]:
```
covid19.head()
```

Out[4]:

	_id	Outbreak Associated	Age Group	Neighbourhood Name	FSA	Source of Infection	Classification	Episode Date	Reported Date	Client Gender	Outcome	Currently Hospitalized	Currently in ICU	Currently Intubated	Eve Hospitalize
0	14692	Sporadic	50-59	Malvern	M1B	Institutional	CONFIRMED	2020-03-25	2020-03-27	MALE	RESOLVED	No	No	No	N
1	14693	Sporadic	20-29	Malvern	M1B	Community	CONFIRMED	2020-03-20	2020-03-28	MALE	RESOLVED	No	No	No	Ye
2	14694	Sporadic	60-69	Malvern	M1B	Travel	CONFIRMED	2020-03-04	2020-03-08	FEMALE	RESOLVED	No	No	No	Ye
3	14695	Outbreak Associated	50-59	Rouge	M1B	N/A - Outbreak associated	CONFIRMED	2020-05-02	2020-05-04	FEMALE	RESOLVED	No	No	No	N
4	14696	Sporadic	30-39	Rouge	M1B	Close contact	CONFIRMED	2020-05-31	2020-06-06	FEMALE	RESOLVED	No	No	No	N

In [5]:
```
covid19.tail()
```

Out[5]:

	_id	Outbreak Associated	Age Group	Neighbourhood Name	FSA	Source of Infection	Classification	Episode Date	Reported Date	Client Gender	Outcome	Currently Hospitalized	Currently in ICU	Currently Intubated	Hospit
14686	29378	Outbreak Associated	50-59	NaN	NaN	N/A - Outbreak associated	CONFIRMED	2020-06-02	2020-06-03	FEMALE	RESOLVED	No	No	No	
14687	29379	Outbreak Associated	50-59	NaN	NaN	N/A - Outbreak associated	CONFIRMED	2020-06-11	2020-06-15	FEMALE	RESOLVED	No	No	No	
14688	29380	Outbreak Associated	20-29	NaN	NaN	N/A - Outbreak associated	CONFIRMED	2020-05-09	2020-05-23	FEMALE	RESOLVED	No	No	No	
14689	29381	Outbreak Associated	40-49	NaN	NaN	N/A - Outbreak associated	CONFIRMED	2020-06-18	2020-06-19	FEMALE	RESOLVED	No	No	No	
14690	29382	Outbreak Associated	50-59	NaN	NaN	N/A - Outbreak associated	CONFIRMED	2020-06-22	2020-06-23	FEMALE	ACTIVE	Yes	No	No	

In [6]:
```
covid19.describe()
```
Out[6]:

	_id
count	14691.000000
mean	22037.000000
std	4241.070737
min	14692.000000
25%	18364.500000
50%	22037.000000
75%	25709.500000
max	29382.000000

In [7]:
```
covid19.head()
```
Out[7]:

	_id	Outbreak Associated	Age Group	Neighbourhood Name	FSA	Source of Infection	Classification	Episode Date	Reported Date	Client Gender	Outcome	Currently Hospitalized	Currently in ICU	Currently Intubated	Eve Hospitalize
0	14692	Sporadic	50-59	Malvern	M1B	Institutional	CONFIRMED	2020-03-25	2020-03-27	MALE	RESOLVED	No	No	No	N
1	14693	Sporadic	20-29	Malvern	M1B	Community	CONFIRMED	2020-03-20	2020-03-28	MALE	RESOLVED	No	No	No	Ye
2	14694	Sporadic	60-69	Malvern	M1B	Travel	CONFIRMED	2020-03-04	2020-03-08	FEMALE	RESOLVED	No	No	No	Ye
3	14695	Outbreak Associated	50-59	Rouge	M1B	N/A - Outbreak associated	CONFIRMED	2020-05-02	2020-05-04	FEMALE	RESOLVED	No	No	No	N
4	14696	Sporadic	30-39	Rouge	M1B	Close contact	CONFIRMED	2020-05-31	2020-06-06	FEMALE	RESOLVED	No	No	No	N

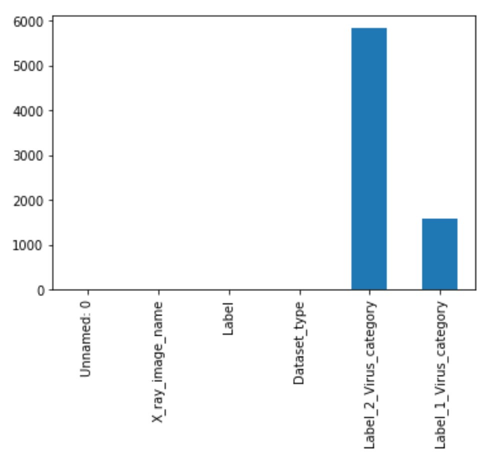
In [34]:

In [35]:
```
train_df.head(5)
```
Out[35]:

	Unnamed: 0	X_ray_image_name	Label	Dataset_type	Label_2_Virus_category	Label_1_Virus_category
0	0	IM-0128-0001.jpeg	Normal	TRAIN	NaN	NaN
1	1	IM-0127-0001.jpeg	Normal	TRAIN	NaN	NaN
2	2	IM-0125-0001.jpeg	Normal	TRAIN	NaN	NaN
3	3	IM-0122-0001.jpeg	Normal	TRAIN	NaN	NaN
4	4	IM-0119-0001.jpeg	Normal	TRAIN	NaN	NaN

Missing Values

In [36]:
```
missing_vals = train_df.isnull().sum()
missing_vals.plot(kind = 'bar')
```
Out[36]: <matplotlib.axes._subplots.AxesSubplot at 0x14cb4f1bbc8>



In [37]:
```
train_df.dropna(how = 'all')
train_df.isnull().sum()
```

Out[37]:
```
Unnamed: 0                0
X_ray_image_name          0
Label                     0
Dataset_type              0
Label_2_Virus_category    5841
Label_1_Virus_category    1576
dtype: int64
```

In [38]:
```
train_data = train_df[train_df['Dataset_type'] == 'TRAIN']
test_data = train_df[train_df['Dataset_type'] == 'TEST']
assert train_data.shape[0] + test_data.shape[0] == train_df.shape[0]
print(f"Shape of train data : {train_data.shape}")
print(f"Shape of test data : {test_data.shape}")
test_data.sample(10)
```

```
Shape of train data : (5286, 6)
Shape of test data : (624, 6)
```

Out[38]:

	Unnamed: 0	X_ray_image_name	Label	Dataset_type	Label_2_Virus_category	Label_1_Virus_category
5484	5507	NORMAL2-IM-0079-0001.jpeg	Normal	TEST	NaN	NaN
5295	5318	IM-0010-0001.jpeg	Normal	TEST	NaN	NaN
5773	5796	person78_bacteria_386.jpeg	Pnemonia	TEST	NaN	bacteria
5761	5784	person81_bacteria_398.jpeg	Pnemonia	TEST	NaN	bacteria
5538	5561	person1613_virus_2799.jpeg	Pnemonia	TEST	NaN	Virus
5514	5537	NORMAL2-IM-0343-0001.jpeg	Normal	TEST	NaN	NaN
5444	5467	NORMAL2-IM-0221-0001.jpeg	Normal	TEST	NaN	NaN
5837	5860	person24_virus_58.jpeg	Pnemonia	TEST	NaN	Virus
5641	5664	person124_bacteria_589.jpeg	Pnemonia	TEST	NaN	bacteria
5879	5902	person1668_virus_2882.jpeg	Pnemonia	TEST	NaN	Virus

In [ ]:
```
data_path = 'C:/UOFT/3546_TermProject/covid/DL-final-project/Chest_xray_seperate'
data_dir_list = os.listdir(data_path)
print(data_path)
```

Set Image Size and Epocs

In [ ]:
```
img_rows=128
img_cols=128
num_channel=3
num_epoch=40
```

Define the number of classes

In [ ]:
```
num_classes = 2

img_data_list=[]
```

In [ ]:

```
def data_preperation():
    for dataset in data_dir_list:
        img_list=os.listdir(data_path+'/'+ dataset)
        print ('Loaded the images of dataset-'+'{}\n'.format(dataset))
        for img in img_list:
            input_img=cv2.imread(data_path + '/'+ dataset + '/'+ img )
            if ( num_channel == 1):
                input_img=cv2.cvtColor(input_img, cv2.COLOR_BGR2GRAY)
            input_img_resize=cv2.resize(input_img,(128,128))
            img_data_list.append(input_img_resize)

def display_loss_accuracy(hist):
    train_loss=hist.history['loss']
    val_loss=hist.history['val_loss']
    train_acc=hist.history['accuracy']
    val_acc=hist.history['val_accuracy']
    xc=range(num_epoch)

    plt.figure(1,figsize=(7,5))
    plt.plot(xc,train_loss)
    plt.plot(xc,val_loss)
    plt.xlabel('num of Epochs')
    plt.ylabel('loss')
    plt.title('train_loss vs val_loss')
    plt.grid(True)
    plt.legend(['train','val'])
    #print plt.style.available # use bmh, classic,ggplot for big pictures
    plt.style.use(['classic'])

    plt.figure(2,figsize=(7,5))
    plt.plot(xc,train_acc)
    plt.plot(xc,val_acc)
    plt.xlabel('num of Epochs')
    plt.ylabel('accuracy')
    plt.title('train_acc vs val_acc')
    plt.grid(True)
    plt.legend(['train','val'],loc=4)
    #print plt.style.available # use bmh, classic,ggplot for big pictures
    plt.style.use(['classic'])

def get_featuremaps(model, layer_idx, X_batch):
    get_activations = K.function([model.layers[0].input, K.learning_phase()],[model.layers[layer_idx].output,])
    activations = get_activations([X_batch,0])
    return activations

def plot_featuremap_activations(activations):
    print (np.shape(activations))
    feature_maps = activations[0][0]
    print (np.shape(feature_maps))
    print (feature_maps.shape)

    fig=plt.figure(figsize=(16,16))
    plt.imshow(feature_maps[:,:,filter_num],cmap='gray')
    plt.savefig("featuremaps-layer-{}".format(layer_num) + "-filternum-{}".format(filter_num)+'.jpg')

    num_of_featuremaps=feature_maps.shape[2]
    fig=plt.figure(figsize=(16,16))
    plt.title("featuremaps-layer-{}".format(layer_num))
    subplot_num=int(np.ceil(np.sqrt(num_of_featuremaps)))
    for i in range(int(num_of_featuremaps)):
        ax = fig.add_subplot(subplot_num, subplot_num, i+1)
        #ax.imshow(output_image[0,:,:,i],interpolation='nearest' ) #to see the first filter
        ax.imshow(feature_maps[:,:,i],cmap='gray')
        plt.xticks([])
        plt.yticks([])
        plt.tight_layout()
    plt.show()
    fig.savefig("featuremaps-layer-{}".format(layer_num) + '.jpg')

# Plotting the confusion matrix
def plot_confusion_matrix(cm, classes,
                          normalize=False,
                          title='Confusion matrix',
                          cmap=plt.cm.Blues):
    """
    This function prints and plots the confusion matrix.
    Normalization can be applied by setting `normalize=True`.
    """
    plt.figure()
    plt.imshow(cm, interpolation='nearest', cmap=cmap)
    plt.title(title)
    plt.colorbar()
    tick_marks = np.arange(len(classes))
    plt.xticks(tick_marks, classes, rotation=45)
    plt.yticks(tick_marks, classes)

    if normalize:
        cm = cm.astype('float') / cm.sum(axis=1)[:, np.newaxis]
        print("Normalized confusion matrix")
    else:
```

```
        print('Confusion matrix, without normalization')

    print(cm)

    thresh = cm.max() / 2.
    for i, j in itertools.product(range(cm.shape[0]), range(cm.shape[1])):
        plt.text(j, i, cm[i, j],
                 horizontalalignment="center",
                 color="white" if cm[i, j] > thresh else "black")

    plt.tight_layout()
    plt.ylabel('True label')
    plt.xlabel('Predicted label')
    plt.show()
```

In [6]:
```
data_preperation()
```

```
Loaded the images of dataset-NORMAL

Loaded the images of dataset-PNEUMONIA
```

In [7]:
```
# Calling Data Preperation

img_data = np.array(img_data_list)
print(img_data.shape)
img_data = img_data.astype('float32')
img_data /= 255
print (img_data.shape)

# if num_channel==1:
#         img_data= np.expand_dims(img_data, axis=3)
#         print (img_data.shape)
# else:
#     if (K.image_data_format() == 'channels_first'):
#         img_data=np.rollaxis(img_data,3,1)

print (img_data.shape)
```

```
(5856, 128, 128, 3)
(5856, 128, 128, 3)
(5856, 128, 128, 3)
```

Assigining Labels

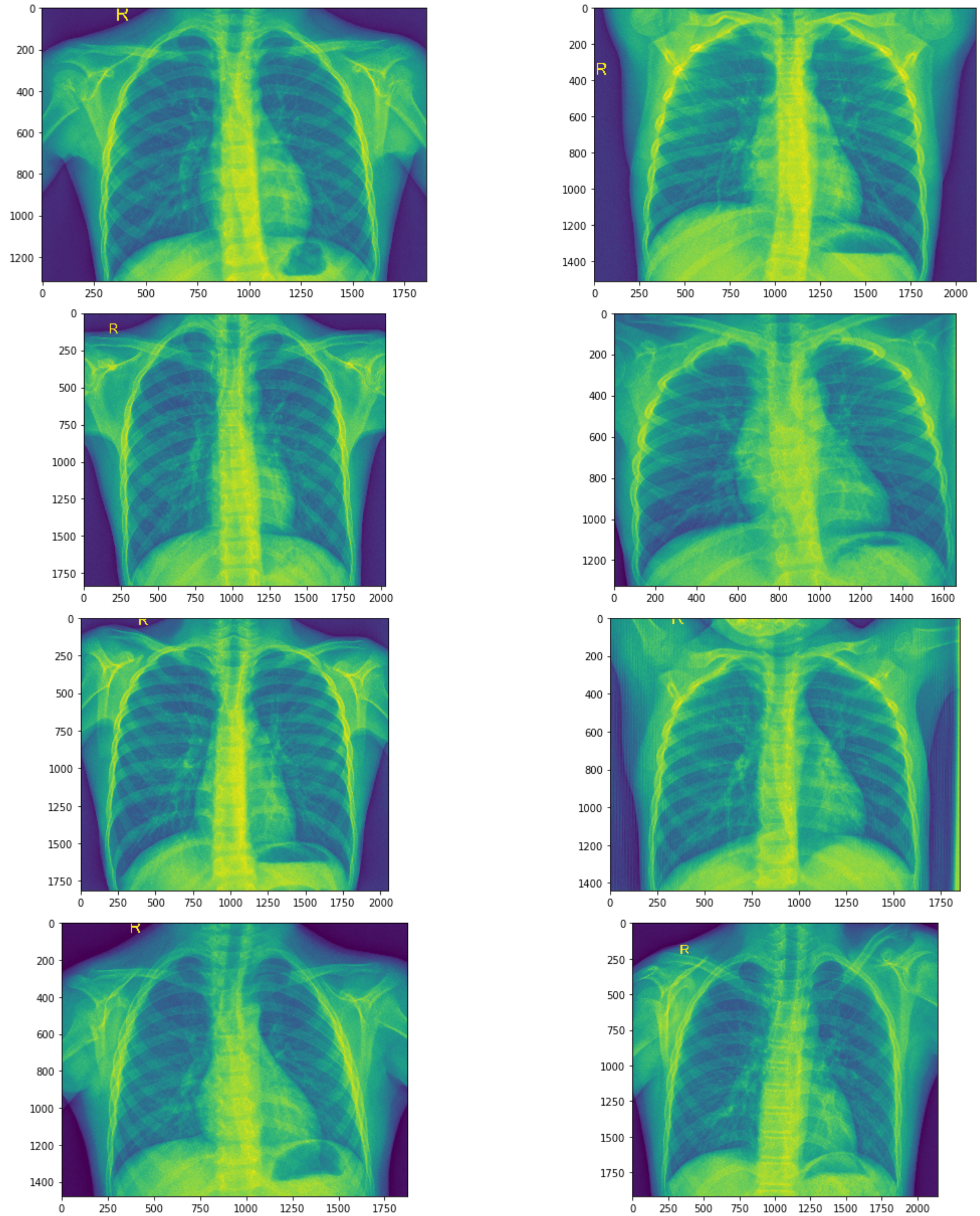
In [ ]:
```
num_of_samples = img_data.shape[0]
labels = np.ones((num_of_samples,),dtype='int64')

labels[0:1582]=0
labels[1583:5856]=1

names = ['normal','pneumonia']
```

View Images

In [77]:
```
assert os.path.isdir(test_img_dir) == True
assert os.path.isdir(train_img_dir) == True

sample_train_images = list(os.walk(train_img_dir))[0][2][:8]
sample_train_images = list(map(lambda x: os.path.join(train_img_dir, x), sample_train_images))

sample_test_images = list(os.walk(test_img_dir))[0][2][:8]
sample_test_images = list(map(lambda x: os.path.join(test_img_dir, x), sample_test_images))
```

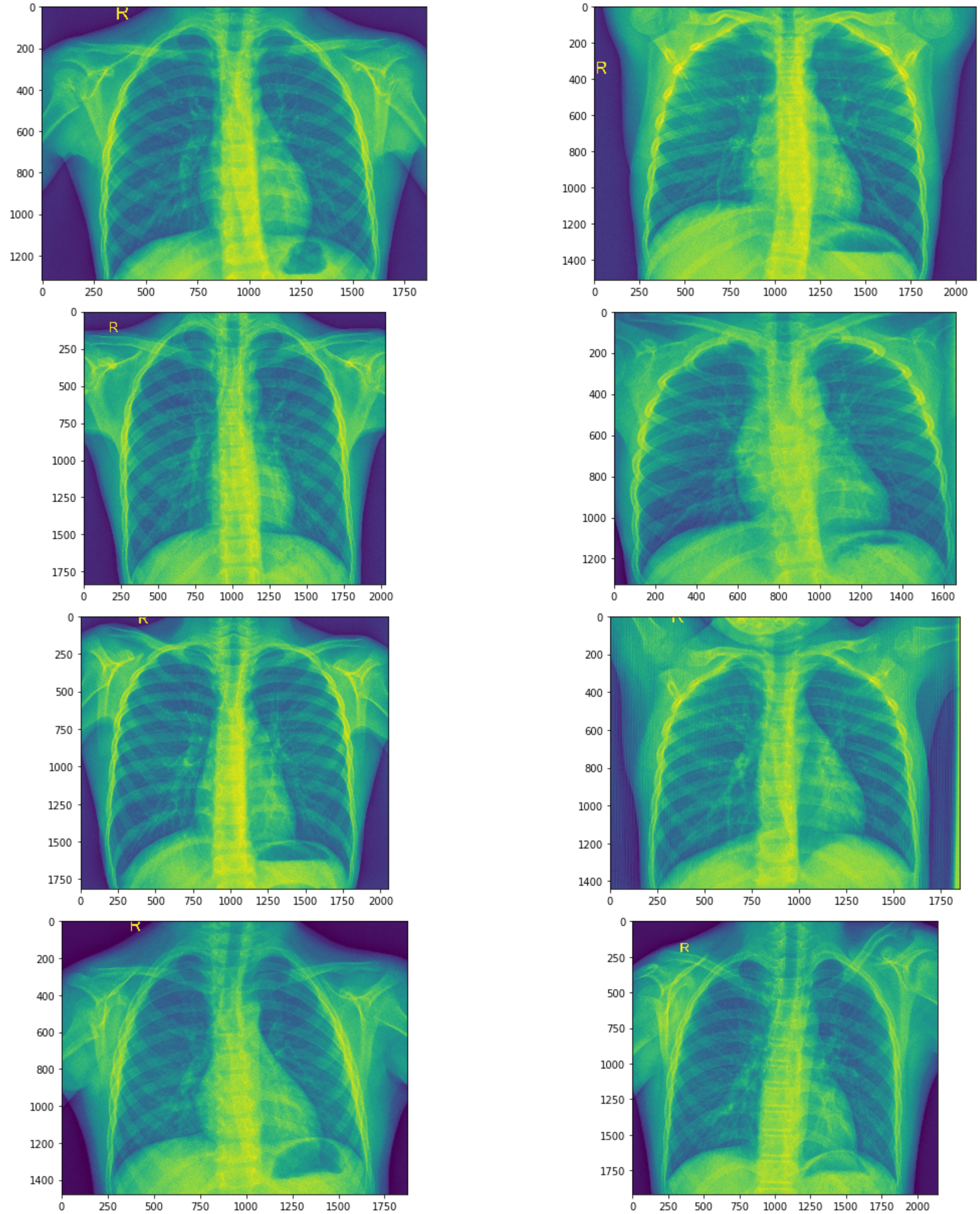
View images from Train

In [46]:
```
from PIL import Image
plt.figure(figsize = (17,17))
for iterator, filename in enumerate(sample_train_images):
    image = Image.open(filename)
    plt.subplot(4,2,iterator+1)
    plt.imshow(image)

plt.tight_layout()
```



View images from Test

In [48]:
```
plt.figure(figsize = (17,17))
for iterator, filename in enumerate(sample_test_images):
    image = Image.open(filename)
    plt.subplot(4,2,iterator+1)
    plt.imshow(image)

plt.tight_layout()
```



Use of proper training and test set

In [8]:
```python
# Drop all unwanted columns
# covid19 = covid19.drop('Episode Date',axis = 1)
# covid19 = covid19.drop('Reported Date',axis = 1)

# Create empty data frame
covid19_updated = pd.DataFrame()

# Apply Label Binarizer
lb = LabelBinarizer()
covid19['Outbreak Associated']= lb.fit_transform(covid19['Outbreak Associated'])
covid19_updated = pd.concat([covid19_updated, covid19['Outbreak Associated']], axis=1)


dummies1 = pd.get_dummies(covid19["Age Group"], prefix='Age_Group')
covid19_updated = pd.concat([covid19_updated, dummies1], axis=1)

dummies2 = pd.get_dummies(covid19["Neighbourhood Name"], prefix='Neighbourhood_Name')
covid19_updated = pd.concat([covid19_updated, dummies2], axis=1)

fsa_dummies = pd.get_dummies(covid19.FSA, prefix='FSA')
covid19_updated = pd.concat([covid19_updated, fsa_dummies], axis=1)

dummies3 = pd.get_dummies(covid19["Source of Infection"], prefix='Source_of_Infection')
covid19_updated = pd.concat([covid19_updated, dummies3], axis=1)

covid19['Classification']= lb.fit_transform(covid19['Classification'])
covid19_updated = pd.concat([covid19_updated, covid19['Classification']], axis=1)

dummies4 = pd.get_dummies(covid19["Client Gender"], prefix='Client_Gender')
covid19_updated = pd.concat([covid19_updated, dummies4], axis=1)

covid19['Currently Hospitalized']= lb.fit_transform(covid19['Currently Hospitalized'])
covid19_updated = pd.concat([covid19_updated, covid19['Currently Hospitalized']], axis=1)

covid19['Currently in ICU']= lb.fit_transform(covid19['Currently in ICU'])
covid19_updated = pd.concat([covid19_updated, covid19['Currently in ICU']], axis=1)

covid19['Currently Intubated']= lb.fit_transform(covid19['Currently Intubated'])
covid19_updated = pd.concat([covid19_updated, covid19['Currently Intubated']], axis=1)

covid19['Ever Hospitalized']= lb.fit_transform(covid19['Ever Hospitalized'])
covid19_updated = pd.concat([covid19_updated, covid19['Ever Hospitalized']], axis=1)

covid19['Ever in ICU']= lb.fit_transform(covid19['Ever in ICU'])
covid19_updated = pd.concat([covid19_updated, covid19['Ever in ICU']], axis=1)

covid19['Ever Intubated']= lb.fit_transform(covid19['Ever Intubated'])
covid19_updated = pd.concat([covid19_updated, covid19['Ever Intubated']], axis=1)

covid19_updated = pd.concat([covid19_updated, covid19['Outcome']], axis=1)

covid19_updated.Outcome = pd.factorize(covid19_updated.Outcome)[0]
covid19_updated.head()

# covid19_updated.to_csv("drive/My Drive/Final_Project/out.csv")
```

Out[8]:

	Outbreak Associated	Age_Group_19 and younger	Age_Group_20-29	Age_Group_30-39	Age_Group_40-49	Age_Group_50-59	Age_Group_60-69	Age_Group_70-79	Age_Group_80-89	Age_Group_90+	...
0	1	0	0	0	0	1	0	0	0	0	...
1	1	0	1	0	0	0	0	0	0	0	...
2	1	0	0	0	0	0	1	0	0	0	...
3	0	0	0	0	0	1	0	0	0	0	...
4	1	0	0	1	0	0	0	0	0	0	...

5 rows × 267 columns

In [9]:
```python
dataset = covid19_updated.values

X = dataset[:,0:261]
Y = dataset[:,261]

min_max_scaler = preprocessing.MinMaxScaler()
X_scale = min_max_scaler.fit_transform(X)

X_train, X_val_and_test, Y_train, Y_val_and_test = train_test_split(X_scale, Y, test_size=0.3)
X_val, X_test, Y_val, Y_test = train_test_split(X_val_and_test, Y_val_and_test, test_size=0.5)
print(X_train.shape, X_val.shape, X_test.shape, Y_train.shape, Y_val.shape, Y_test.shape)
```

```
(10283, 261) (2204, 261) (2204, 261) (10283,) (2204,) (2204,)
```

In [10]:
```
model = Sequential([
    Dense(1000, activation='relu', kernel_regularizer=regularizers.l2(0.01), input_shape=(261,)),
    Dropout(0.3),
    Dense(1000, activation='relu', kernel_regularizer=regularizers.l2(0.01)),
    Dropout(0.3),
    Dense(1000, activation='relu', kernel_regularizer=regularizers.l2(0.01)),
    Dropout(0.3),
    Dense(1000, activation='relu', kernel_regularizer=regularizers.l2(0.01)),
    Dropout(0.3),
    Dense(1, activation='sigmoid', kernel_regularizer=regularizers.l2(0.01)),
])
```

In [11]:
```
model.compile(optimizer='adam',
              loss='binary_crossentropy',
              metrics=['accuracy'])
```

In [13]:
```
hist_out = model.fit(X_train, Y_train,
          batch_size=32, epochs=50,
          validation_data=(X_val, Y_val))
```

```
Epoch 1/50
185/322 [================>............] - ETA: 0s - loss: 0.0056 - accuracy: 1.00 - ETA: 29s - loss: 0.0056 - accuracy: 1.000 - ETA:
36s - loss: 0.0055 - accuracy: 1.000 - ETA: 1:00 - loss: 0.0055 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0408 - accuracy: 0.99 - ETA: 1:
02 - loss: 0.0349 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0561 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0499 - accuracy: 0.99 - ETA: 58s
- loss: 0.0453 - accuracy: 0.9931 - ETA: 58s - loss: 0.0416 - accuracy: 0.993 - ETA: 1:01 - loss: 0.0385 - accuracy: 0.99 - ETA: 1:02
- loss: 0.0360 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0338 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0433 - accuracy: 0.99 - ETA: 59s - l
oss: 0.0514 - accuracy: 0.9917 - ETA: 59s - loss: 0.0488 - accuracy: 0.992 - ETA: 59s - loss: 0.0554 - accuracy: 0.990 - ETA: 1:01 - l
oss: 0.0529 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0508 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0489 - accuracy: 0.99 - ETA: 59s - los
s: 0.0473 - accuracy: 0.9926 - ETA: 59s - loss: 0.0519 - accuracy: 0.991 - ETA: 58s - loss: 0.0503 - accuracy: 0.991 - ETA: 58s - los
s: 0.0488 - accuracy: 0.992 - ETA: 1:00 - loss: 0.0473 - accuracy: 0.99 - ETA: 59s - loss: 0.0511 - accuracy: 0.9916 - ETA: 59s - los
s: 0.0497 - accuracy: 0.991 - ETA: 58s - loss: 0.0484 - accuracy: 0.992 - ETA: 58s - loss: 0.0471 - accuracy: 0.992 - ETA: 57s - loss:
0.0460 - accuracy: 0.992 - ETA: 58s - loss: 0.0448 - accuracy: 0.992 - ETA: 59s - loss: 0.0437 - accuracy: 0.993 - ETA: 58s - loss: 0.
0427 - accuracy: 0.993 - ETA: 58s - loss: 0.0416 - accuracy: 0.993 - ETA: 57s - loss: 0.0407 - accuracy: 0.993 - ETA: 57s - loss: 0.03
97 - accuracy: 0.993 - ETA: 57s - loss: 0.0388 - accuracy: 0.994 - ETA: 57s - loss: 0.0379 - accuracy: 0.994 - ETA: 57s - loss: 0.0371
- accuracy: 0.994 - ETA: 57s - loss: 0.0363 - accuracy: 0.994 - ETA: 57s - loss: 0.0355 - accuracy: 0.994 - ETA: 56s - loss: 0.0348 -
accuracy: 0.994 - ETA: 56s - loss: 0.0341 - accuracy: 0.994 - ETA: 55s - loss: 0.0334 - accuracy: 0.995 - ETA: 55s - loss: 0.0327 - ac
curacy: 0.995 - ETA: 56s - loss: 0.0321 - accuracy: 0.995 - ETA: 56s - loss: 0.0315 - accuracy: 0.995 - ETA: 55s - loss: 0.0309 - accu
racy: 0.995 - ETA: 55s - loss: 0.0303 - accuracy: 0.995 - ETA: 55s - loss: 0.0339 - accuracy: 0.995 - ETA: 54s - loss: 0.0333 - accura
cy: 0.995 - ETA: 55s - loss: 0.0327 - accuracy: 0.995 - ETA: 55s - loss: 0.0322 - accuracy: 0.995 - ETA: 55s - loss: 0.0317 - accurac
y: 0.995 - ETA: 55s - loss: 0.0312 - accuracy: 0.995 - ETA: 55s - loss: 0.0307 - accuracy: 0.995 - ETA: 56s - loss: 0.0302 - accuracy:
0.995 - ETA: 55s - loss: 0.0298 - accuracy: 0.995 - ETA: 55s - loss: 0.0293 - accuracy: 0.995 - ETA: 55s - loss: 0.0289 - accuracy: 0.
995 - ETA: 54s - loss: 0.0285 - accuracy: 0.995 - ETA: 54s - loss: 0.0281 - accuracy: 0.996 - ETA: 54s - loss: 0.0311 - accuracy: 0.99
5 - ETA: 54s - loss: 0.0306 - accuracy: 0.995 - ETA: 54s - loss: 0.0302 - accuracy: 0.995 - ETA: 53s - loss: 0.0298 - accuracy: 0.995
- ETA: 53s - loss: 0.0295 - accuracy: 0.995 - ETA: 53s - loss: 0.0291 - accuracy: 0.995 - ETA: 53s - loss: 0.0287 - accuracy: 0.995 -
ETA: 53s - loss: 0.0284 - accuracy: 0.996 - ETA: 53s - loss: 0.0280 - accuracy: 0.996 - ETA: 52s - loss: 0.0277 - accuracy: 0.996 - ET
A: 52s - loss: 0.0274 - accuracy: 0.996 - ETA: 52s - loss: 0.0271 - accuracy: 0.996 - ETA: 52s - loss: 0.0268 - accuracy: 0.996 - ETA:
52s - loss: 0.0265 - accuracy: 0.996 - ETA: 51s - loss: 0.0262 - accuracy: 0.996 - ETA: 51s - loss: 0.0259 - accuracy: 0.996 - ETA: 51
s - loss: 0.0256 - accuracy: 0.996 - ETA: 51s - loss: 0.0253 - accuracy: 0.996 - ETA: 50s - loss: 0.0251 - accuracy: 0.996 - ETA: 50s
- loss: 0.0248 - accuracy: 0.996 - ETA: 50s - loss: 0.0245 - accuracy: 0.996 - ETA: 50s - loss: 0.0243 - accuracy: 0.996 - ETA: 49s -
loss: 0.0240 - accuracy: 0.996 - ETA: 49s - loss: 0.0238 - accuracy: 0.996 - ETA: 49s - loss: 0.0236 - accuracy: 0.996 - ETA: 49s - lo
ss: 0.0233 - accuracy: 0.996 - ETA: 49s - loss: 0.0231 - accuracy: 0.996 - ETA: 49s - loss: 0.0229 - accuracy: 0.996 - ETA: 48s - los
s: 0.0227 - accuracy: 0.996 - ETA: 48s - loss: 0.0247 - accuracy: 0.996 - ETA: 48s - loss: 0.0245 - accuracy: 0.996 - ETA: 48s - loss:
0.0243 - accuracy: 0.996 - ETA: 48s - loss: 0.0241 - accuracy: 0.996 - ETA: 48s - loss: 0.0239 - accuracy: 0.996 - ETA: 48s - loss: 0.
0237 - accuracy: 0.996 - ETA: 47s - loss: 0.0235 - accuracy: 0.996 - ETA: 47s - loss: 0.0233 - accuracy: 0.996 - ETA: 47s - loss: 0.02
31 - accuracy: 0.996 - ETA: 47s - loss: 0.0229 - accuracy: 0.996 - ETA: 47s - loss: 0.0227 - accuracy: 0.996 - ETA: 46s - loss: 0.0225
- accuracy: 0.997 - ETA: 46s - loss: 0.0223 - accuracy: 0.997 - ETA: 46s - loss: 0.0221 - accuracy: 0.997 - ETA: 46s - loss: 0.0220 -
accuracy: 0.997 - ETA: 46s - loss: 0.0218 - accuracy: 0.997 - ETA: 46s - loss: 0.0216 - accuracy: 0.997 - ETA: 46s - loss: 0.0215 - ac
curacy: 0.997 - ETA: 45s - loss: 0.0213 - accuracy: 0.997 - ETA: 45s - loss: 0.0211 - accuracy: 0.997 - ETA: 45s - loss: 0.0210 - accu
racy: 0.997 - ETA: 45s - loss: 0.0208 - accuracy: 0.997 - ETA: 45s - loss: 0.0207 - accuracy: 0.997 - ETA: 45s - loss: 0.0205 - accura
cy: 0.997 - ETA: 45s - loss: 0.0204 - accuracy: 0.997 - ETA: 45s - loss: 0.0202 - accuracy: 0.997 - ETA: 44s - loss: 0.0201 - accurac
y: 0.997 - ETA: 44s - loss: 0.0199 - accuracy: 0.997 - ETA: 44s - loss: 0.0198 - accuracy: 0.997 - ETA: 44s - loss: 0.0197 - accuracy:
0.997 - ETA: 44s - loss: 0.0195 - accuracy: 0.997 - ETA: 44s - loss: 0.0194 - accuracy: 0.997 - ETA: 44s - loss: 0.0193 - accuracy: 0.
997 - ETA: 43s - loss: 0.0191 - accuracy: 0.997 - ETA: 43s - loss: 0.0190 - accuracy: 0.997 - ETA: 43s - loss: 0.0189 - accuracy: 0.99
7 - ETA: 42s - loss: 0.0187 - accuracy: 0.997 - ETA: 42s - loss: 0.0186 - accuracy: 0.997 - ETA: 42s - loss: 0.0185 - accuracy: 0.997
- ETA: 42s - loss: 0.0184 - accuracy: 0.997 - ETA: 42s - loss: 0.0183 - accuracy: 0.997 - ETA: 41s - loss: 0.0181 - accuracy: 0.997 -
ETA: 41s - loss: 0.0180 - accuracy: 0.997 - ETA: 41s - loss: 0.0179 - accuracy: 0.997 - ETA: 41s - loss: 0.0178 - accuracy: 0.997 - ET
A: 41s - loss: 0.0177 - accuracy: 0.997 - ETA: 41s - loss: 0.0192 - accuracy: 0.997 - ETA: 40s - loss: 0.0191 - accuracy: 0.997 - ETA:
40s - loss: 0.0190 - accuracy: 0.997 - ETA: 40s - loss: 0.0189 - accuracy: 0.997 - ETA: 40s - loss: 0.0188 - accuracy: 0.997 - ETA: 40
s - loss: 0.0187 - accuracy: 0.997 - ETA: 40s - loss: 0.0186 - accuracy: 0.997 - ETA: 39s - loss: 0.0185 - accuracy: 0.997 - ETA: 39s
- loss: 0.0184 - accuracy: 0.997 - ETA: 39s - loss: 0.0183 - accuracy: 0.997 - ETA: 39s - loss: 0.0182 - accuracy: 0.997 - ETA: 39s -
loss: 0.0181 - accuracy: 0.997 - ETA: 38s - loss: 0.0180 - accuracy: 0.997 - ETA: 38s - loss: 0.0192 - accuracy: 0.997 - ETA: 38s - lo
ss: 0.0191 - accuracy: 0.997 - ETA: 38s - loss: 0.0190 - accuracy: 0.997 - ETA: 38s - loss: 0.0189 - accuracy: 0.997 - ETA: 38s - los
s: 0.0188 - accuracy: 0.997 - ETA: 37s - loss: 0.0187 - accuracy: 0.997 - ETA: 37s - loss: 0.0187 - accuracy: 0.997 - ETA: 37s - loss:
0.0186 - accuracy: 0.997 - ETA: 37s - loss: 0.0185 - accuracy: 0.997 - ETA: 37s - loss: 0.0184 - accuracy: 0.997 - ETA: 36s - loss: 0.
0183 - accuracy: 0.997 - ETA: 36s - loss: 0.0182 - accuracy: 0.997 - ETA: 36s - loss: 0.0181 - accuracy: 0.997 - ETA: 36s - loss: 0.01
80 - accuracy: 0.997 - ETA: 36s - loss: 0.0179 - accuracy: 0.997 - ETA: 35s - loss: 0.0179 - accuracy: 0.997 - ETA: 35s - loss: 0.0178
- accuracy: 0.997 - ETA: 35s - loss: 0.0177 - accuracy: 0.997 - ETA: 35s - loss: 0.0176 - accuracy: 0.997 - ETA: 34s - loss: 0.0175 -
accuracy: 0.997 - ETA: 34s - loss: 0.0175 - accuracy: 0.997 - ETA: 34s - loss: 0.0174 - accuracy: 0.997 - ETA: 34s - loss: 0.0173 - ac
curacy: 0.997 - ETA: 33s - loss: 0.0172 - accuracy: 0.997 - ETA: 33s - loss: 0.0171 - accuracy: 0.997 - ETA: 33s - loss: 0.0171 - accu
racy: 0.997 - ETA: 33s - loss: 0.0170 - accuracy: 0.997 - ETA: 32s - loss: 0.0169 - accuracy: 0.997 - ETA: 32s - loss: 0.0168 - accura
cy: 0.997 - ETA: 32s - loss: 0.0167 - accuracy: 0.997 - ETA: 32s - loss: 0.0167 - accuracy: 0.997 - ETA: 32s - loss: 0.0166 - accurac
y: 0.997 - ETA: 31s - loss: 0.0165 - accuracy: 0.998 - ETA: 31s - loss: 0.0164 - accuracy: 0.998 - ETA: 31s - loss: 0.0164 - accuracy:
0.998322/322 [==============================] - ETA: 31s - loss: 0.0163 - accuracy: 0.998 - ETA: 31s - loss: 0.0162 - accuracy: 0.998
- ETA: 30s - loss: 0.0162 - accuracy: 0.998 - ETA: 30s - loss: 0.0161 - accuracy: 0.998 - ETA: 30s - loss: 0.0160 - accuracy: 0.998 -
ETA: 30s - loss: 0.0159 - accuracy: 0.998 - ETA: 30s - loss: 0.0159 - accuracy: 0.998 - ETA: 29s - loss: 0.0170 - accuracy: 0.997 - ET
A: 29s - loss: 0.0180 - accuracy: 0.997 - ETA: 29s - loss: 0.0179 - accuracy: 0.997 - ETA: 28s - loss: 0.0178 - accuracy: 0.997 - ETA:
28s - loss: 0.0178 - accuracy: 0.997 - ETA: 28s - loss: 0.0177 - accuracy: 0.997 - ETA: 28s - loss: 0.0177 - accuracy: 0.997 - ETA: 28
s - loss: 0.0176 - accuracy: 0.997 - ETA: 27s - loss: 0.0175 - accuracy: 0.997 - ETA: 27s - loss: 0.0175 - accuracy: 0.997 - ETA: 27s
- loss: 0.0174 - accuracy: 0.997 - ETA: 27s - loss: 0.0173 - accuracy: 0.997 - ETA: 26s - loss: 0.0173 - accuracy: 0.997 - ETA: 26s -
loss: 0.0172 - accuracy: 0.997 - ETA: 26s - loss: 0.0181 - accuracy: 0.997 - ETA: 26s - loss: 0.0181 - accuracy: 0.997 - ETA: 26s - lo
ss: 0.0189 - accuracy: 0.997 - ETA: 25s - loss: 0.0188 - accuracy: 0.997 - ETA: 25s - loss: 0.0188 - accuracy: 0.997 - ETA: 25s - los
s: 0.0187 - accuracy: 0.997 - ETA: 25s - loss: 0.0187 - accuracy: 0.997 - ETA: 25s - loss: 0.0186 - accuracy: 0.997 - ETA: 24s - loss:
0.0186 - accuracy: 0.997 - ETA: 24s - loss: 0.0185 - accuracy: 0.997 - ETA: 24s - loss: 0.0185 - accuracy: 0.997 - ETA: 24s - loss: 0.
0184 - accuracy: 0.997 - ETA: 24s - loss: 0.0184 - accuracy: 0.997 - ETA: 23s - loss: 0.0183 - accuracy: 0.997 - ETA: 23s - loss: 0.01
83 - accuracy: 0.997 - ETA: 23s - loss: 0.0182 - accuracy: 0.997 - ETA: 23s - loss: 0.0181 - accuracy: 0.997 - ETA: 22s - loss: 0.0181
- accuracy: 0.997 - ETA: 22s - loss: 0.0188 - accuracy: 0.997 - ETA: 22s - loss: 0.0187 - accuracy: 0.997 - ETA: 22s - loss: 0.0187 -
accuracy: 0.997 - ETA: 22s - loss: 0.0186 - accuracy: 0.997 - ETA: 21s - loss: 0.0186 - accuracy: 0.997 - ETA: 21s - loss: 0.0185 - ac
curacy: 0.997 - ETA: 21s - loss: 0.0185 - accuracy: 0.997 - ETA: 21s - loss: 0.0184 - accuracy: 0.997 - ETA: 20s - loss: 0.0184 - accu
racy: 0.997 - ETA: 20s - loss: 0.0183 - accuracy: 0.997 - ETA: 20s - loss: 0.0182 - accuracy: 0.997 - ETA: 20s - loss: 0.0190 - accura
cy: 0.997 - ETA: 19s - loss: 0.0189 - accuracy: 0.997 - ETA: 19s - loss: 0.0189 - accuracy: 0.997 - ETA: 19s - loss: 0.0188 - accurac
y: 0.997 - ETA: 19s - loss: 0.0188 - accuracy: 0.997 - ETA: 19s - loss: 0.0187 - accuracy: 0.997 - ETA: 18s - loss: 0.0186 - accuracy:
0.997 - ETA: 18s - loss: 0.0186 - accuracy: 0.997 - ETA: 18s - loss: 0.0185 - accuracy: 0.997 - ETA: 18s - loss: 0.0185 - accuracy: 0.
997 - ETA: 17s - loss: 0.0184 - accuracy: 0.997 - ETA: 17s - loss: 0.0191 - accuracy: 0.997 - ETA: 17s - loss: 0.0190 - accuracy: 0.99
7 - ETA: 17s - loss: 0.0190 - accuracy: 0.997 - ETA: 16s - loss: 0.0189 - accuracy: 0.997 - ETA: 16s - loss: 0.0189 - accuracy: 0.997
- ETA: 16s - loss: 0.0188 - accuracy: 0.997 - ETA: 16s - loss: 0.0188 - accuracy: 0.997 - ETA: 16s - loss: 0.0187 - accuracy: 0.997 -
ETA: 15s - loss: 0.0186 - accuracy: 0.997 - ETA: 15s - loss: 0.0186 - accuracy: 0.997 - ETA: 15s - loss: 0.0185 - accuracy: 0.997 - ET
A: 15s - loss: 0.0185 - accuracy: 0.997 - ETA: 14s - loss: 0.0184 - accuracy: 0.997 - ETA: 14s - loss: 0.0184 - accuracy: 0.997 - ETA:
14s - loss: 0.0183 - accuracy: 0.997 - ETA: 14s - loss: 0.0183 - accuracy: 0.997 - ETA: 13s - loss: 0.0182 - accuracy: 0.997 - ETA: 13
s - loss: 0.0181 - accuracy: 0.997 - ETA: 13s - loss: 0.0181 - accuracy: 0.997 - ETA: 13s - loss: 0.0180 - accuracy: 0.997 - ETA: 13s
- loss: 0.0180 - accuracy: 0.997 - ETA: 12s - loss: 0.0179 - accuracy: 0.997 - ETA: 12s - loss: 0.0179 - accuracy: 0.997 - ETA: 12s -
loss: 0.0178 - accuracy: 0.997 - ETA: 12s - loss: 0.0178 - accuracy: 0.997 - ETA: 11s - loss: 0.0177 - accuracy: 0.997 - ETA: 11s - lo
```

```
ss: 0.0177 - accuracy: 0.997 - ETA: 11s - loss: 0.0176 - accuracy: 0.997 - ETA: 11s - loss: 0.0176 - accuracy: 0.997 - ETA: 10s - los
s: 0.0175 - accuracy: 0.997 - ETA: 10s - loss: 0.0182 - accuracy: 0.997 - ETA: 10s - loss: 0.0182 - accuracy: 0.997 - ETA: 10s - loss:
0.0181 - accuracy: 0.997 - ETA: 9s - loss: 0.0181 - accuracy: 0.997 - ETA: 9s - loss: 0.0180 - accuracy: 0.99 - ETA: 9s - loss: 0.0180
- accuracy: 0.99 - ETA: 9s - loss: 0.0179 - accuracy: 0.99 - ETA: 9s - loss: 0.0179 - accuracy: 0.99 - ETA: 8s - loss: 0.0178 - accura
cy: 0.99 - ETA: 8s - loss: 0.0178 - accuracy: 0.99 - ETA: 8s - loss: 0.0184 - accuracy: 0.99 - ETA: 8s - loss: 0.0184 - accuracy: 0.99
- ETA: 7s - loss: 0.0183 - accuracy: 0.99 - ETA: 7s - loss: 0.0183 - accuracy: 0.99 - ETA: 7s - loss: 0.0182 - accuracy: 0.99 - ETA: 7
s - loss: 0.0188 - accuracy: 0.99 - ETA: 6s - loss: 0.0194 - accuracy: 0.99 - ETA: 6s - loss: 0.0194 - accuracy: 0.99 - ETA: 6s - los
s: 0.0193 - accuracy: 0.99 - ETA: 6s - loss: 0.0193 - accuracy: 0.99 - ETA: 5s - loss: 0.0198 - accuracy: 0.99 - ETA: 5s - loss: 0.019
7 - accuracy: 0.99 - ETA: 5s - loss: 0.0197 - accuracy: 0.99 - ETA: 5s - loss: 0.0197 - accuracy: 0.99 - ETA: 5s - loss: 0.0196 - accu
racy: 0.99 - ETA: 4s - loss: 0.0196 - accuracy: 0.99 - ETA: 4s - loss: 0.0201 - accuracy: 0.99 - ETA: 4s - loss: 0.0200 - accuracy: 0.
99 - ETA: 4s - loss: 0.0200 - accuracy: 0.99 - ETA: 3s - loss: 0.0200 - accuracy: 0.99 - ETA: 3s - loss: 0.0200 - accuracy: 0.99 - ET
A: 3s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s - loss: 0.0199 - accuracy: 0.99 - ETA: 2s - loss: 0.0199 - accuracy: 0.99 - ETA: 2s -
loss: 0.0198 - accuracy: 0.99 - ETA: 2s - loss: 0.0198 - accuracy: 0.99 - ETA: 2s - loss: 0.0198 - accuracy: 0.99 - ETA: 1s - loss: 0.
0197 - accuracy: 0.99 - ETA: 1s - loss: 0.0197 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - a
ccuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy:
0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - 84s 262ms/step - loss: 0.0200 - accuracy:
0.9975 - val_loss: 0.0234 - val_accuracy: 0.9968
Epoch 2/50
186/322 [================>............] - ETA: 0s - loss: 0.0054 - accuracy: 1.00 - ETA: 34s - loss: 0.0053 - accuracy: 1.000 - ETA:
49s - loss: 0.0052 - accuracy: 1.000 - ETA: 54s - loss: 0.0050 - accuracy: 1.000 - ETA: 57s - loss: 0.0049 - accuracy: 1.000 - ETA: 1:
12 - loss: 0.0047 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0046 - accuracy: 1.00 - ETA: 1:19 - loss: 0.0299 - accuracy: 0.99 - ETA: 1:25
- loss: 0.0270 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:22 -
loss: 0.0214 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:16 - lo
ss: 0.0181 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0172 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:13 - los
s: 0.0268 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:13 - loss:
0.0237 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:15 - loss: 0.
0213 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:17 - loss: 0.01
95 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0180
- accuracy: 0.99 - ETA: 1:29 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0167 -
accuracy: 0.99 - ETA: 1:27 - loss: 0.0163 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0156 - ac
curacy: 0.99 - ETA: 1:29 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0150 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0147 - accu
racy: 0.99 - ETA: 1:36 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0142 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0139 - accura
cy: 0.99 - ETA: 1:38 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0134 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0132 - accurac
y: 0.99 - ETA: 1:40 - loss: 0.0130 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0128 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0126 - accuracy:
0.99 - ETA: 1:37 - loss: 0.0164 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0162 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0159 - accuracy: 0.
99 - ETA: 1:38 - loss: 0.0157 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0152 - accuracy: 0.99
- ETA: 1:41 - loss: 0.0150 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0148 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0146 - accuracy: 0.99 -
ETA: 1:44 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0176 - accuracy: 0.99 - ET
A: 1:41 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0169 - accuracy: 0.99 - ETA:
1:40 - loss: 0.0167 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:
39 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:36
- loss: 0.0183 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:34 -
loss: 0.0178 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:33 - lo
ss: 0.0173 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0170 - accuracy: 0.99 - ETA: 1:31 - los
s: 0.0168 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:30 - loss:
0.0163 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:29 - loss: 0.
0180 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:28 - loss: 0.01
96 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0192
- accuracy: 0.99 - ETA: 1:28 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0225 -
accuracy: 0.99 - ETA: 1:28 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0236 - ac
curacy: 0.99 - ETA: 1:27 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0232 - accu
racy: 0.99 - ETA: 1:26 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0229 - accura
cy: 0.99 - ETA: 1:25 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0225 - accurac
y: 0.99 - ETA: 1:24 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0222 - accuracy:
0.99 - ETA: 1:23 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0217 - accuracy: 0.
99 - ETA: 1:22 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0229 - accuracy: 0.99
- ETA: 1:21 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0254 - accuracy: 0.99 -
ETA: 1:21 - loss: 0.0253 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0263 - accuracy: 0.99 - ET
A: 1:19 - loss: 0.0262 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0260 - accuracy: 0.99 - ETA:
1:18 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0270 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0269 - accuracy: 0.99 - ETA: 1:
16 - loss: 0.0268 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:15
- loss: 0.0264 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:13 -
loss: 0.0272 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:11 - lo
ss: 0.0280 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0278 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:10 - los
s: 0.0276 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:08 - loss:
0.0272 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0269 - accuracy: 0.99 - ETA: 1:06 - loss: 0.
0268 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:05 - loss: 0.02
64 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0262 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0260
- accuracy: 0.99 - ETA: 1:03 - loss: 0.0258 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0268 -
accuracy: 0.99 - ETA: 1:02 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0264 - ac
curacy: 0.99 - ETA: 1:01 - loss: 0.0262 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0260 - accu
racy: 0.99 - ETA: 1:00 - loss: 0.0270 - accuracy: 0.99 - ETA: 59s - loss: 0.0268 - accuracy: 0.9964 - ETA: 59s - loss: 0.0267 - accura
cy: 0.996 - ETA: 58s - loss: 0.0266 - accuracy: 0.996 - ETA: 58s - loss: 0.0264 - accuracy: 0.996 - ETA: 58s - loss: 0.0263 - accurac
y: 0.996 - ETA: 57s - loss: 0.0262 - accuracy: 0.996 - ETA: 57s - loss: 0.0261 - accuracy: 0.996 - ETA: 57s - loss: 0.0259 - accuracy:
0.996 - ETA: 56s - loss: 0.0258 - accuracy: 0.996 - ETA: 55s - loss: 0.0257 - accuracy: 0.996 - ETA: 55s - loss: 0.0256 - accuracy: 0.
996 - ETA: 55s - loss: 0.0254 - accuracy: 0.996 - ETA: 54s - loss: 0.0265 - accuracy: 0.996 - ETA: 54s - loss: 0.0263 - accuracy: 0.99
6 - ETA: 53s - loss: 0.0262 - accuracy: 0.996 - ETA: 53s - loss: 0.0261 - accuracy: 0.996 - ETA: 53s - loss: 0.0260 - accuracy: 0.996
- ETA: 52s - loss: 0.0259 - accuracy: 0.996 - ETA: 52s - loss: 0.0258 - accuracy: 0.996 - ETA: 51s - loss: 0.0266 - accuracy: 0.996 -
ETA: 51s - loss: 0.0265 - accuracy: 0.996 - ETA: 50s - loss: 0.0264 - accuracy: 0.996 - ETA: 50s - loss: 0.0263 - accuracy: 0.996 - ET
A: 49s - loss: 0.0262 - accuracy: 0.9965322/322 [==============================] - ETA: 49s - loss: 0.0261 - accuracy: 0.996 - ETA: 49
s - loss: 0.0260 - accuracy: 0.996 - ETA: 48s - loss: 0.0259 - accuracy: 0.996 - ETA: 48s - loss: 0.0258 - accuracy: 0.996 - ETA: 47s
- loss: 0.0257 - accuracy: 0.996 - ETA: 47s - loss: 0.0256 - accuracy: 0.996 - ETA: 46s - loss: 0.0255 - accuracy: 0.996 - ETA: 46s -
loss: 0.0254 - accuracy: 0.996 - ETA: 46s - loss: 0.0253 - accuracy: 0.996 - ETA: 45s - loss: 0.0251 - accuracy: 0.996 - ETA: 45s - lo
ss: 0.0250 - accuracy: 0.996 - ETA: 45s - loss: 0.0249 - accuracy: 0.996 - ETA: 44s - loss: 0.0248 - accuracy: 0.996 - ETA: 44s - los
s: 0.0247 - accuracy: 0.996 - ETA: 43s - loss: 0.0246 - accuracy: 0.996 - ETA: 43s - loss: 0.0245 - accuracy: 0.996 - ETA: 43s - loss:
0.0244 - accuracy: 0.996 - ETA: 42s - loss: 0.0243 - accuracy: 0.996 - ETA: 42s - loss: 0.0242 - accuracy: 0.996 - ETA: 41s - loss: 0.
0241 - accuracy: 0.996 - ETA: 41s - loss: 0.0240 - accuracy: 0.996 - ETA: 40s - loss: 0.0239 - accuracy: 0.996 - ETA: 40s - loss: 0.02
38 - accuracy: 0.996 - ETA: 40s - loss: 0.0237 - accuracy: 0.996 - ETA: 39s - loss: 0.0236 - accuracy: 0.996 - ETA: 39s - loss: 0.0235
- accuracy: 0.996 - ETA: 38s - loss: 0.0234 - accuracy: 0.996 - ETA: 38s - loss: 0.0233 - accuracy: 0.996 - ETA: 38s - loss: 0.0232 -
accuracy: 0.996 - ETA: 37s - loss: 0.0232 - accuracy: 0.997 - ETA: 37s - loss: 0.0231 - accuracy: 0.997 - ETA: 36s - loss: 0.0230 - ac
curacy: 0.997 - ETA: 36s - loss: 0.0229 - accuracy: 0.997 - ETA: 36s - loss: 0.0228 - accuracy: 0.997 - ETA: 35s - loss: 0.0227 - accu
```

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racy: 0.997 - ETA: 35s - loss: 0.0226 - accuracy: 0.997 - ETA: 35s - loss: 0.0225 - accuracy: 0.997 - ETA: 34s - loss: 0.0224 - accura
cy: 0.997 - ETA: 34s - loss: 0.0233 - accuracy: 0.996 - ETA: 33s - loss: 0.0232 - accuracy: 0.997 - ETA: 33s - loss: 0.0231 - accurac
y: 0.997 - ETA: 33s - loss: 0.0230 - accuracy: 0.997 - ETA: 32s - loss: 0.0229 - accuracy: 0.997 - ETA: 32s - loss: 0.0229 - accuracy:
0.997 - ETA: 31s - loss: 0.0237 - accuracy: 0.996 - ETA: 31s - loss: 0.0236 - accuracy: 0.996 - ETA: 31s - loss: 0.0235 - accuracy: 0.
996 - ETA: 30s - loss: 0.0235 - accuracy: 0.996 - ETA: 30s - loss: 0.0234 - accuracy: 0.996 - ETA: 29s - loss: 0.0241 - accuracy: 0.99
6 - ETA: 29s - loss: 0.0240 - accuracy: 0.996 - ETA: 29s - loss: 0.0240 - accuracy: 0.996 - ETA: 28s - loss: 0.0239 - accuracy: 0.996
- ETA: 28s - loss: 0.0238 - accuracy: 0.996 - ETA: 27s - loss: 0.0237 - accuracy: 0.996 - ETA: 27s - loss: 0.0237 - accuracy: 0.996 -
ETA: 27s - loss: 0.0236 - accuracy: 0.996 - ETA: 26s - loss: 0.0235 - accuracy: 0.996 - ETA: 26s - loss: 0.0234 - accuracy: 0.996 - ET
A: 26s - loss: 0.0234 - accuracy: 0.997 - ETA: 25s - loss: 0.0233 - accuracy: 0.997 - ETA: 25s - loss: 0.0232 - accuracy: 0.997 - ETA:
25s - loss: 0.0231 - accuracy: 0.997 - ETA: 24s - loss: 0.0231 - accuracy: 0.997 - ETA: 24s - loss: 0.0230 - accuracy: 0.997 - ETA: 23
s - loss: 0.0229 - accuracy: 0.997 - ETA: 23s - loss: 0.0229 - accuracy: 0.997 - ETA: 23s - loss: 0.0228 - accuracy: 0.997 - ETA: 22s
- loss: 0.0227 - accuracy: 0.997 - ETA: 22s - loss: 0.0226 - accuracy: 0.997 - ETA: 22s - loss: 0.0226 - accuracy: 0.997 - ETA: 21s -
loss: 0.0225 - accuracy: 0.997 - ETA: 21s - loss: 0.0224 - accuracy: 0.997 - ETA: 20s - loss: 0.0224 - accuracy: 0.997 - ETA: 20s - lo
ss: 0.0223 - accuracy: 0.997 - ETA: 20s - loss: 0.0222 - accuracy: 0.997 - ETA: 19s - loss: 0.0221 - accuracy: 0.997 - ETA: 19s - los
s: 0.0228 - accuracy: 0.997 - ETA: 19s - loss: 0.0227 - accuracy: 0.997 - ETA: 18s - loss: 0.0227 - accuracy: 0.997 - ETA: 18s - loss:
0.0226 - accuracy: 0.997 - ETA: 18s - loss: 0.0233 - accuracy: 0.997 - ETA: 17s - loss: 0.0232 - accuracy: 0.997 - ETA: 17s - loss: 0.
0231 - accuracy: 0.997 - ETA: 17s - loss: 0.0231 - accuracy: 0.997 - ETA: 16s - loss: 0.0230 - accuracy: 0.997 - ETA: 16s - loss: 0.02
30 - accuracy: 0.997 - ETA: 15s - loss: 0.0229 - accuracy: 0.997 - ETA: 15s - loss: 0.0228 - accuracy: 0.997 - ETA: 15s - loss: 0.0228
- accuracy: 0.997 - ETA: 14s - loss: 0.0227 - accuracy: 0.997 - ETA: 14s - loss: 0.0226 - accuracy: 0.997 - ETA: 14s - loss: 0.0226 -
accuracy: 0.997 - ETA: 13s - loss: 0.0225 - accuracy: 0.997 - ETA: 13s - loss: 0.0224 - accuracy: 0.997 - ETA: 13s - loss: 0.0224 - ac
curacy: 0.997 - ETA: 12s - loss: 0.0223 - accuracy: 0.997 - ETA: 12s - loss: 0.0223 - accuracy: 0.997 - ETA: 12s - loss: 0.0222 - accu
racy: 0.997 - ETA: 11s - loss: 0.0221 - accuracy: 0.997 - ETA: 11s - loss: 0.0221 - accuracy: 0.997 - ETA: 11s - loss: 0.0220 - accura
cy: 0.997 - ETA: 10s - loss: 0.0219 - accuracy: 0.997 - ETA: 10s - loss: 0.0219 - accuracy: 0.997 - ETA: 10s - loss: 0.0218 - accurac
y: 0.997 - ETA: 9s - loss: 0.0218 - accuracy: 0.997 - ETA: 9s - loss: 0.0217 - accuracy: 0.99 - ETA: 9s - loss: 0.0216 - accuracy: 0.9
9 - ETA: 8s - loss: 0.0216 - accuracy: 0.99 - ETA: 8s - loss: 0.0215 - accuracy: 0.99 - ETA: 8s - loss: 0.0214 - accuracy: 0.99 - ETA:
7s - loss: 0.0214 - accuracy: 0.99 - ETA: 7s - loss: 0.0213 - accuracy: 0.99 - ETA: 7s - loss: 0.0213 - accuracy: 0.99 - ETA: 6s - los
s: 0.0212 - accuracy: 0.99 - ETA: 6s - loss: 0.0211 - accuracy: 0.99 - ETA: 6s - loss: 0.0211 - accuracy: 0.99 - ETA: 5s - loss: 0.021
0 - accuracy: 0.99 - ETA: 5s - loss: 0.0210 - accuracy: 0.99 - ETA: 5s - loss: 0.0209 - accuracy: 0.99 - ETA: 4s - loss: 0.0208 - accu
racy: 0.99 - ETA: 4s - loss: 0.0208 - accuracy: 0.99 - ETA: 4s - loss: 0.0207 - accuracy: 0.99 - ETA: 3s - loss: 0.0207 - accuracy: 0.
99 - ETA: 3s - loss: 0.0206 - accuracy: 0.99 - ETA: 3s - loss: 0.0206 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99 - ET
A: 2s - loss: 0.0204 - accuracy: 0.99 - ETA: 2s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0203 - accuracy: 0.99 - ETA: 1s -
loss: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.
0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - 107s 333ms/step - loss: 0.
0200 - accuracy: 0.9975 - val_loss: 0.0255 - val_accuracy: 0.9968
Epoch 3/50
 94/322 [=======>......................] - ETA: 0s - loss: 0.0027 - accuracy: 1.00 - ETA: 41s - loss: 0.0027 - accuracy: 1.000 - ETA:
57s - loss: 0.0757 - accuracy: 0.989 - ETA: 57s - loss: 0.0575 - accuracy: 0.992 - ETA: 54s - loss: 0.0467 - accuracy: 0.993 - ETA: 53
s - loss: 0.0395 - accuracy: 0.994 - ETA: 1:00 - loss: 0.0345 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0306 - accuracy: 0.99 - ETA: 1:05
- loss: 0.0500 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0454 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0595 - accuracy: 0.99 - ETA: 1:00 -
loss: 0.0551 - accuracy: 0.99 - ETA: 58s - loss: 0.0515 - accuracy: 0.9928 - ETA: 56s - loss: 0.0484 - accuracy: 0.993 - ETA: 57s - lo
ss: 0.0456 - accuracy: 0.993 - ETA: 1:06 - loss: 0.0432 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0410 - accuracy: 0.99 - ETA: 1:05 - los
s: 0.0391 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0373 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0357 - accuracy: 0.99 - ETA: 1:02 - loss:
0.0343 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0330 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0318 - accuracy: 0.99 - ETA: 1:02 - loss: 0.
0307 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0297 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0288 - accuracy: 0.99 - ETA: 1:00 - loss: 0.02
79 - accuracy: 0.99 - ETA: 59s - loss: 0.0271 - accuracy: 0.9967 - ETA: 58s - loss: 0.0264 - accuracy: 0.996 - ETA: 57s - loss: 0.0256
- accuracy: 0.996 - ETA: 57s - loss: 0.0250 - accuracy: 0.997 - ETA: 57s - loss: 0.0243 - accuracy: 0.997 - ETA: 56s - loss: 0.0237 -
accuracy: 0.997 - ETA: 55s - loss: 0.0231 - accuracy: 0.997 - ETA: 55s - loss: 0.0226 - accuracy: 0.997 - ETA: 54s - loss: 0.0221 - ac
curacy: 0.997 - ETA: 53s - loss: 0.0216 - accuracy: 0.997 - ETA: 53s - loss: 0.0211 - accuracy: 0.997 - ETA: 52s - loss: 0.0207 - accu
racy: 0.997 - ETA: 53s - loss: 0.0202 - accuracy: 0.997 - ETA: 55s - loss: 0.0198 - accuracy: 0.997 - ETA: 54s - loss: 0.0194 - accura
cy: 0.997 - ETA: 54s - loss: 0.0191 - accuracy: 0.997 - ETA: 54s - loss: 0.0187 - accuracy: 0.997 - ETA: 54s - loss: 0.0184 - accurac
y: 0.997 - ETA: 54s - loss: 0.0180 - accuracy: 0.998 - ETA: 54s - loss: 0.0177 - accuracy: 0.998 - ETA: 55s - loss: 0.0174 - accuracy:
0.998 - ETA: 56s - loss: 0.0171 - accuracy: 0.998 - ETA: 58s - loss: 0.0168 - accuracy: 0.998 - ETA: 59s - loss: 0.0165 - accuracy: 0.
998 - ETA: 59s - loss: 0.0163 - accuracy: 0.998 - ETA: 59s - loss: 0.0160 - accuracy: 0.998 - ETA: 58s - loss: 0.0158 - accuracy: 0.99
8 - ETA: 58s - loss: 0.0155 - accuracy: 0.998 - ETA: 1:00 - loss: 0.0153 - accuracy: 0.99 - ETA: 59s - loss: 0.0151 - accuracy: 0.9984
- ETA: 59s - loss: 0.0149 - accuracy: 0.998 - ETA: 59s - loss: 0.0147 - accuracy: 0.998 - ETA: 59s - loss: 0.0145 - accuracy: 0.998 -
ETA: 1:00 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0174 - accuracy: 0.99 - ET
A: 59s - loss: 0.0172 - accuracy: 0.9980 - ETA: 59s - loss: 0.0170 - accuracy: 0.998 - ETA: 59s - loss: 0.0168 - accuracy: 0.998 - ET
A: 59s - loss: 0.0166 - accuracy: 0.998 - ETA: 58s - loss: 0.0164 - accuracy: 0.998 - ETA: 58s - loss: 0.0163 - accuracy: 0.998 - ETA:
57s - loss: 0.0161 - accuracy: 0.998 - ETA: 57s - loss: 0.0159 - accuracy: 0.998 - ETA: 56s - loss: 0.0187 - accuracy: 0.997 - ETA: 56
s - loss: 0.0185 - accuracy: 0.997 - ETA: 56s - loss: 0.0183 - accuracy: 0.997 - ETA: 56s - loss: 0.0181 - accuracy: 0.997 - ETA: 56s
- loss: 0.0179 - accuracy: 0.997 - ETA: 56s - loss: 0.0177 - accuracy: 0.998 - ETA: 55s - loss: 0.0176 - accuracy: 0.998 - ETA: 54s -
loss: 0.0174 - accuracy: 0.998 - ETA: 54s - loss: 0.0172 - accuracy: 0.998 - ETA: 54s - loss: 0.0171 - accuracy: 0.998 - ETA: 53s - lo
ss: 0.0169 - accuracy: 0.998 - ETA: 53s - loss: 0.0168 - accuracy: 0.998 - ETA: 53s - loss: 0.0166 - accuracy: 0.998 - ETA: 53s - los
s: 0.0165 - accuracy: 0.998 - ETA: 53s - loss: 0.0163 - accuracy: 0.998 - ETA: 53s - loss: 0.0162 - accuracy: 0.998 - ETA: 53s - loss:
0.0160 - accuracy: 0.998 - ETA: 52s - loss: 0.0159 - accuracy: 0.998 - ETA: 52s - loss: 0.0158 - accuracy: 0.998 - ETA: 52s - loss: 0.
0156 - accuracy: 0.998 - ETA: 51s - loss: 0.0155 - accuracy: 0.998 - ETA: 51s - loss: 0.0154 - accuracy: 0.998 - ETA: 51s - loss: 0.01
73 - accuracy: 0.998 - ETA: 50s - loss: 0.0172 - accuracy: 0.998 - ETA: 50s - loss: 0.0171 - accuracy: 0.998 - ETA: 50s - loss: 0.0169
- accuracy: 0.998 - ETA: 49s - loss: 0.0168 - accuracy: 0.9 - ETA: 1:08 - loss: 0.0122 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0122 - a
ccuracy: 1.00 - ETA: 1:09 - loss: 0.0121 - accuracy: 1.00 - ETA: 1:12 - loss: 0.0279 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0263 - acc
uracy: 0.99 - ETA: 1:11 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0227 - accur
acy: 0.99 - ETA: 1:12 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0202 - accurac
y: 0.99 - ETA: 1:18 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0271 - accuracy:
0.99 - ETA: 1:19 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0253 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0245 - accuracy: 0.
99 - ETA: 1:14 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0224 - accuracy: 0.99
- ETA: 1:10 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0207 - accuracy: 0.99 -
ETA: 1:10 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0192 - accuracy: 0.99 - ET
A: 1:08 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0284 - accuracy: 0.99 - ETA:
1:07 - loss: 0.0278 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0319 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0313 - accuracy: 0.99 - ETA: 1:
05 - loss: 0.0307 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0301 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0296 - accuracy: 0.99 - ETA: 1:05
- loss: 0.0291 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0286 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:04 -
loss: 0.0276 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0272 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0268 - accuracy: 0.99 - ETA: 1:03 - lo
ss: 0.0264 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0260 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0256 - accuracy: 0.99 - ETA: 1:02 - los
s: 0.0252 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0283 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0279 - accuracy: 0.99 - ETA: 1:01 - loss:
0.0275 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:01 - loss: 0.
0294 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0290 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0287 - accuracy: 0.99 - ETA: 1:01 - loss: 0.02
83 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0280 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0276 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0273
- accuracy: 0.99 - ETA: 59s - loss: 0.0270 - accuracy: 0.9966 - ETA: 59s - loss: 0.0266 - accuracy: 0.996 - ETA: 59s - loss: 0.0263 -
accuracy: 0.996 - ETA: 59s - loss: 0.0260 - accuracy: 0.996 - ETA: 59s - loss: 0.0257 - accuracy: 0.996 - ETA: 58s - loss: 0.0254 - ac
curacy: 0.996 - ETA: 58s - loss: 0.0251 - accuracy: 0.996 - ETA: 57s - loss: 0.0248 - accuracy: 0.996 - ETA: 57s - loss: 0.0246 - accu
racy: 0.997 - ETA: 57s - loss: 0.0243 - accuracy: 0.997 - ETA: 56s - loss: 0.0240 - accuracy: 0.997 - ETA: 56s - loss: 0.0237 - accura
cy: 0.997 - ETA: 55s - loss: 0.0235 - accuracy: 0.997 - ETA: 55s - loss: 0.0232 - accuracy: 0.997 - ETA: 54s - loss: 0.0230 - accurac
```

```
y: 0.997 - ETA: 54s - loss: 0.0227 - accuracy: 0.997 - ETA: 54s - loss: 0.0225 - accuracy: 0.997 - ETA: 54s - loss: 0.0223 - accuracy:
0.997 - ETA: 54s - loss: 0.0220 - accuracy: 0.997 - ETA: 54s - loss: 0.0218 - accuracy: 0.997 - ETA: 53s - loss: 0.0216 - accuracy: 0.
997 - ETA: 53s - loss: 0.0214 - accuracy: 0.997 - ETA: 54s - loss: 0.0211 - accuracy: 0.997 - ETA: 54s - loss: 0.0209 - accuracy: 0.99
7 - ETA: 53s - loss: 0.0207 - accuracy: 0.997 - ETA: 53s - loss: 0.0205 - accuracy: 0.997 - ETA: 53s - loss: 0.0203 - accuracy: 0.997
- ETA: 53s - loss: 0.0201 - accuracy: 0.997 - ETA: 53s - loss: 0.0200 - accuracy: 0.997 - ETA: 53s - loss: 0.0198 - accuracy: 0.997 -
ETA: 52s - loss: 0.0196 - accuracy: 0.9977280/322 [========================>....] - ETA: 52s - loss: 0.0194 - accuracy: 0.997 - ETA:
52s - loss: 0.0193 - accuracy: 0.997 - ETA: 52s - loss: 0.0191 - accuracy: 0.997 - ETA: 52s - loss: 0.0189 - accuracy: 0.997 - ETA: 52
s - loss: 0.0188 - accuracy: 0.997 - ETA: 51s - loss: 0.0186 - accuracy: 0.997 - ETA: 51s - loss: 0.0184 - accuracy: 0.997 - ETA: 50s
- loss: 0.0183 - accuracy: 0.997 - ETA: 51s - loss: 0.0181 - accuracy: 0.997 - ETA: 50s - loss: 0.0201 - accuracy: 0.997 - ETA: 50s -
loss: 0.0199 - accuracy: 0.997 - ETA: 50s - loss: 0.0198 - accuracy: 0.997 - ETA: 49s - loss: 0.0196 - accuracy: 0.997 - ETA: 49s - lo
ss: 0.0195 - accuracy: 0.997 - ETA: 49s - loss: 0.0193 - accuracy: 0.997 - ETA: 48s - loss: 0.0192 - accuracy: 0.997 - ETA: 49s - los
s: 0.0190 - accuracy: 0.997 - ETA: 48s - loss: 0.0189 - accuracy: 0.997 - ETA: 48s - loss: 0.0187 - accuracy: 0.997 - ETA: 48s - loss:
0.0186 - accuracy: 0.997 - ETA: 48s - loss: 0.0185 - accuracy: 0.997 - ETA: 48s - loss: 0.0183 - accuracy: 0.997 - ETA: 49s - loss: 0.
0182 - accuracy: 0.997 - ETA: 49s - loss: 0.0181 - accuracy: 0.997 - ETA: 49s - loss: 0.0180 - accuracy: 0.997 - ETA: 49s - loss: 0.01
78 - accuracy: 0.997 - ETA: 49s - loss: 0.0177 - accuracy: 0.997 - ETA: 50s - loss: 0.0176 - accuracy: 0.998 - ETA: 51s - loss: 0.0175
- accuracy: 0.998 - ETA: 52s - loss: 0.0174 - accuracy: 0.998 - ETA: 51s - loss: 0.0172 - accuracy: 0.998 - ETA: 52s - loss: 0.0171 -
accuracy: 0.998 - ETA: 52s - loss: 0.0170 - accuracy: 0.998 - ETA: 51s - loss: 0.0169 - accuracy: 0.998 - ETA: 51s - loss: 0.0168 - ac
curacy: 0.998 - ETA: 51s - loss: 0.0167 - accuracy: 0.998 - ETA: 51s - loss: 0.0166 - accuracy: 0.998 - ETA: 50s - loss: 0.0165 - accu
racy: 0.998 - ETA: 50s - loss: 0.0164 - accuracy: 0.998 - ETA: 50s - loss: 0.0163 - accuracy: 0.998 - ETA: 50s - loss: 0.0162 - accura
cy: 0.998 - ETA: 50s - loss: 0.0161 - accuracy: 0.998 - ETA: 49s - loss: 0.0176 - accuracy: 0.997 - ETA: 49s - loss: 0.0175 - accurac
y: 0.998 - ETA: 49s - loss: 0.0174 - accuracy: 0.998 - ETA: 49s - loss: 0.0173 - accuracy: 0.998 - ETA: 48s - loss: 0.0172 - accuracy:
0.998 - ETA: 48s - loss: 0.0185 - accuracy: 0.997 - ETA: 48s - loss: 0.0184 - accuracy: 0.997 - ETA: 47s - loss: 0.0183 - accuracy: 0.
997 - ETA: 47s - loss: 0.0182 - accuracy: 0.997 - ETA: 47s - loss: 0.0181 - accuracy: 0.997 - ETA: 47s - loss: 0.0180 - accuracy: 0.99
7 - ETA: 46s - loss: 0.0179 - accuracy: 0.997 - ETA: 46s - loss: 0.0178 - accuracy: 0.997 - ETA: 46s - loss: 0.0177 - accuracy: 0.997
- ETA: 45s - loss: 0.0177 - accuracy: 0.997 - ETA: 45s - loss: 0.0176 - accuracy: 0.997 - ETA: 45s - loss: 0.0175 - accuracy: 0.998 -
ETA: 44s - loss: 0.0174 - accuracy: 0.998 - ETA: 44s - loss: 0.0173 - accuracy: 0.998 - ETA: 43s - loss: 0.0172 - accuracy: 0.998 - ET
A: 43s - loss: 0.0171 - accuracy: 0.998 - ETA: 42s - loss: 0.0183 - accuracy: 0.997 - ETA: 42s - loss: 0.0182 - accuracy: 0.997 - ETA:
42s - loss: 0.0193 - accuracy: 0.997 - ETA: 42s - loss: 0.0192 - accuracy: 0.997 - ETA: 41s - loss: 0.0191 - accuracy: 0.997 - ETA: 41
s - loss: 0.0201 - accuracy: 0.997 - ETA: 41s - loss: 0.0210 - accuracy: 0.997 - ETA: 40s - loss: 0.0209 - accuracy: 0.997 - ETA: 40s
- loss: 0.0208 - accuracy: 0.997 - ETA: 40s - loss: 0.0208 - accuracy: 0.997 - ETA: 39s - loss: 0.0207 - accuracy: 0.997 - ETA: 39s -
loss: 0.0207 - accuracy: 0.997 - ETA: 39s - loss: 0.0206 - accuracy: 0.997 - ETA: 38s - loss: 0.0206 - accuracy: 0.997 - ETA: 38s - lo
ss: 0.0205 - accuracy: 0.997 - ETA: 38s - loss: 0.0205 - accuracy: 0.997 - ETA: 38s - loss: 0.0204 - accuracy: 0.997 - ETA: 37s - los
s: 0.0204 - accuracy: 0.997 - ETA: 37s - loss: 0.0203 - accuracy: 0.997 - ETA: 37s - loss: 0.0211 - accuracy: 0.997 - ETA: 36s - loss:
0.0210 - accuracy: 0.997 - ETA: 36s - loss: 0.0210 - accuracy: 0.997 - ETA: 36s - loss: 0.0209 - accuracy: 0.997 - ETA: 35s - loss: 0.
0208 - accuracy: 0.997 - ETA: 35s - loss: 0.0207 - accuracy: 0.997 - ETA: 35s - loss: 0.0216 - accuracy: 0.997 - ETA: 35s - loss: 0.02
15 - accuracy: 0.997 - ETA: 34s - loss: 0.0223 - accuracy: 0.997 - ETA: 34s - loss: 0.0222 - accuracy: 0.997 - ETA: 34s - loss: 0.0221
- accuracy: 0.997 - ETA: 33s - loss: 0.0229 - accuracy: 0.997 - ETA: 33s - loss: 0.0229 - accuracy: 0.997 - ETA: 33s - loss: 0.0228 -
accuracy: 0.997 - ETA: 32s - loss: 0.0227 - accuracy: 0.997 - ETA: 32s - loss: 0.0227 - accuracy: 0.997 - ETA: 32s - loss: 0.0226 - ac
curacy: 0.997 - ETA: 31s - loss: 0.0233 - accuracy: 0.996 - ETA: 31s - loss: 0.0232 - accuracy: 0.997 - ETA: 31s - loss: 0.0231 - accu
racy: 0.997 - ETA: 31s - loss: 0.0231 - accuracy: 0.997 - ETA: 30s - loss: 0.0230 - accuracy: 0.997 - ETA: 30s - loss: 0.0229 - accura
cy: 0.997 - ETA: 30s - loss: 0.0228 - accuracy: 0.997 - ETA: 29s - loss: 0.0228 - accuracy: 0.997 - ETA: 29s - loss: 0.0227 - accurac
y: 0.997 - ETA: 29s - loss: 0.0226 - accuracy: 0.997 - ETA: 29s - loss: 0.0225 - accuracy: 0.997 - ETA: 28s - loss: 0.0225 - accuracy:
0.997 - ETA: 28s - loss: 0.0224 - accuracy: 0.997 - ETA: 28s - loss: 0.0223 - accuracy: 0.997 - ETA: 27s - loss: 0.0222 - accuracy: 0.
997 - ETA: 27s - loss: 0.0221 - accuracy: 0.997 - ETA: 27s - loss: 0.0220 - accuracy: 0.997 - ETA: 27s - loss: 0.0220 - accuracy: 0.99
7 - ETA: 26s - loss: 0.0219 - accuracy: 0.997 - ETA: 26s - loss: 0.0218 - accuracy: 0.997 - ETA: 26s - loss: 0.0217 - accuracy: 0.997
- ETA: 25s - loss: 0.0216 - accuracy: 0.997 - ETA: 25s - loss: 0.0215 - accuracy: 0.997 - ETA: 25s - loss: 0.0215 - accuracy: 0.997 -
ETA: 25s - loss: 0.0214 - accuracy: 0.997 - ETA: 24s - loss: 0.0213 - accuracy: 0.997 - ETA: 24s - loss: 0.0212 - accuracy: 0.997 - ET
A: 24s - loss: 0.0211 - accuracy: 0.997 - ETA: 23s - loss: 0.0220 - accuracy: 0.997 - ETA: 23s - loss: 0.0219 - accuracy: 0.997 - ETA:
23s - loss: 0.0218 - accuracy: 0.997 - ETA: 23s - loss: 0.0217 - accuracy: 0.997 - ETA: 22s - loss: 0.0216 - accuracy: 0.997 - ETA: 22
s - loss: 0.0216 - accuracy: 0.997 - ETA: 22s - loss: 0.0215 - accuracy: 0.997 - ETA: 22s - loss: 0.0223 - accuracy: 0.997 - ETA: 21s
- loss: 0.0222 - accuracy: 0.997 - ETA: 21s - loss: 0.0221 - accuracy: 0.997 - ETA: 21s - loss: 0.0221 - accuracy: 0.997 - ETA: 20s -
loss: 0.0220 - accuracy: 0.997 - ETA: 20s - loss: 0.0219 - accuracy: 0.997 - ETA: 20s - loss: 0.0226 - accuracy: 0.997 - ETA: 20s - lo
ss: 0.0225 - accuracy: 0.997 - ETA: 19s - loss: 0.0225 - accuracy: 0.997 - ETA: 19s - loss: 0.0224 - accuracy: 0.997 - ETA: 19s - los
s: 0.0223 - accuracy: 0.997 - ETA: 19s - loss: 0.0223 - accuracy: 0.997 - ETA: 18s - loss: 0.0222 - accuracy: 0.997 - ETA: 18s - loss:
0.0221 - accuracy: 0.997 - ETA: 18s - loss: 0.0220 - accuracy: 0.997 - ETA: 18s - loss: 0.0227 - accuracy: 0.997 - ETA: 17s - loss: 0.
0226 - accuracy: 0.997 - ETA: 17s - loss: 0.0225 - accuracy: 0.997 - ETA: 17s - loss: 0.0225 - accuracy: 0.997 - ETA: 17s - loss: 0.02
24 - accuracy: 0.997 - ETA: 16s - loss: 0.0223 - accuracy: 0.997 - ETA: 16s - loss: 0.0223 - accuracy: 0.997 - ETA: 16s - loss: 0.0222
- accuracy: 0.997 - ETA: 16s - loss: 0.0221 - accuracy: 0.997 - ETA: 15s - loss: 0.0221 - accuracy: 0.997 - ETA: 15s - loss: 0.0220 -
accuracy: 0.997 - ETA: 15s - loss: 0.0219 - accuracy: 0.997 - ETA: 15s - loss: 0.0219 - accuracy: 0.997 - ETA: 14s - loss: 0.0218 - ac
curacy: 0.997 - ETA: 14s - loss: 0.0217 - accuracy: 0.997 - ETA: 14s - loss: 0.0217 - accuracy: 0.997 - ETA: 14s - loss: 0.0216 - accu
racy: 0.997 - ETA: 14s - loss: 0.0216 - accuracy: 0.997 - ETA: 13s - loss: 0.0215 - accuracy: 0.997 - ETA: 13s - loss: 0.0214 - accura
cy: 0.997 - ETA: 13s - loss: 0.0213 - accuracy: 0.997 - ETA: 13s - loss: 0.0213 - accuracy: 0.997 - ETA: 12s - loss: 0.0212 - accurac
y: 0.997 - ETA: 12s - loss: 0.0212 - accuracy: 0.997 - ETA: 12s - loss: 0.0211 - accuracy: 0.997 - ETA: 12s - loss: 0.0210 - accuracy:
0.997 - ETA: 11s - loss: 0.0210 - accuracy: 0.997 - ETA: 11s - loss: 0.0209 - accuracy: 0.997 - ETA: 11s - loss: 0.0208 - accuracy: 0.
997 - ETA: 11s - loss: 0.0208 - accuracy: 0.997 - ETA: 10s - loss: 0.0207 - accuracy: 0.997 - ETA: 10s - loss: 0.0206 - accuracy: 0.99
7 - ETA: 10s - loss: 0.0206 - accuracy: 0.997 - ETA: 10s - loss: 0.0205 - accuracy: 0.997 - ETA: 9s - loss: 0.0204 - accuracy: 0.997 -
ETA: 9s - loss: 0.0204 - accuracy: 0.99 - ETA: 9s - loss: 0.0203 - accuracy: 0.9974322/322 [==============================] - ETA: 9s
- loss: 0.0202 - accuracy: 0.99 - ETA: 9s - loss: 0.0202 - accuracy: 0.99 - ETA: 8s - loss: 0.0209 - accuracy: 0.99 - ETA: 8s - loss:
0.0216 - accuracy: 0.99 - ETA: 8s - loss: 0.0215 - accuracy: 0.99 - ETA: 8s - loss: 0.0214 - accuracy: 0.99 - ETA: 7s - loss: 0.0214 -
accuracy: 0.99 - ETA: 7s - loss: 0.0213 - accuracy: 0.99 - ETA: 7s - loss: 0.0213 - accuracy: 0.99 - ETA: 7s - loss: 0.0212 - accurac
y: 0.99 - ETA: 7s - loss: 0.0212 - accuracy: 0.99 - ETA: 6s - loss: 0.0211 - accuracy: 0.99 - ETA: 6s - loss: 0.0210 - accuracy: 0.99
- ETA: 6s - loss: 0.0210 - accuracy: 0.99 - ETA: 6s - loss: 0.0209 - accuracy: 0.99 - ETA: 5s - loss: 0.0209 - accuracy: 0.99 - ETA: 5
s - loss: 0.0214 - accuracy: 0.99 - ETA: 5s - loss: 0.0214 - accuracy: 0.99 - ETA: 5s - loss: 0.0213 - accuracy: 0.99 - ETA: 5s - los
s: 0.0213 - accuracy: 0.99 - ETA: 4s - loss: 0.0212 - accuracy: 0.99 - ETA: 4s - loss: 0.0212 - accuracy: 0.99 - ETA: 4s - loss: 0.021
1 - accuracy: 0.99 - ETA: 4s - loss: 0.0211 - accuracy: 0.99 - ETA: 3s - loss: 0.0210 - accuracy: 0.99 - ETA: 3s - loss: 0.0210 - accu
racy: 0.99 - ETA: 3s - loss: 0.0209 - accuracy: 0.99 - ETA: 3s - loss: 0.0209 - accuracy: 0.99 - ETA: 2s - loss: 0.0208 - accuracy: 0.
99 - ETA: 2s - loss: 0.0208 - accuracy: 0.99 - ETA: 2s - loss: 0.0207 - accuracy: 0.99 - ETA: 2s - loss: 0.0206 - accuracy: 0.99 - ET
A: 2s - loss: 0.0206 - accuracy: 0.99 - ETA: 1s - loss: 0.0205 - accuracy: 0.99 - ETA: 1s - loss: 0.0205 - accuracy: 0.99 - ETA: 1s -
loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0204 - accuracy: 0.99 - ETA: 0s - loss: 0.0203 - accuracy: 0.99 - ETA: 0s - loss: 0.
0203 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - a
ccuracy: 0.99 - 78s 242ms/step - loss: 0.0202 - accuracy: 0.9975 - val_loss: 0.0236 - val_accuracy: 0.9968
Epoch 6/50
186/322 [================>............] - ETA: 0s - loss: 0.0033 - accuracy: 1.00 - ETA: 41s - loss: 0.1049 - accuracy: 0.984 - ETA:
57s - loss: 0.0711 - accuracy: 0.989 - ETA: 1:04 - loss: 0.0543 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0442 - accuracy: 0.99 - ETA: 1:
25 - loss: 0.0375 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0327 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0533 - accuracy: 0.99 - ETA: 1:18
- loss: 0.0479 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0436 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0401 - accuracy: 0.99 - ETA: 1:08 -
loss: 0.0371 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0346 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0325 - accuracy: 0.99 - ETA: 1:01 - lo
ss: 0.0306 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0290 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:00 - los
s: 0.0262 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:03 - loss:
0.0231 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:07 - loss: 0.
0207 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:04 - loss: 0.01
```

```
88 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0173
- accuracy: 0.99 - ETA: 1:07 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0164 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0160 -
accuracy: 0.99 - ETA: 1:09 - loss: 0.0157 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0150 - ac
curacy: 0.99 - ETA: 1:07 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0193 - accu
racy: 0.99 - ETA: 1:05 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0182 - accura
cy: 0.99 - ETA: 1:06 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0216 - accurac
y: 0.99 - ETA: 1:04 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0206 - accuracy:
0.99 - ETA: 1:02 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0196 - accuracy: 0.
99 - ETA: 1:01 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0188 - accuracy: 0.99
- ETA: 59s - loss: 0.0185 - accuracy: 0.9977 - ETA: 58s - loss: 0.0183 - accuracy: 0.997 - ETA: 58s - loss: 0.0180 - accuracy: 0.997 -
ETA: 58s - loss: 0.0178 - accuracy: 0.997 - ETA: 58s - loss: 0.0175 - accuracy: 0.997 - ETA: 57s - loss: 0.0173 - accuracy: 0.997 - ET
A: 56s - loss: 0.0171 - accuracy: 0.998 - ETA: 56s - loss: 0.0169 - accuracy: 0.998 - ETA: 55s - loss: 0.0167 - accuracy: 0.998 - ETA:
55s - loss: 0.0165 - accuracy: 0.998 - ETA: 54s - loss: 0.0163 - accuracy: 0.998 - ETA: 55s - loss: 0.0161 - accuracy: 0.998 - ETA: 56
s - loss: 0.0159 - accuracy: 0.998 - ETA: 56s - loss: 0.0157 - accuracy: 0.998 - ETA: 56s - loss: 0.0155 - accuracy: 0.998 - ETA: 56s
- loss: 0.0153 - accuracy: 0.998 - ETA: 57s - loss: 0.0152 - accuracy: 0.998 - ETA: 56s - loss: 0.0150 - accuracy: 0.998 - ETA: 55s -
loss: 0.0148 - accuracy: 0.998 - ETA: 55s - loss: 0.0147 - accuracy: 0.998 - ETA: 55s - loss: 0.0173 - accuracy: 0.997 - ETA: 54s - lo
ss: 0.0171 - accuracy: 0.997 - ETA: 54s - loss: 0.0169 - accuracy: 0.998 - ETA: 54s - loss: 0.0168 - accuracy: 0.998 - ETA: 53s - los
s: 0.0166 - accuracy: 0.998 - ETA: 53s - loss: 0.0164 - accuracy: 0.998 - ETA: 52s - loss: 0.0163 - accuracy: 0.998 - ETA: 52s - loss:
0.0161 - accuracy: 0.998 - ETA: 51s - loss: 0.0160 - accuracy: 0.998 - ETA: 51s - loss: 0.0158 - accuracy: 0.998 - ETA: 51s - loss: 0.
0157 - accuracy: 0.998 - ETA: 50s - loss: 0.0155 - accuracy: 0.998 - ETA: 50s - loss: 0.0154 - accuracy: 0.998 - ETA: 50s - loss: 0.01
97 - accuracy: 0.997 - ETA: 50s - loss: 0.0196 - accuracy: 0.997 - ETA: 50s - loss: 0.0194 - accuracy: 0.997 - ETA: 50s - loss: 0.0192
- accuracy: 0.997 - ETA: 50s - loss: 0.0191 - accuracy: 0.997 - ETA: 50s - loss: 0.0190 - accuracy: 0.997 - ETA: 50s - loss: 0.0188 -
accuracy: 0.997 - ETA: 51s - loss: 0.0187 - accuracy: 0.997 - ETA: 51s - loss: 0.0186 - accuracy: 0.997 - ETA: 51s - loss: 0.0184 - ac
curacy: 0.997 - ETA: 51s - loss: 0.0183 - accuracy: 0.997 - ETA: 51s - loss: 0.0200 - accuracy: 0.997 - ETA: 51s - loss: 0.0216 - accu
racy: 0.997 - ETA: 51s - loss: 0.0214 - accuracy: 0.997 - ETA: 50s - loss: 0.0213 - accuracy: 0.997 - ETA: 50s - loss: 0.0212 - accura
cy: 0.997 - ETA: 50s - loss: 0.0210 - accuracy: 0.997 - ETA: 50s - loss: 0.0209 - accuracy: 0.997 - ETA: 50s - loss: 0.0208 - accurac
y: 0.997 - ETA: 50s - loss: 0.0207 - accuracy: 0.997 - ETA: 49s - loss: 0.0206 - accuracy: 0.997 - ETA: 49s - loss: 0.0205 - accuracy:
0.997 - ETA: 49s - loss: 0.0203 - accuracy: 0.997 - ETA: 49s - loss: 0.0202 - accuracy: 0.997 - ETA: 49s - loss: 0.0216 - accuracy: 0.
997 - ETA: 49s - loss: 0.0214 - accuracy: 0.997 - ETA: 48s - loss: 0.0213 - accuracy: 0.997 - ETA: 48s - loss: 0.0212 - accuracy: 0.99
7 - ETA: 48s - loss: 0.0211 - accuracy: 0.997 - ETA: 47s - loss: 0.0209 - accuracy: 0.997 - ETA: 48s - loss: 0.0208 - accuracy: 0.997
- ETA: 48s - loss: 0.0221 - accuracy: 0.997 - ETA: 49s - loss: 0.0220 - accuracy: 0.997 - ETA: 49s - loss: 0.0219 - accuracy: 0.997 -
ETA: 49s - loss: 0.0217 - accuracy: 0.997 - ETA: 49s - loss: 0.0216 - accuracy: 0.997 - ETA: 49s - loss: 0.0228 - accuracy: 0.997 - ET
A: 49s - loss: 0.0227 - accuracy: 0.997 - ETA: 49s - loss: 0.0226 - accuracy: 0.997 - ETA: 49s - loss: 0.0224 - accuracy: 0.997 - ETA:
49s - loss: 0.0223 - accuracy: 0.997 - ETA: 49s - loss: 0.0222 - accuracy: 0.997 - ETA: 49s - loss: 0.0221 - accuracy: 0.997 - ETA: 49
s - loss: 0.0220 - accuracy: 0.997 - ETA: 49s - loss: 0.0218 - accuracy: 0.997 - ETA: 49s - loss: 0.0217 - accuracy: 0.997 - ETA: 49s
- loss: 0.0216 - accuracy: 0.997 - ETA: 49s - loss: 0.0215 - accuracy: 0.997 - ETA: 49s - loss: 0.0214 - accuracy: 0.997 - ETA: 49s -
loss: 0.0212 - accuracy: 0.997 - ETA: 49s - loss: 0.0211 - accuracy: 0.997 - ETA: 49s - loss: 0.0210 - accuracy: 0.997 - ETA: 49s - lo
ss: 0.0209 - accuracy: 0.997 - ETA: 49s - loss: 0.0207 - accuracy: 0.997 - ETA: 49s - loss: 0.0206 - accuracy: 0.997 - ETA: 48s - los
s: 0.0205 - accuracy: 0.997 - ETA: 48s - loss: 0.0204 - accuracy: 0.997 - ETA: 48s - loss: 0.0203 - accuracy: 0.997 - ETA: 48s - loss:
0.0202 - accuracy: 0.997 - ETA: 48s - loss: 0.0200 - accuracy: 0.997 - ETA: 48s - loss: 0.0199 - accuracy: 0.997 - ETA: 48s - loss: 0.
0198 - accuracy: 0.997 - ETA: 47s - loss: 0.0197 - accuracy: 0.997 - ETA: 47s - loss: 0.0196 - accuracy: 0.997 - ETA: 47s - loss: 0.01
95 - accuracy: 0.997 - ETA: 47s - loss: 0.0194 - accuracy: 0.997 - ETA: 47s - loss: 0.0193 - accuracy: 0.997 - ETA: 47s - loss: 0.0205
- accuracy: 0.997 - ETA: 47s - loss: 0.0204 - accuracy: 0.997 - ETA: 47s - loss: 0.0203 - accuracy: 0.997 - ETA: 46s - loss: 0.0201 -
accuracy: 0.997 - ETA: 47s - loss: 0.0200 - accuracy: 0.997 - ETA: 47s - loss: 0.0199 - accuracy: 0.997 - ETA: 46s - loss: 0.0198 - ac
curacy: 0.997 - ETA: 46s - loss: 0.0197 - accuracy: 0.997 - ETA: 46s - loss: 0.0196 - accuracy: 0.997 - ETA: 46s - loss: 0.0195 - accu
racy: 0.997 - ETA: 46s - loss: 0.0194 - accuracy: 0.997 - ETA: 45s - loss: 0.0193 - accuracy: 0.997 - ETA: 45s - loss: 0.0192 - accura
cy: 0.997 - ETA: 45s - loss: 0.0191 - accuracy: 0.997 - ETA: 45s - loss: 0.0190 - accuracy: 0.997 - ETA: 45s - loss: 0.0190 - accurac
y: 0.997 - ETA: 44s - loss: 0.0189 - accuracy: 0.997 - ETA: 44s - loss: 0.0188 - accuracy: 0.997 - ETA: 44s - loss: 0.0187 - accuracy:
0.997 - ETA: 44s - loss: 0.0186 - accuracy: 0.997 - ETA: 43s - loss: 0.0185 - accuracy: 0.997 - ETA: 43s - loss: 0.0196 - accuracy: 0.
997 - ETA: 43s - loss: 0.0195 - accuracy: 0.997 - ETA: 43s - loss: 0.0194 - accuracy: 0.997 - ETA: 42s - loss: 0.0193 - accuracy: 0.99
7 - ETA: 42s - loss: 0.0192 - accuracy: 0.997 - ETA: 42s - loss: 0.0191 - accuracy: 0.997 - ETA: 42s - loss: 0.0190 - accuracy: 0.997
- ETA: 42s - loss: 0.0199 - accuracy: 0.997 - ETA: 42s - loss: 0.0199 - accuracy: 0.997 - ETA: 42s - loss: 0.0198 - accuracy: 0.997 -
ETA: 42s - loss: 0.0197 - accuracy: 0.9975322/322 [==============================] - ETA: 42s - loss: 0.0196 - accuracy: 0.997 - ETA:
41s - loss: 0.0195 - accuracy: 0.997 - ETA: 41s - loss: 0.0194 - accuracy: 0.997 - ETA: 41s - loss: 0.0194 - accuracy: 0.997 - ETA: 40
s - loss: 0.0202 - accuracy: 0.997 - ETA: 40s - loss: 0.0201 - accuracy: 0.997 - ETA: 39s - loss: 0.0201 - accuracy: 0.997 - ETA: 39s
- loss: 0.0200 - accuracy: 0.997 - ETA: 39s - loss: 0.0199 - accuracy: 0.997 - ETA: 38s - loss: 0.0207 - accuracy: 0.997 - ETA: 38s -
loss: 0.0207 - accuracy: 0.997 - ETA: 38s - loss: 0.0206 - accuracy: 0.997 - ETA: 37s - loss: 0.0205 - accuracy: 0.997 - ETA: 37s - lo
ss: 0.0213 - accuracy: 0.997 - ETA: 37s - loss: 0.0212 - accuracy: 0.997 - ETA: 37s - loss: 0.0211 - accuracy: 0.997 - ETA: 36s - los
s: 0.0211 - accuracy: 0.997 - ETA: 36s - loss: 0.0210 - accuracy: 0.997 - ETA: 36s - loss: 0.0209 - accuracy: 0.997 - ETA: 36s - loss:
0.0209 - accuracy: 0.997 - ETA: 35s - loss: 0.0208 - accuracy: 0.997 - ETA: 35s - loss: 0.0208 - accuracy: 0.997 - ETA: 35s - loss: 0.
0207 - accuracy: 0.997 - ETA: 34s - loss: 0.0206 - accuracy: 0.997 - ETA: 34s - loss: 0.0206 - accuracy: 0.997 - ETA: 34s - loss: 0.02
05 - accuracy: 0.997 - ETA: 33s - loss: 0.0204 - accuracy: 0.997 - ETA: 33s - loss: 0.0204 - accuracy: 0.997 - ETA: 33s - loss: 0.0203
- accuracy: 0.997 - ETA: 32s - loss: 0.0202 - accuracy: 0.997 - ETA: 32s - loss: 0.0201 - accuracy: 0.997 - ETA: 32s - loss: 0.0209 -
accuracy: 0.997 - ETA: 31s - loss: 0.0208 - accuracy: 0.997 - ETA: 31s - loss: 0.0208 - accuracy: 0.997 - ETA: 31s - loss: 0.0207 - ac
curacy: 0.997 - ETA: 31s - loss: 0.0206 - accuracy: 0.997 - ETA: 30s - loss: 0.0205 - accuracy: 0.997 - ETA: 30s - loss: 0.0205 - accu
racy: 0.997 - ETA: 30s - loss: 0.0204 - accuracy: 0.997 - ETA: 30s - loss: 0.0203 - accuracy: 0.997 - ETA: 29s - loss: 0.0203 - accura
cy: 0.997 - ETA: 29s - loss: 0.0202 - accuracy: 0.997 - ETA: 29s - loss: 0.0201 - accuracy: 0.997 - ETA: 28s - loss: 0.0200 - accurac
y: 0.997 - ETA: 28s - loss: 0.0200 - accuracy: 0.997 - ETA: 28s - loss: 0.0199 - accuracy: 0.997 - ETA: 27s - loss: 0.0198 - accuracy:
0.997 - ETA: 27s - loss: 0.0198 - accuracy: 0.997 - ETA: 27s - loss: 0.0197 - accuracy: 0.997 - ETA: 26s - loss: 0.0196 - accuracy: 0.
997 - ETA: 26s - loss: 0.0195 - accuracy: 0.997 - ETA: 26s - loss: 0.0195 - accuracy: 0.997 - ETA: 25s - loss: 0.0194 - accuracy: 0.99
7 - ETA: 25s - loss: 0.0193 - accuracy: 0.997 - ETA: 25s - loss: 0.0193 - accuracy: 0.997 - ETA: 24s - loss: 0.0192 - accuracy: 0.997
- ETA: 24s - loss: 0.0191 - accuracy: 0.997 - ETA: 24s - loss: 0.0191 - accuracy: 0.997 - ETA: 23s - loss: 0.0190 - accuracy: 0.997 -
ETA: 23s - loss: 0.0189 - accuracy: 0.997 - ETA: 23s - loss: 0.0189 - accuracy: 0.997 - ETA: 22s - loss: 0.0188 - accuracy: 0.997 - ET
A: 22s - loss: 0.0187 - accuracy: 0.997 - ETA: 22s - loss: 0.0187 - accuracy: 0.997 - ETA: 21s - loss: 0.0186 - accuracy: 0.997 - ETA:
21s - loss: 0.0186 - accuracy: 0.997 - ETA: 21s - loss: 0.0194 - accuracy: 0.997 - ETA: 20s - loss: 0.0193 - accuracy: 0.997 - ETA: 20
s - loss: 0.0192 - accuracy: 0.997 - ETA: 20s - loss: 0.0192 - accuracy: 0.997 - ETA: 19s - loss: 0.0191 - accuracy: 0.997 - ETA: 19s
- loss: 0.0191 - accuracy: 0.997 - ETA: 19s - loss: 0.0198 - accuracy: 0.997 - ETA: 18s - loss: 0.0197 - accuracy: 0.997 - ETA: 18s -
loss: 0.0197 - accuracy: 0.997 - ETA: 18s - loss: 0.0196 - accuracy: 0.997 - ETA: 17s - loss: 0.0196 - accuracy: 0.997 - ETA: 17s - lo
ss: 0.0195 - accuracy: 0.997 - ETA: 17s - loss: 0.0194 - accuracy: 0.997 - ETA: 16s - loss: 0.0201 - accuracy: 0.997 - ETA: 16s - los
s: 0.0200 - accuracy: 0.997 - ETA: 16s - loss: 0.0200 - accuracy: 0.997 - ETA: 16s - loss: 0.0199 - accuracy: 0.997 - ETA: 15s - loss:
0.0199 - accuracy: 0.997 - ETA: 15s - loss: 0.0198 - accuracy: 0.997 - ETA: 15s - loss: 0.0198 - accuracy: 0.997 - ETA: 14s - loss: 0.
0203 - accuracy: 0.997 - ETA: 14s - loss: 0.0209 - accuracy: 0.997 - ETA: 14s - loss: 0.0208 - accuracy: 0.997 - ETA: 13s - loss: 0.02
08 - accuracy: 0.997 - ETA: 13s - loss: 0.0208 - accuracy: 0.997 - ETA: 13s - loss: 0.0207 - accuracy: 0.997 - ETA: 12s - loss: 0.0207
- accuracy: 0.997 - ETA: 12s - loss: 0.0206 - accuracy: 0.997 - ETA: 12s - loss: 0.0206 - accuracy: 0.997 - ETA: 12s - loss: 0.0205 -
accuracy: 0.997 - ETA: 11s - loss: 0.0205 - accuracy: 0.997 - ETA: 11s - loss: 0.0205 - accuracy: 0.997 - ETA: 11s - loss: 0.0204 - ac
curacy: 0.997 - ETA: 10s - loss: 0.0204 - accuracy: 0.997 - ETA: 10s - loss: 0.0203 - accuracy: 0.997 - ETA: 10s - loss: 0.0203 - accu
racy: 0.997 - ETA: 9s - loss: 0.0202 - accuracy: 0.997 - ETA: 9s - loss: 0.0202 - accuracy: 0.99 - ETA: 9s - loss: 0.0201 - accuracy:
0.99 - ETA: 8s - loss: 0.0201 - accuracy: 0.99 - ETA: 8s - loss: 0.0200 - accuracy: 0.99 - ETA: 8s - loss: 0.0200 - accuracy: 0.99 - E
TA: 8s - loss: 0.0199 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 - accuracy: 0.99 - ETA: 7s -
loss: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0196 - accuracy: 0.99 - ETA: 6s - loss: 0.
0196 - accuracy: 0.99 - ETA: 5s - loss: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0201 - accuracy: 0.99 - ETA: 5s - loss: 0.0201 - a
```

```
ccuracy: 0.99 - ETA: 5s - loss: 0.0200 - accuracy: 0.99 - ETA: 4s - loss: 0.0200 - accuracy: 0.99 - ETA: 4s - loss: 0.0199 - accuracy:
0.99 - ETA: 4s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accuracy: 0.99 - E
TA: 3s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s -
loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 1s - loss: 0.0194 - accuracy: 0.99 - ETA: 1s - loss: 0.
0201 - accuracy: 0.99 - ETA: 1s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - a
ccuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - 98s 304ms/step - loss: 0.0198 - ac
curacy: 0.9975 - val_loss: 0.0235 - val_accuracy: 0.9968
Epoch 7/50
186/322 [================>............] - ETA: 0s - loss: 0.0041 - accuracy: 1.00 - ETA: 25s - loss: 0.0040 - accuracy: 1.000 - ETA:
39s - loss: 0.0040 - accuracy: 1.000 - ETA: 43s - loss: 0.0509 - accuracy: 0.992 - ETA: 52s - loss: 0.0415 - accuracy: 0.993 - ETA: 1:
05 - loss: 0.0353 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0309 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0276 - accuracy: 0.99 - ETA: 1:33
- loss: 0.0465 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0424 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0390 - accuracy: 0.99 - ETA: 1:42 -
loss: 0.0363 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0340 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0320 - accuracy: 0.99 - ETA: 1:36 - lo
ss: 0.0303 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0287 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0274 - accuracy: 0.99 - ETA: 1:31 - los
s: 0.0262 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:33 - loss:
0.0232 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:30 - loss: 0.
0209 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0270 - accuracy: 0.99 - ETA: 1:28 - loss: 0.02
61 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0240
- accuracy: 0.99 - ETA: 1:23 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0223 -
accuracy: 0.99 - ETA: 1:23 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0208 - ac
curacy: 0.99 - ETA: 1:22 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0195 - accu
racy: 0.99 - ETA: 1:20 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0277 - accura
cy: 0.99 - ETA: 1:20 - loss: 0.0272 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0262 - accurac
y: 0.99 - ETA: 1:17 - loss: 0.0258 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0250 - accuracy:
0.99 - ETA: 1:17 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0239 - accuracy: 0.
99 - ETA: 1:16 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0228 - accuracy: 0.99
- ETA: 1:15 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0219 - accuracy: 0.99 -
ETA: 1:15 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0210 - accuracy: 0.99 - ET
A: 1:13 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0202 - accuracy: 0.99 - ETA:
1:13 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:
12 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:11
- loss: 0.0212 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:12 -
loss: 0.0231 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:10 - lo
ss: 0.0224 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:10 - los
s: 0.0217 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:08 - loss:
0.0231 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:08 - loss: 0.
0225 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:07 - loss: 0.02
19 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0234
- accuracy: 0.99 - ETA: 1:06 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0228 -
accuracy: 0.99 - ETA: 1:06 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0223 - ac
curacy: 0.99 - ETA: 1:06 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0218 - accu
racy: 0.99 - ETA: 1:05 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0213 - accura
cy: 0.99 - ETA: 1:05 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0208 - accurac
y: 0.99 - ETA: 1:03 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0203 - accuracy:
0.99 - ETA: 1:02 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0199 - accuracy: 0.
99 - ETA: 1:01 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0194 - accuracy: 0.99
- ETA: 1:00 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0192 - accuracy: 0.99 - ETA: 59s - loss: 0.0190 - accuracy: 0.9976 -
ETA: 59s - loss: 0.0189 - accuracy: 0.997 - ETA: 59s - loss: 0.0188 - accuracy: 0.997 - ETA: 59s - loss: 0.0186 - accuracy: 0.997 - ET
A: 59s - loss: 0.0185 - accuracy: 0.997 - ETA: 59s - loss: 0.0184 - accuracy: 0.997 - ETA: 58s - loss: 0.0182 - accuracy: 0.997 - ETA:
59s - loss: 0.0181 - accuracy: 0.997 - ETA: 59s - loss: 0.0180 - accuracy: 0.997 - ETA: 58s - loss: 0.0179 - accuracy: 0.997 - ETA: 58
s - loss: 0.0178 - accuracy: 0.997 - ETA: 58s - loss: 0.0176 - accuracy: 0.997 - ETA: 58s - loss: 0.0175 - accuracy: 0.997 - ETA: 57s
 - loss: 0.0174 - accuracy: 0.997 - ETA: 57s - loss: 0.0173 - accuracy: 0.997 - ETA: 56s - loss: 0.0172 - accuracy: 0.997 - ETA: 56s -
loss: 0.0171 - accuracy: 0.997 - ETA: 56s - loss: 0.0170 - accuracy: 0.997 - ETA: 55s - loss: 0.0169 - accuracy: 0.997 - ETA: 55s - lo
ss: 0.0184 - accuracy: 0.997 - ETA: 55s - loss: 0.0183 - accuracy: 0.997 - ETA: 55s - loss: 0.0182 - accuracy: 0.997 - ETA: 54s - los
s: 0.0197 - accuracy: 0.997 - ETA: 54s - loss: 0.0196 - accuracy: 0.997 - ETA: 53s - loss: 0.0209 - accuracy: 0.997 - ETA: 53s - loss:
0.0208 - accuracy: 0.997 - ETA: 53s - loss: 0.0207 - accuracy: 0.997 - ETA: 53s - loss: 0.0206 - accuracy: 0.997 - ETA: 52s - loss: 0.
0206 - accuracy: 0.997 - ETA: 52s - loss: 0.0205 - accuracy: 0.997 - ETA: 52s - loss: 0.0204 - accuracy: 0.997 - ETA: 51s - loss: 0.02
03 - accuracy: 0.997 - ETA: 51s - loss: 0.0202 - accuracy: 0.997 - ETA: 51s - loss: 0.0201 - accuracy: 0.997 - ETA: 50s - loss: 0.0200
- accuracy: 0.997 - ETA: 50s - loss: 0.0199 - accuracy: 0.997 - ETA: 50s - loss: 0.0198 - accuracy: 0.997 - ETA: 49s - loss: 0.0197 -
 accuracy: 0.997 - ETA: 49s - loss: 0.0196 - accuracy: 0.997 - ETA: 49s - loss: 0.0195 - accuracy: 0.997 - ETA: 48s - loss: 0.0195 - a
ccuracy: 0.997 - ETA: 48s - loss: 0.0194 - accuracy: 0.997 - ETA: 47s - loss: 0.0193 - accuracy: 0.997 - ETA: 47s - loss: 0.0192 - acc
uracy: 0.997 - ETA: 47s - loss: 0.0202 - accuracy: 0.997 - ETA: 46s - loss: 0.0201 - accuracy: 0.997 - ETA: 46s - loss: 0.0200 - accur
acy: 0.997 - ETA: 46s - loss: 0.0199 - accuracy: 0.997 - ETA: 45s - loss: 0.0198 - accuracy: 0.997 - ETA: 45s - loss: 0.0197 - accurac
y: 0.997 - ETA: 45s - loss: 0.0196 - accuracy: 0.997 - ETA: 44s - loss: 0.0196 - accuracy: 0.997 - ETA: 44s - loss: 0.0195 - accuracy:
0.997 - ETA: 44s - loss: 0.0194 - accuracy: 0.997 - ETA: 44s - loss: 0.0193 - accuracy: 0.997 - ETA: 43s - loss: 0.0203 - accuracy: 0.
997 - ETA: 43s - loss: 0.0202 - accuracy: 0.997 - ETA: 43s - loss: 0.0201 - accuracy: 0.997 - ETA: 42s - loss: 0.0200 - accuracy: 0.99
7 - ETA: 42s - loss: 0.0220 - accuracy: 0.997 - ETA: 42s - loss: 0.0219 - accuracy: 0.997 - ETA: 42s - loss: 0.0218 - accuracy: 0.997
 - ETA: 41s - loss: 0.0217 - accuracy: 0.997 - ETA: 41s - loss: 0.0217 - accuracy: 0.997 - ETA: 40s - loss: 0.0216 - accuracy: 0.997 -
ETA: 40s - loss: 0.0215 - accuracy: 0.997 - ETA: 40s - loss: 0.0214 - accuracy: 0.997 - ETA: 40s - loss: 0.0214 - accuracy: 0.997 - ET
A: 39s - loss: 0.0213 - accuracy: 0.9973322/322 [==============================] - ETA: 39s - loss: 0.0212 - accuracy: 0.997 - ETA: 39
s - loss: 0.0212 - accuracy: 0.997 - ETA: 39s - loss: 0.0211 - accuracy: 0.997 - ETA: 38s - loss: 0.0210 - accuracy: 0.997 - ETA: 38s
 - loss: 0.0227 - accuracy: 0.997 - ETA: 38s - loss: 0.0226 - accuracy: 0.997 - ETA: 38s - loss: 0.0225 - accuracy: 0.997 - ETA: 37s -
loss: 0.0224 - accuracy: 0.997 - ETA: 37s - loss: 0.0232 - accuracy: 0.997 - ETA: 37s - loss: 0.0231 - accuracy: 0.997 - ETA: 36s - lo
ss: 0.0230 - accuracy: 0.997 - ETA: 36s - loss: 0.0230 - accuracy: 0.997 - ETA: 36s - loss: 0.0237 - accuracy: 0.996 - ETA: 35s - los
s: 0.0236 - accuracy: 0.996 - ETA: 35s - loss: 0.0235 - accuracy: 0.996 - ETA: 35s - loss: 0.0235 - accuracy: 0.996 - ETA: 35s - loss:
0.0234 - accuracy: 0.996 - ETA: 34s - loss: 0.0233 - accuracy: 0.996 - ETA: 34s - loss: 0.0240 - accuracy: 0.996 - ETA: 34s - loss: 0.
0239 - accuracy: 0.996 - ETA: 33s - loss: 0.0238 - accuracy: 0.996 - ETA: 33s - loss: 0.0238 - accuracy: 0.996 - ETA: 33s - loss: 0.02
37 - accuracy: 0.996 - ETA: 32s - loss: 0.0236 - accuracy: 0.996 - ETA: 32s - loss: 0.0236 - accuracy: 0.996 - ETA: 32s - loss: 0.0235
- accuracy: 0.996 - ETA: 32s - loss: 0.0234 - accuracy: 0.996 - ETA: 32s - loss: 0.0241 - accuracy: 0.996 - ETA: 31s - loss: 0.0240 -
 accuracy: 0.996 - ETA: 31s - loss: 0.0240 - accuracy: 0.996 - ETA: 31s - loss: 0.0239 - accuracy: 0.996 - ETA: 31s - loss: 0.0238 - a
ccuracy: 0.996 - ETA: 31s - loss: 0.0237 - accuracy: 0.996 - ETA: 31s - loss: 0.0236 - accuracy: 0.996 - ETA: 31s - loss: 0.0243 - acc
uracy: 0.996 - ETA: 31s - loss: 0.0242 - accuracy: 0.996 - ETA: 30s - loss: 0.0241 - accuracy: 0.996 - ETA: 30s - loss: 0.0241 - accur
acy: 0.996 - ETA: 30s - loss: 0.0240 - accuracy: 0.996 - ETA: 29s - loss: 0.0239 - accuracy: 0.996 - ETA: 29s - loss: 0.0238 - accurac
y: 0.996 - ETA: 29s - loss: 0.0237 - accuracy: 0.996 - ETA: 29s - loss: 0.0237 - accuracy: 0.996 - ETA: 28s - loss: 0.0236 - accuracy:
0.996 - ETA: 28s - loss: 0.0235 - accuracy: 0.996 - ETA: 28s - loss: 0.0234 - accuracy: 0.996 - ETA: 27s - loss: 0.0233 - accuracy: 0.
996 - ETA: 27s - loss: 0.0232 - accuracy: 0.996 - ETA: 27s - loss: 0.0232 - accuracy: 0.996 - ETA: 26s - loss: 0.0231 - accuracy: 0.99
7 - ETA: 26s - loss: 0.0230 - accuracy: 0.997 - ETA: 26s - loss: 0.0229 - accuracy: 0.997 - ETA: 25s - loss: 0.0228 - accuracy: 0.997
 - ETA: 25s - loss: 0.0228 - accuracy: 0.997 - ETA: 25s - loss: 0.0227 - accuracy: 0.997 - ETA: 24s - loss: 0.0226 - accuracy: 0.997 -
ETA: 24s - loss: 0.0225 - accuracy: 0.997 - ETA: 24s - loss: 0.0224 - accuracy: 0.997 - ETA: 23s - loss: 0.0224 - accuracy: 0.997 - ET
A: 23s - loss: 0.0223 - accuracy: 0.997 - ETA: 23s - loss: 0.0222 - accuracy: 0.997 - ETA: 22s - loss: 0.0221 - accuracy: 0.997 - ETA:
22s - loss: 0.0220 - accuracy: 0.997 - ETA: 22s - loss: 0.0220 - accuracy: 0.997 - ETA: 21s - loss: 0.0219 - accuracy: 0.997 - ETA: 21
```

```
s - loss: 0.0218 - accuracy: 0.997 - ETA: 21s - loss: 0.0217 - accuracy: 0.997 - ETA: 20s - loss: 0.0217 - accuracy: 0.997 - ETA: 20s
 - loss: 0.0216 - accuracy: 0.997 - ETA: 20s - loss: 0.0215 - accuracy: 0.997 - ETA: 20s - loss: 0.0214 - accuracy: 0.997 - ETA: 19s -
loss: 0.0214 - accuracy: 0.997 - ETA: 19s - loss: 0.0213 - accuracy: 0.997 - ETA: 19s - loss: 0.0212 - accuracy: 0.997 - ETA: 18s - lo
ss: 0.0212 - accuracy: 0.997 - ETA: 18s - loss: 0.0211 - accuracy: 0.997 - ETA: 18s - loss: 0.0219 - accuracy: 0.997 - ETA: 17s - los
s: 0.0218 - accuracy: 0.997 - ETA: 17s - loss: 0.0217 - accuracy: 0.997 - ETA: 17s - loss: 0.0216 - accuracy: 0.997 - ETA: 16s - loss:
0.0216 - accuracy: 0.997 - ETA: 16s - loss: 0.0223 - accuracy: 0.997 - ETA: 16s - loss: 0.0222 - accuracy: 0.997 - ETA: 16s - loss: 0.
0222 - accuracy: 0.997 - ETA: 15s - loss: 0.0221 - accuracy: 0.997 - ETA: 15s - loss: 0.0220 - accuracy: 0.997 - ETA: 15s - loss: 0.02
20 - accuracy: 0.997 - ETA: 15s - loss: 0.0219 - accuracy: 0.997 - ETA: 14s - loss: 0.0218 - accuracy: 0.997 - ETA: 14s - loss: 0.0218
- accuracy: 0.997 - ETA: 14s - loss: 0.0217 - accuracy: 0.997 - ETA: 13s - loss: 0.0216 - accuracy: 0.997 - ETA: 13s - loss: 0.0216 -
 accuracy: 0.997 - ETA: 13s - loss: 0.0215 - accuracy: 0.997 - ETA: 13s - loss: 0.0215 - accuracy: 0.997 - ETA: 12s - loss: 0.0214 - a
ccuracy: 0.997 - ETA: 12s - loss: 0.0213 - accuracy: 0.997 - ETA: 12s - loss: 0.0213 - accuracy: 0.997 - ETA: 11s - loss: 0.0212 - acc
uracy: 0.997 - ETA: 11s - loss: 0.0211 - accuracy: 0.997 - ETA: 11s - loss: 0.0211 - accuracy: 0.997 - ETA: 10s - loss: 0.0210 - accur
acy: 0.997 - ETA: 10s - loss: 0.0210 - accuracy: 0.997 - ETA: 10s - loss: 0.0209 - accuracy: 0.997 - ETA: 9s - loss: 0.0208 - accurac
y: 0.997 - ETA: 9s - loss: 0.0208 - accuracy: 0.99 - ETA: 9s - loss: 0.0207 - accuracy: 0.99 - ETA: 9s - loss: 0.0207 - accuracy: 0.99
- ETA: 8s - loss: 0.0206 - accuracy: 0.99 - ETA: 8s - loss: 0.0205 - accuracy: 0.99 - ETA: 8s - loss: 0.0205 - accuracy: 0.99 - ETA: 7
s - loss: 0.0204 - accuracy: 0.99 - ETA: 7s - loss: 0.0204 - accuracy: 0.99 - ETA: 7s - loss: 0.0203 - accuracy: 0.99 - ETA: 6s - los
s: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0201 - accuracy: 0.99 - ETA: 5s - loss: 0.020
1 - accuracy: 0.99 - ETA: 5s - loss: 0.0200 - accuracy: 0.99 - ETA: 5s - loss: 0.0200 - accuracy: 0.99 - ETA: 4s - loss: 0.0199 - accu
racy: 0.99 - ETA: 4s - loss: 0.0199 - accuracy: 0.99 - ETA: 4s - loss: 0.0198 - accuracy: 0.99 - ETA: 4s - loss: 0.0197 - accuracy: 0.
99 - ETA: 3s - loss: 0.0197 - accuracy: 0.99 - ETA: 3s - loss: 0.0196 - accuracy: 0.99 - ETA: 3s - loss: 0.0196 - accuracy: 0.99 - ET
A: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0194 - accuracy: 0.99 - ETA: 1s -
 loss: 0.0194 - accuracy: 0.99 - ETA: 1s - loss: 0.0193 - accuracy: 0.99 - ETA: 1s - loss: 0.0193 - accuracy: 0.99 - ETA: 0s - loss:
 0.0192 - accuracy: 0.99 - ETA: 0s - loss: 0.0192 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - 114s 354ms/step - loss:
0.0198 - accuracy: 0.9975 - val_loss: 0.0251 - val_accuracy: 0.9968
Epoch 8/50
 43/322 [===>..........................] - ETA: 0s - loss: 0.0035 - accuracy: 1.00 - ETA: 35s - loss: 0.0044 - accuracy: 1.000 - ETA:
 51s - loss: 0.0053 - accuracy: 1.000 - ETA: 1:16 - loss: 0.0060 - accuracy: 1.00 - ETA: 1:37 - loss: 0.0065 - accuracy: 1.00 - ETA:
 1:46 - loss: 0.0067 - accuracy: 1.00 - ETA: 2:02 - loss: 0.0068 - accuracy: 1.00 - ETA: 2:09 - loss: 0.0068 - accuracy: 1.00 - ETA:
 2:11 - loss: 0.0067 - accuracy: 1.00 - ETA: 2:12 - loss: 0.0066 - accuracy: 1.00 - ETA: 2:23 - loss: 0.0065 - accuracy: 1.00 - ETA:
 2:24 - loss: 0.0065 - accuracy: 1.00 - ETA: 2:26 - loss: 0.0064 - accuracy: 1.00 - ETA: 2:34 - loss: 0.0063 - accuracy: 1.00 - ETA:
 2:35 - loss: 0.0063 - accuracy: 1.00 - ETA: 2:37 - loss: 0.0062 - accuracy: 1.00 - ETA: 2:40 - loss: 0.0062 - accuracy: 1.00 - ETA:
 2:41 - loss: 0.0061 - accuracy: 1.00 - ETA: 2:40 - loss: 0.0061 - accuracy: 1.00 - ETA: 2:45 - loss: 0.0060 - accuracy: 1.00 - ETA:
 2:46 - loss: 0.0060 - accuracy: 1.00 - ETA: 2:46 - loss: 0.0059 - accuracy: 1.00 - ETA: 2:52 - loss: 0.0059 - accuracy: 1.00 - ETA:
 2:52 - loss: 0.0136 - accuracy: 0.99 - ETA: 2:54 - loss: 0.0133 - accuracy: 0.99 - ETA: 2:55 - loss: 0.0130 - accuracy: 0.99 - ETA:
 2:55 - loss: 0.0127 - accuracy: 0.99 - ETA: 2:55 - loss: 0.0124 - accuracy: 0.99 - ETA: 2:54 - loss: 0.0121 - accuracy: 0.99 - ETA:
 2:53 - loss: 0.0119 - accuracy: 0.99 - ETA: 2:51 - loss: 0.0117 - accuracy: 0.99 - ETA: 2:52 - loss: 0.0114 - accuracy: 0.99 - ETA:
 2:52 - loss: 0.0112 - accuracy: 0.99 - ETA: 2:52 - loss: 0.0110 - accuracy: 0.99 - ETA: 2:57 - loss: 0.0108 - accuracy: 0.99 - ETA:
 3:05 - loss: 0.0106 - accuracy: 0.99 - ETA: 3:13 - loss: 0.0105 - accuracy: 0.99 - ETA: 3:16 - loss: 0.0103 - accuracy: 0.99 - ETA:
 3:19 - loss: 0.0149 - accuracy: 0.99 - ETA: 3:21 - loss: 0.0147 - accuracy: 0.99 - ETA: 3:22 - loss: 0.0144 - accuracy: 0.99 - ETA:
 3:24 - loss: 0.0142 - accuracy: 0.99 - ETA: 3:22 - loss: 0.0139 - accuracy: 0.9985WARNING:tensorflow:Method (on_train_batch_end) is s
low compared to the batch update (0.468617). Check your callbacks.
 58/322 [====>.........................] - ETA: 3:23 - loss: 0.0137 - accuracy: 0.99 - ETA: 3:24 - loss: 0.0135 - accuracy: 0.99 - ET
A: 3:30 - loss: 0.0133 - accuracy: 0.99 - ETA: 3:30 - loss: 0.0131 - accuracy: 0.99 - ETA: 3:30 - loss: 0.0129 - accuracy: 0.99 - ETA:
3:28 - loss: 0.0128 - accuracy: 0.99 - ETA: 3:32 - loss: 0.0126 - accuracy: 0.99 - ETA: 3:37 - loss: 0.0124 - accuracy: 0.99 - ETA: 3:
41 - loss: 0.0122 - accuracy: 0.99 - ETA: 3:42 - loss: 0.0121 - accuracy: 0.99 - ETA: 3:39 - loss: 0.0119 - accuracy: 0.99 - ETA: 3:36
- loss: 0.0118 - accuracy: 0.99 - ETA: 3:35 - loss: 0.0116 - accuracy: 0.99 - ETA: 3:32 - loss: 0.0115 - accuracy: 0.99 - ETA: 3:29 -
 loss: 0.0113 - accuracy: 0.9989WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.255564). Check
 your callbacks.
 78/322 [======>.......................] - ETA: 3:29 - loss: 0.0112 - accuracy: 0.99 - ETA: 3:27 - loss: 0.0111 - accuracy: 0.99 - ET
A: 3:24 - loss: 0.0109 - accuracy: 0.99 - ETA: 3:22 - loss: 0.0108 - accuracy: 0.99 - ETA: 3:21 - loss: 0.0107 - accuracy: 0.99 - ETA:
3:20 - loss: 0.0106 - accuracy: 0.99 - ETA: 3:18 - loss: 0.0105 - accuracy: 0.99 - ETA: 3:17 - loss: 0.0103 - accuracy: 0.99 - ETA: 3:
16 - loss: 0.0102 - accuracy: 0.99 - ETA: 3:16 - loss: 0.0101 - accuracy: 0.99 - ETA: 3:17 - loss: 0.0100 - accuracy: 0.99 - ETA: 3:20
- loss: 0.0099 - accuracy: 0.99 - ETA: 3:22 - loss: 0.0098 - accuracy: 0.99 - ETA: 3:22 - loss: 0.0097 - accuracy: 0.99 - ETA: 3:20 -
 loss: 0.0096 - accuracy: 0.99 - ETA: 3:19 - loss: 0.0095 - accuracy: 0.99 - ETA: 3:18 - loss: 0.0094 - accuracy: 0.99 - ETA: 3:19 - l
oss: 0.0094 - accuracy: 0.99 - ETA: 3:18 - loss: 0.0093 - accuracy: 0.99 - ETA: 3:16 - loss: 0.0092 - accuracy: 0.9992WARNING:tensorfl
ow:Method (on_train_batch_end) is slow compared to the batch update (0.323569). Check your callbacks.
 79/322 [======>.......................] - ETA: 3:14 - loss: 0.0091 - accuracy: 0.9992WARNING:tensorflow:Method (on_train_batch_end) i
s slow compared to the batch update (0.266567). Check your callbacks.
 83/322 [======>.......................] - ETA: 3:12 - loss: 0.0090 - accuracy: 0.99 - ETA: 3:11 - loss: 0.0089 - accuracy: 0.99 - ET
A: 3:09 - loss: 0.0089 - accuracy: 0.99 - ETA: 3:08 - loss: 0.0088 - accuracy: 0.9992WARNING:tensorflow:Method (on_train_batch_end) is
slow compared to the batch update (0.274070). Check your callbacks.
269/322 [========================>.....] - ETA: 3:06 - loss: 0.0087 - accuracy: 0.99 - ETA: 3:05 - loss: 0.0086 - accuracy: 0.99 - ET
A: 3:03 - loss: 0.0113 - accuracy: 0.99 - ETA: 3:01 - loss: 0.0112 - accuracy: 0.99 - ETA: 3:00 - loss: 0.0111 - accuracy: 0.99 - ETA:
2:59 - loss: 0.0110 - accuracy: 0.99 - ETA: 2:57 - loss: 0.0110 - accuracy: 0.99 - ETA: 2:55 - loss: 0.0109 - accuracy: 0.99 - ETA: 2:
54 - loss: 0.0108 - accuracy: 0.99 - ETA: 2:52 - loss: 0.0107 - accuracy: 0.99 - ETA: 2:50 - loss: 0.0106 - accuracy: 0.99 - ETA: 2:48
- loss: 0.0106 - accuracy: 0.99 - ETA: 2:46 - loss: 0.0105 - accuracy: 0.99 - ETA: 2:44 - loss: 0.0104 - accuracy: 0.99 - ETA: 2:43 -
 loss: 0.0103 - accuracy: 0.99 - ETA: 2:41 - loss: 0.0103 - accuracy: 0.99 - ETA: 2:40 - loss: 0.0102 - accuracy: 0.99 - ETA: 2:38 - l
oss: 0.0101 - accuracy: 0.99 - ETA: 2:37 - loss: 0.0141 - accuracy: 0.99 - ETA: 2:36 - loss: 0.0140 - accuracy: 0.99 - ETA: 2:35 - los
s: 0.0139 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0138 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0137 - accuracy: 0.99 - ETA: 2:33 - loss:
0.0136 - accuracy: 0.99 - ETA: 2:32 - loss: 0.0153 - accuracy: 0.99 - ETA: 2:31 - loss: 0.0152 - accuracy: 0.99 - ETA: 2:30 - loss: 0.
0152 - accuracy: 0.99 - ETA: 2:28 - loss: 0.0166 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0165 - accuracy: 0.99 - ETA: 2:25 - loss: 0.01
79 - accuracy: 0.99 - ETA: 2:25 - loss: 0.0179 - accuracy: 0.99 - ETA: 2:24 - loss: 0.0178 - accuracy: 0.99 - ETA: 2:22 - loss: 0.0178
- accuracy: 0.99 - ETA: 2:21 - loss: 0.0190 - accuracy: 0.99 - ETA: 2:19 - loss: 0.0189 - accuracy: 0.99 - ETA: 2:19 - loss: 0.0189 -
 accuracy: 0.99 - ETA: 2:18 - loss: 0.0189 - accuracy: 0.99 - ETA: 2:17 - loss: 0.0200 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0199 - a
ccuracy: 0.99 - ETA: 2:15 - loss: 0.0199 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0198 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0198 - acc
uracy: 0.99 - ETA: 2:11 - loss: 0.0197 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0197 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0196 - accur
acy: 0.99 - ETA: 2:07 - loss: 0.0195 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0194 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0193 - accurac
y: 0.99 - ETA: 2:04 - loss: 0.0192 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0204 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0203 - accuracy:
0.99 - ETA: 2:00 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0200 - accuracy: 0.
99 - ETA: 1:57 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0197 - accuracy: 0.99
- ETA: 1:53 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0194 - accuracy: 0.99 -
 ETA: 1:50 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0191 - accuracy: 0.99 - E
TA: 1:47 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0187 - accuracy: 0.99 - ET
A: 1:45 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0184 - accuracy: 0.99 - ETA:
1:43 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:
40 - loss: 0.0180 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:38
- loss: 0.0177 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:36 -
 loss: 0.0175 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:34 - l
oss: 0.0185 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:31 - los
s: 0.0182 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0180 - accuracy: 0.99 - ETA: 1:28 - loss:
0.0191 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:25 - loss: 0.
```

```
0200 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:23 - loss: 0.01
98 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0196
- accuracy: 0.99 - ETA: 1:19 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0193 -
 accuracy: 0.99 - ETA: 1:17 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0210 - a
ccuracy: 0.99 - ETA: 1:15 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0208 - acc
uracy: 0.99 - ETA: 1:13 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0206 - accur
acy: 0.99 - ETA: 1:10 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0212 - accurac
y: 0.99 - ETA: 1:08 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0210 - accuracy:
0.99 - ETA: 1:06 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0208 - accuracy: 0.
99 - ETA: 1:05 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0206 - accuracy: 0.99
- ETA: 1:03 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0204 - accuracy: 0.99 -
 ETA: 1:01 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0202 - accuracy: 0.99 - ETA: 59s - loss: 0.0202 - accuracy: 0.9975 -
 ETA: 59s - loss: 0.0201 - accuracy: 0.997 - ETA: 58s - loss: 0.0200 - accuracy: 0.997 - ETA: 58s - loss: 0.0199 - accuracy: 0.997 - E
TA: 57s - loss: 0.0199 - accuracy: 0.997 - ETA: 56s - loss: 0.0198 - accuracy: 0.997 - ETA: 56s - loss: 0.0197 - accuracy: 0.997 - ET
A: 55s - loss: 0.0196 - accuracy: 0.997 - ETA: 54s - loss: 0.0195 - accuracy: 0.997 - ETA: 54s - loss: 0.0195 - accuracy: 0.997 - ETA:
53s - loss: 0.0194 - accuracy: 0.997 - ETA: 52s - loss: 0.0193 - accuracy: 0.997 - ETA: 52s - loss: 0.0193 - accuracy: 0.997 - ETA: 51
s - loss: 0.0192 - accuracy: 0.997 - ETA: 50s - loss: 0.0191 - accuracy: 0.997 - ETA: 50s - loss: 0.0190 - accuracy: 0.997 - ETA: 49s
 - loss: 0.0190 - accuracy: 0.997 - ETA: 48s - loss: 0.0189 - accuracy: 0.997 - ETA: 48s - loss: 0.0188 - accuracy: 0.997 - ETA: 47s -
loss: 0.0187 - accuracy: 0.997 - ETA: 47s - loss: 0.0187 - accuracy: 0.997 - ETA: 46s - loss: 0.0186 - accuracy: 0.997 - ETA: 46s - lo
ss: 0.0185 - accuracy: 0.997 - ETA: 45s - loss: 0.0185 - accuracy: 0.997 - ETA: 45s - loss: 0.0184 - accuracy: 0.997 - ETA: 44s - los
s: 0.0183 - accuracy: 0.997 - ETA: 44s - loss: 0.0183 - accuracy: 0.997 - ETA: 43s - loss: 0.0182 - accuracy: 0.997 - ETA: 42s - loss:
0.0181 - accuracy: 0.997 - ETA: 42s - loss: 0.0181 - accuracy: 0.997 - ETA: 41s - loss: 0.0180 - accuracy: 0.997 - ETA: 41s - loss: 0.
0179 - accuracy: 0.997 - ETA: 40s - loss: 0.0179 - accuracy: 0.997 - ETA: 40s - loss: 0.0178 - accuracy: 0.997 - ETA: 39s - loss: 0.01
78 - accuracy: 0.997 - ETA: 38s - loss: 0.0177 - accuracy: 0.997 - ETA: 38s - loss: 0.0176 - accuracy: 0.997 - ETA: 37s - loss: 0.0185
- accuracy: 0.997 - ETA: 37s - loss: 0.0185 - accuracy: 0.997 - ETA: 36s - loss: 0.0184 - accuracy: 0.997 - ETA: 36s - loss: 0.0183 -
 accuracy: 0.997 - ETA: 35s - loss: 0.0183 - accuracy: 0.997 - ETA: 35s - loss: 0.0182 - accuracy: 0.997 - ETA: 34s - loss: 0.0182 - a
ccuracy: 0.997 - ETA: 33s - loss: 0.0181 - accuracy: 0.997 - ETA: 33s - loss: 0.0180 - accuracy: 0.997 - ETA: 32s - loss: 0.0180 - acc
uracy: 0.997 - ETA: 32s - loss: 0.0188 - accuracy: 0.997 - ETA: 31s - loss: 0.0187 - accuracy: 0.997 - ETA: 31s - loss: 0.0187 - accur
acy: 0.997 - ETA: 30s - loss: 0.0194 - accuracy: 0.997 - ETA: 30s - loss: 0.0193 - accuracy: 0.997 - ETA: 29s - loss: 0.0193 - accurac
y: 0.997 - ETA: 29s - loss: 0.0192 - accuracy: 0.997 - ETA: 28s - loss: 0.0199 - accuracy: 0.997 - ETA: 27s - loss: 0.0205 - accuracy:
0.997 - ETA: 27s - loss: 0.0205 - accuracy: 0.997 - ETA: 26s - loss: 0.0205 - accuracy: 0.997 - ETA: 26s - loss: 0.0204 - accuracy: 0.
997 - ETA: 25s - loss: 0.0204 - accuracy: 0.9974322/322 [==============================] - ETA: 25s - loss: 0.0203 - accuracy: 0.997 -
ETA: 24s - loss: 0.0203 - accuracy: 0.997 - ETA: 24s - loss: 0.0203 - accuracy: 0.997 - ETA: 23s - loss: 0.0202 - accuracy: 0.997 - ET
A: 23s - loss: 0.0202 - accuracy: 0.997 - ETA: 22s - loss: 0.0202 - accuracy: 0.997 - ETA: 22s - loss: 0.0201 - accuracy: 0.997 - ETA:
21s - loss: 0.0201 - accuracy: 0.997 - ETA: 21s - loss: 0.0200 - accuracy: 0.997 - ETA: 20s - loss: 0.0200 - accuracy: 0.997 - ETA: 20
s - loss: 0.0200 - accuracy: 0.997 - ETA: 19s - loss: 0.0199 - accuracy: 0.997 - ETA: 19s - loss: 0.0199 - accuracy: 0.997 - ETA: 18s
 - loss: 0.0198 - accuracy: 0.997 - ETA: 18s - loss: 0.0198 - accuracy: 0.997 - ETA: 17s - loss: 0.0197 - accuracy: 0.997 - ETA: 17s -
loss: 0.0197 - accuracy: 0.997 - ETA: 16s - loss: 0.0196 - accuracy: 0.997 - ETA: 16s - loss: 0.0196 - accuracy: 0.997 - ETA: 15s - lo
ss: 0.0195 - accuracy: 0.997 - ETA: 15s - loss: 0.0194 - accuracy: 0.997 - ETA: 14s - loss: 0.0194 - accuracy: 0.997 - ETA: 14s - los
s: 0.0200 - accuracy: 0.997 - ETA: 13s - loss: 0.0199 - accuracy: 0.997 - ETA: 13s - loss: 0.0199 - accuracy: 0.997 - ETA: 12s - loss:
0.0198 - accuracy: 0.997 - ETA: 12s - loss: 0.0198 - accuracy: 0.997 - ETA: 11s - loss: 0.0197 - accuracy: 0.997 - ETA: 11s - loss: 0.
0197 - accuracy: 0.997 - ETA: 10s - loss: 0.0196 - accuracy: 0.997 - ETA: 10s - loss: 0.0202 - accuracy: 0.997 - ETA: 9s - loss: 0.020
1 - accuracy: 0.997 - ETA: 9s - loss: 0.0201 - accuracy: 0.99 - ETA: 8s - loss: 0.0200 - accuracy: 0.99 - ETA: 8s - loss: 0.0200 - acc
uracy: 0.99 - ETA: 7s - loss: 0.0199 - accuracy: 0.99 - ETA: 7s - loss: 0.0199 - accuracy: 0.99 - ETA: 6s - loss: 0.0198 - accuracy:
 0.99 - ETA: 6s - loss: 0.0204 - accuracy: 0.99 - ETA: 6s - loss: 0.0203 - accuracy: 0.99 - ETA: 5s - loss: 0.0203 - accuracy: 0.99 -
 ETA: 5s - loss: 0.0202 - accuracy: 0.99 - ETA: 4s - loss: 0.0202 - accuracy: 0.99 - ETA: 4s - loss: 0.0201 - accuracy: 0.99 - ETA: 3s
- loss: 0.0201 - accuracy: 0.99 - ETA: 3s - loss: 0.0200 - accuracy: 0.99 - ETA: 2s - loss: 0.0200 - accuracy: 0.99 - ETA: 2s - loss:
 0.0199 - accuracy: 0.99 - ETA: 1s - loss: 0.0205 - accuracy: 0.99 - ETA: 1s - loss: 0.0204 - accuracy: 0.99 - ETA: 0s - loss: 0.0204
 - accuracy: 0.99 - ETA: 0s - loss: 0.0203 - accuracy: 0.99 - ETA: 0s - loss: 0.0203 - accuracy: 0.99 - 152s 473ms/step - loss: 0.0203
- accuracy: 0.9975 - val_loss: 0.0231 - val_accuracy: 0.9968
Epoch 9/50
256/322 [======================>.......] - ETA: 0s - loss: 0.0058 - accuracy: 1.00 - ETA: 25s - loss: 0.0056 - accuracy: 1.000 - ETA:
 37s - loss: 0.0056 - accuracy: 1.000 - ETA: 45s - loss: 0.0055 - accuracy: 1.000 - ETA: 59s - loss: 0.0054 - accuracy: 1.000 - ETA:
 1:11 - loss: 0.0053 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0052 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0052 - accuracy: 1.00 - ETA:
 1:02 - loss: 0.0051 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0050 - accuracy: 1.00 - ETA: 1:00 - loss: 0.0050 - accuracy: 1.00 - ETA:
 1:04 - loss: 0.0049 - accuracy: 1.00 - ETA: 1:04 - loss: 0.0048 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0047 - accuracy: 1.00 - ETA:
 1:05 - loss: 0.0047 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0046 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0046 - accuracy: 1.00 - ETA:
 1:16 - loss: 0.0045 - accuracy: 1.00 - ETA: 1:17 - loss: 0.0044 - accuracy: 1.00 - ETA: 1:16 - loss: 0.0044 - accuracy: 1.00 - ETA:
 1:17 - loss: 0.0043 - accuracy: 1.00 - ETA: 1:19 - loss: 0.0043 - accuracy: 1.00 - ETA: 1:26 - loss: 0.0042 - accuracy: 1.00 - ETA:
 1:25 - loss: 0.0042 - accuracy: 1.00 - ETA: 1:26 - loss: 0.0041 - accuracy: 1.00 - ETA: 1:27 - loss: 0.0041 - accuracy: 1.00 - ETA:
 1:25 - loss: 0.0040 - accuracy: 1.00 - ETA: 1:26 - loss: 0.0040 - accuracy: 1.00 - ETA: 1:25 - loss: 0.0039 - accuracy: 1.00 - ETA:
 1:24 - loss: 0.0039 - accuracy: 1.00 - ETA: 1:23 - loss: 0.0039 - accuracy: 1.00 - ETA: 1:22 - loss: 0.0038 - accuracy: 1.00 - ETA:
 1:20 - loss: 0.0038 - accuracy: 1.00 - ETA: 1:20 - loss: 0.0037 - accuracy: 1.00 - ETA: 1:20 - loss: 0.0037 - accuracy: 1.00 - ETA:
 1:21 - loss: 0.0037 - accuracy: 1.00 - ETA: 1:20 - loss: 0.0037 - accuracy: 1.00 - ETA: 1:19 - loss: 0.0036 - accuracy: 1.00 - ETA:
 1:19 - loss: 0.0036 - accuracy: 1.00 - ETA: 1:18 - loss: 0.0036 - accuracy: 1.00 - ETA: 1:17 - loss: 0.0036 - accuracy: 1.00 - ETA:
 1:17 - loss: 0.0035 - accuracy: 1.00 - ETA: 1:16 - loss: 0.0089 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0088 - accuracy: 0.99 - ETA:
 1:14 - loss: 0.0086 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0130 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0128 - accuracy: 0.99 - ETA:
 1:13 - loss: 0.0127 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0125 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0124 - accuracy: 0.99 - ETA:
 1:10 - loss: 0.0122 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0121 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0120 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0118 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0117 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0115 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0114 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0144 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0142 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0139 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0138 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0135 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0134 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0183 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0180 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0179 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0196 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0192 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0190 - accuracy: 0.99 - ETA: 59s - loss: 0.0188 - accuracy: 0.9977 - ETA:
 59s - loss: 0.0207 - accuracy: 0.997 - ETA: 58s - loss: 0.0205 - accuracy: 0.997 - ETA: 58s - loss: 0.0204 - accuracy: 0.997 - ETA: 5
7s - loss: 0.0202 - accuracy: 0.997 - ETA: 57s - loss: 0.0201 - accuracy: 0.997 - ETA: 57s - loss: 0.0199 - accuracy: 0.997 - ETA: 57s
- loss: 0.0198 - accuracy: 0.997 - ETA: 56s - loss: 0.0197 - accuracy: 0.997 - ETA: 56s - loss: 0.0195 - accuracy: 0.997 - ETA: 56s -
 loss: 0.0194 - accuracy: 0.997 - ETA: 55s - loss: 0.0192 - accuracy: 0.997 - ETA: 55s - loss: 0.0191 - accuracy: 0.997 - ETA: 55s - l
oss: 0.0208 - accuracy: 0.997 - ETA: 55s - loss: 0.0206 - accuracy: 0.997 - ETA: 54s - loss: 0.0204 - accuracy: 0.997 - ETA: 54s - los
s: 0.0203 - accuracy: 0.997 - ETA: 54s - loss: 0.0201 - accuracy: 0.997 - ETA: 54s - loss: 0.0200 - accuracy: 0.997 - ETA: 53s - loss:
0.0198 - accuracy: 0.997 - ETA: 53s - loss: 0.0197 - accuracy: 0.997 - ETA: 53s - loss: 0.0195 - accuracy: 0.997 - ETA: 52s - loss: 0.
0194 - accuracy: 0.997 - ETA: 52s - loss: 0.0192 - accuracy: 0.997 - ETA: 52s - loss: 0.0191 - accuracy: 0.997 - ETA: 52s - loss: 0.01
90 - accuracy: 0.997 - ETA: 52s - loss: 0.0188 - accuracy: 0.997 - ETA: 52s - loss: 0.0187 - accuracy: 0.997 - ETA: 52s - loss: 0.0185
- accuracy: 0.997 - ETA: 52s - loss: 0.0184 - accuracy: 0.99 - ETA: 28s - loss: 0.0134 - accuracy: 0.998 - ETA: 28s - loss: 0.0134 - a
ccuracy: 0.998 - ETA: 28s - loss: 0.0133 - accuracy: 0.998 - ETA: 28s - loss: 0.0132 - accuracy: 0.998 - ETA: 27s - loss: 0.0132 - acc
uracy: 0.998 - ETA: 27s - loss: 0.0144 - accuracy: 0.998 - ETA: 27s - loss: 0.0143 - accuracy: 0.998 - ETA: 27s - loss: 0.0143 - accur
acy: 0.998 - ETA: 27s - loss: 0.0142 - accuracy: 0.998 - ETA: 27s - loss: 0.0142 - accuracy: 0.998 - ETA: 27s - loss: 0.0141 - accurac
```

```
y: 0.998 - ETA: 27s - loss: 0.0140 - accuracy: 0.998 - ETA: 27s - loss: 0.0140 - accuracy: 0.998 - ETA: 26s - loss: 0.0150 - accuracy:
0.998 - ETA: 26s - loss: 0.0149 - accuracy: 0.998 - ETA: 26s - loss: 0.0149 - accuracy: 0.998 - ETA: 26s - loss: 0.0148 - accuracy: 0.
998 - ETA: 26s - loss: 0.0148 - accuracy: 0.998 - ETA: 25s - loss: 0.0147 - accuracy: 0.998 - ETA: 25s - loss: 0.0156 - accuracy: 0.99
8 - ETA: 25s - loss: 0.0155 - accuracy: 0.998 - ETA: 25s - loss: 0.0155 - accuracy: 0.998 - ETA: 25s - loss: 0.0154 - accuracy: 0.998
 - ETA: 24s - loss: 0.0154 - accuracy: 0.998 - ETA: 24s - loss: 0.0153 - accuracy: 0.998 - ETA: 24s - loss: 0.0153 - accuracy: 0.998 -
ETA: 24s - loss: 0.0152 - accuracy: 0.998 - ETA: 24s - loss: 0.0152 - accuracy: 0.998 - ETA: 24s - loss: 0.0160 - accuracy: 0.998 - ET
A: 24s - loss: 0.0160 - accuracy: 0.998 - ETA: 23s - loss: 0.0159 - accuracy: 0.998 - ETA: 23s - loss: 0.0159 - accuracy: 0.998 - ETA:
23s - loss: 0.0158 - accuracy: 0.998 - ETA: 23s - loss: 0.0158 - accuracy: 0.998 - ETA: 23s - loss: 0.0158 - accuracy: 0.998 - ETA: 23
s - loss: 0.0164 - accuracy: 0.998 - ETA: 22s - loss: 0.0164 - accuracy: 0.998 - ETA: 22s - loss: 0.0164 - accuracy: 0.998 - ETA: 22s
 - loss: 0.0163 - accuracy: 0.998 - ETA: 22s - loss: 0.0163 - accuracy: 0.998 - ETA: 21s - loss: 0.0162 - accuracy: 0.998 - ETA: 21s -
loss: 0.0162 - accuracy: 0.998 - ETA: 21s - loss: 0.0161 - accuracy: 0.998 - ETA: 21s - loss: 0.0161 - accuracy: 0.998 - ETA: 21s - lo
ss: 0.0160 - accuracy: 0.998 - ETA: 20s - loss: 0.0160 - accuracy: 0.998 - ETA: 20s - loss: 0.0160 - accuracy: 0.998 - ETA: 20s - los
s: 0.0159 - accuracy: 0.998 - ETA: 20s - loss: 0.0159 - accuracy: 0.998 - ETA: 19s - loss: 0.0158 - accuracy: 0.998 - ETA: 19s - loss:
0.0158 - accuracy: 0.998 - ETA: 19s - loss: 0.0157 - accuracy: 0.998 - ETA: 19s - loss: 0.0157 - accuracy: 0.998 - ETA: 18s - loss: 0.
0156 - accuracy: 0.998 - ETA: 18s - loss: 0.0156 - accuracy: 0.998 - ETA: 18s - loss: 0.0155 - accuracy: 0.998 - ETA: 18s - loss: 0.01
55 - accuracy: 0.998 - ETA: 17s - loss: 0.0154 - accuracy: 0.998 - ETA: 17s - loss: 0.0162 - accuracy: 0.998 - ETA: 17s - loss: 0.0170
- accuracy: 0.997 - ETA: 17s - loss: 0.0170 - accuracy: 0.997 - ETA: 17s - loss: 0.0169 - accuracy: 0.997 - ETA: 16s - loss: 0.0169 -
 accuracy: 0.997 - ETA: 16s - loss: 0.0176 - accuracy: 0.997 - ETA: 16s - loss: 0.0175 - accuracy: 0.997 - ETA: 16s - loss: 0.0175 - a
ccuracy: 0.997 - ETA: 15s - loss: 0.0174 - accuracy: 0.997 - ETA: 15s - loss: 0.0174 - accuracy: 0.997 - ETA: 15s - loss: 0.0173 - acc
uracy: 0.997 - ETA: 15s - loss: 0.0173 - accuracy: 0.997 - ETA: 15s - loss: 0.0173 - accuracy: 0.997 - ETA: 14s - loss: 0.0179 - accur
acy: 0.997 - ETA: 14s - loss: 0.0178 - accuracy: 0.997 - ETA: 14s - loss: 0.0178 - accuracy: 0.997 - ETA: 14s - loss: 0.0184 - accurac
y: 0.997 - ETA: 14s - loss: 0.0184 - accuracy: 0.997 - ETA: 13s - loss: 0.0183 - accuracy: 0.9977322/322 [============================
==] - ETA: 13s - loss: 0.0183 - accuracy: 0.997 - ETA: 13s - loss: 0.0183 - accuracy: 0.997 - ETA: 13s - loss: 0.0182 - accuracy: 0.99
7 - ETA: 13s - loss: 0.0182 - accuracy: 0.997 - ETA: 12s - loss: 0.0187 - accuracy: 0.997 - ETA: 12s - loss: 0.0187 - accuracy: 0.997
 - ETA: 12s - loss: 0.0187 - accuracy: 0.997 - ETA: 12s - loss: 0.0186 - accuracy: 0.997 - ETA: 11s - loss: 0.0186 - accuracy: 0.997 -
ETA: 11s - loss: 0.0185 - accuracy: 0.997 - ETA: 11s - loss: 0.0185 - accuracy: 0.997 - ETA: 11s - loss: 0.0185 - accuracy: 0.997 - ET
A: 11s - loss: 0.0184 - accuracy: 0.997 - ETA: 11s - loss: 0.0184 - accuracy: 0.997 - ETA: 10s - loss: 0.0183 - accuracy: 0.997 - ETA:
10s - loss: 0.0183 - accuracy: 0.997 - ETA: 10s - loss: 0.0182 - accuracy: 0.997 - ETA: 10s - loss: 0.0182 - accuracy: 0.997 - ETA: 10
s - loss: 0.0181 - accuracy: 0.997 - ETA: 9s - loss: 0.0181 - accuracy: 0.997 - ETA: 9s - loss: 0.0187 - accuracy: 0.99 - ETA: 9s - lo
ss: 0.0187 - accuracy: 0.99 - ETA: 9s - loss: 0.0186 - accuracy: 0.99 - ETA: 8s - loss: 0.0186 - accuracy: 0.99 - ETA: 8s - loss: 0.01
85 - accuracy: 0.99 - ETA: 8s - loss: 0.0192 - accuracy: 0.99 - ETA: 8s - loss: 0.0191 - accuracy: 0.99 - ETA: 8s - loss: 0.0197 - acc
uracy: 0.99 - ETA: 7s - loss: 0.0197 - accuracy: 0.99 - ETA: 7s - loss: 0.0203 - accuracy: 0.99 - ETA: 7s - loss: 0.0202 - accuracy:
 0.99 - ETA: 7s - loss: 0.0202 - accuracy: 0.99 - ETA: 7s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0201 - accuracy: 0.99 -
 ETA: 6s - loss: 0.0206 - accuracy: 0.99 - ETA: 6s - loss: 0.0206 - accuracy: 0.99 - ETA: 6s - loss: 0.0206 - accuracy: 0.99 - ETA: 5s
- loss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss:
 0.0204 - accuracy: 0.99 - ETA: 5s - loss: 0.0204 - accuracy: 0.99 - ETA: 4s - loss: 0.0204 - accuracy: 0.99 - ETA: 4s - loss: 0.0203
 - accuracy: 0.99 - ETA: 4s - loss: 0.0203 - accuracy: 0.99 - ETA: 4s - loss: 0.0203 - accuracy: 0.99 - ETA: 4s - loss: 0.0202 - accur
acy: 0.99 - ETA: 3s - loss: 0.0202 - accuracy: 0.99 - ETA: 3s - loss: 0.0201 - accuracy: 0.99 - ETA: 3s - loss: 0.0201 - accuracy: 0.9
9 - ETA: 3s - loss: 0.0206 - accuracy: 0.99 - ETA: 2s - loss: 0.0206 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99 - ETA:
2s - loss: 0.0205 - accuracy: 0.99 - ETA: 2s - loss: 0.0204 - accuracy: 0.99 - ETA: 2s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - los
s: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.020
2 - accuracy: 0.99 - ETA: 1s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accu
racy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.
99 - 71s 220ms/step - loss: 0.0199 - accuracy: 0.9975 - val_loss: 0.0238 - val_accuracy: 0.9968
Epoch 11/50
186/322 [================>.............] - ETA: 0s - loss: 0.2096 - accuracy: 0.96 - ETA: 33s - loss: 0.2021 - accuracy: 0.968 - ETA:
 42s - loss: 0.1362 - accuracy: 0.979 - ETA: 51s - loss: 0.1035 - accuracy: 0.984 - ETA: 57s - loss: 0.0840 - accuracy: 0.987 - ETA:
 1:04 - loss: 0.0710 - accuracy: 0.98 - ETA: 1:07 - loss: 0.0617 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0547 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0493 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0449 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0413 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0382 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0502 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0594 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0559 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0528 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0501 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0478 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0457 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0438 - accuracy: 0.99 - ETA: 5
9s - loss: 0.0421 - accuracy: 0.9940 - ETA: 58s - loss: 0.0406 - accuracy: 0.994 - ETA: 1:00 - loss: 0.0391 - accuracy: 0.99 - ETA: 1:
04 - loss: 0.0443 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0428 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0415 - accuracy: 0.99 - ETA: 1:05
- loss: 0.0402 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0390 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0379 - accuracy: 0.99 - ETA: 1:07 -
 loss: 0.0369 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0359 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0350 - accuracy: 0.99 - ETA: 1:06 - l
oss: 0.0341 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0333 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0325 - accuracy: 0.99 - ETA: 1:07 - los
s: 0.0317 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0310 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0303 - accuracy: 0.99 - ETA: 1:05 - loss:
0.0296 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0290 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0284 - accuracy: 0.99 - ETA: 1:07 - loss: 0.
0278 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0272 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:08 - loss: 0.02
62 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0247
- accuracy: 0.99 - ETA: 1:08 - loss: 0.0243 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0235 -
 accuracy: 0.99 - ETA: 1:06 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0223 - a
ccuracy: 0.99 - ETA: 1:07 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0213 - acc
uracy: 0.99 - ETA: 1:05 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0240 - accur
acy: 0.99 - ETA: 1:04 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0230 - accurac
y: 0.99 - ETA: 1:04 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0221 - accuracy:
0.99 - ETA: 1:03 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0213 - accuracy: 0.
99 - ETA: 1:02 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0205 - accuracy: 0.99
- ETA: 1:00 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0201 - accuracy: 0.99 - ETA: 59s - loss: 0.0198 - accuracy: 0.9975 -
ETA: 59s - loss: 0.0196 - accuracy: 0.997 - ETA: 59s - loss: 0.0194 - accuracy: 0.997 - ETA: 59s - loss: 0.0192 - accuracy: 0.997 - ET
A: 58s - loss: 0.0190 - accuracy: 0.997 - ETA: 58s - loss: 0.0188 - accuracy: 0.997 - ETA: 57s - loss: 0.0212 - accuracy: 0.997 - ETA:
57s - loss: 0.0209 - accuracy: 0.997 - ETA: 57s - loss: 0.0207 - accuracy: 0.997 - ETA: 57s - loss: 0.0205 - accuracy: 0.997 - ETA: 56
s - loss: 0.0203 - accuracy: 0.997 - ETA: 56s - loss: 0.0201 - accuracy: 0.997 - ETA: 55s - loss: 0.0199 - accuracy: 0.997 - ETA: 55s
 - loss: 0.0198 - accuracy: 0.997 - ETA: 55s - loss: 0.0196 - accuracy: 0.997 - ETA: 55s - loss: 0.0216 - accuracy: 0.997 - ETA: 54s -
loss: 0.0214 - accuracy: 0.997 - ETA: 54s - loss: 0.0212 - accuracy: 0.997 - ETA: 53s - loss: 0.0210 - accuracy: 0.997 - ETA: 53s - lo
ss: 0.0208 - accuracy: 0.997 - ETA: 53s - loss: 0.0207 - accuracy: 0.997 - ETA: 53s - loss: 0.0205 - accuracy: 0.997 - ETA: 52s - los
s: 0.0203 - accuracy: 0.997 - ETA: 52s - loss: 0.0202 - accuracy: 0.997 - ETA: 52s - loss: 0.0200 - accuracy: 0.997 - ETA: 53s - loss:
0.0199 - accuracy: 0.997 - ETA: 53s - loss: 0.0197 - accuracy: 0.997 - ETA: 53s - loss: 0.0195 - accuracy: 0.997 - ETA: 54s - loss: 0.
0194 - accuracy: 0.997 - ETA: 53s - loss: 0.0192 - accuracy: 0.997 - ETA: 53s - loss: 0.0191 - accuracy: 0.997 - ETA: 53s - loss: 0.01
90 - accuracy: 0.997 - ETA: 53s - loss: 0.0188 - accuracy: 0.997 - ETA: 52s - loss: 0.0187 - accuracy: 0.997 - ETA: 52s - loss: 0.0185
- accuracy: 0.997 - ETA: 52s - loss: 0.0184 - accuracy: 0.997 - ETA: 51s - loss: 0.0183 - accuracy: 0.997 - ETA: 51s - loss: 0.0181 -
 accuracy: 0.997 - ETA: 51s - loss: 0.0180 - accuracy: 0.997 - ETA: 50s - loss: 0.0196 - accuracy: 0.997 - ETA: 50s - loss: 0.0195 - a
ccuracy: 0.997 - ETA: 49s - loss: 0.0194 - accuracy: 0.997 - ETA: 49s - loss: 0.0192 - accuracy: 0.997 - ETA: 50s - loss: 0.0191 - acc
uracy: 0.997 - ETA: 50s - loss: 0.0190 - accuracy: 0.997 - ETA: 51s - loss: 0.0189 - accuracy: 0.997 - ETA: 51s - loss: 0.0187 - accur
acy: 0.997 - ETA: 51s - loss: 0.0186 - accuracy: 0.997 - ETA: 51s - loss: 0.0185 - accuracy: 0.997 - ETA: 50s - loss: 0.0184 - accurac
y: 0.997 - ETA: 50s - loss: 0.0183 - accuracy: 0.997 - ETA: 50s - loss: 0.0181 - accuracy: 0.997 - ETA: 50s - loss: 0.0180 - accuracy:
0.997 - ETA: 50s - loss: 0.0179 - accuracy: 0.997 - ETA: 50s - loss: 0.0178 - accuracy: 0.997 - ETA: 49s - loss: 0.0177 - accuracy: 0.
997 - ETA: 49s - loss: 0.0176 - accuracy: 0.997 - ETA: 49s - loss: 0.0175 - accuracy: 0.997 - ETA: 49s - loss: 0.0174 - accuracy: 0.99
7 - ETA: 49s - loss: 0.0172 - accuracy: 0.997 - ETA: 49s - loss: 0.0187 - accuracy: 0.997 - ETA: 49s - loss: 0.0185 - accuracy: 0.997
 - ETA: 49s - loss: 0.0184 - accuracy: 0.997 - ETA: 49s - loss: 0.0183 - accuracy: 0.997 - ETA: 48s - loss: 0.0182 - accuracy: 0.997 -
```

```
ETA: 48s - loss: 0.0195 - accuracy: 0.997 - ETA: 48s - loss: 0.0194 - accuracy: 0.997 - ETA: 48s - loss: 0.0193 - accuracy: 0.997 - ET
A: 47s - loss: 0.0192 - accuracy: 0.997 - ETA: 47s - loss: 0.0191 - accuracy: 0.997 - ETA: 47s - loss: 0.0190 - accuracy: 0.997 - ETA:
47s - loss: 0.0189 - accuracy: 0.997 - ETA: 47s - loss: 0.0188 - accuracy: 0.997 - ETA: 46s - loss: 0.0187 - accuracy: 0.997 - ETA: 46
s - loss: 0.0186 - accuracy: 0.997 - ETA: 46s - loss: 0.0185 - accuracy: 0.997 - ETA: 45s - loss: 0.0184 - accuracy: 0.997 - ETA: 45s
 - loss: 0.0183 - accuracy: 0.997 - ETA: 45s - loss: 0.0182 - accuracy: 0.997 - ETA: 44s - loss: 0.0182 - accuracy: 0.997 - ETA: 44s -
loss: 0.0181 - accuracy: 0.997 - ETA: 44s - loss: 0.0180 - accuracy: 0.997 - ETA: 43s - loss: 0.0179 - accuracy: 0.997 - ETA: 43s - lo
ss: 0.0178 - accuracy: 0.997 - ETA: 43s - loss: 0.0177 - accuracy: 0.997 - ETA: 42s - loss: 0.0176 - accuracy: 0.997 - ETA: 42s - los
s: 0.0175 - accuracy: 0.997 - ETA: 42s - loss: 0.0174 - accuracy: 0.997 - ETA: 41s - loss: 0.0174 - accuracy: 0.997 - ETA: 41s - loss:
0.0173 - accuracy: 0.997 - ETA: 41s - loss: 0.0172 - accuracy: 0.997 - ETA: 41s - loss: 0.0171 - accuracy: 0.997 - ETA: 40s - loss: 0.
0170 - accuracy: 0.997 - ETA: 40s - loss: 0.0182 - accuracy: 0.997 - ETA: 40s - loss: 0.0181 - accuracy: 0.997 - ETA: 40s - loss: 0.01
80 - accuracy: 0.997 - ETA: 40s - loss: 0.0179 - accuracy: 0.997 - ETA: 39s - loss: 0.0178 - accuracy: 0.997 - ETA: 40s - loss: 0.0177
- accuracy: 0.997 - ETA: 40s - loss: 0.0177 - accuracy: 0.997 - ETA: 39s - loss: 0.0176 - accuracy: 0.997 - ETA: 39s - loss: 0.0175 -
 accuracy: 0.997 - ETA: 39s - loss: 0.0174 - accuracy: 0.997 - ETA: 39s - loss: 0.0173 - accuracy: 0.997 - ETA: 39s - loss: 0.0173 - a
ccuracy: 0.997 - ETA: 39s - loss: 0.0172 - accuracy: 0.997 - ETA: 38s - loss: 0.0171 - accuracy: 0.997 - ETA: 39s - loss: 0.0170 - acc
uracy: 0.997 - ETA: 39s - loss: 0.0169 - accuracy: 0.998 - ETA: 39s - loss: 0.0169 - accuracy: 0.998 - ETA: 39s - loss: 0.0168 - accur
acy: 0.998 - ETA: 38s - loss: 0.0167 - accuracy: 0.9980WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch up
date (0.140030). Check your callbacks.
322/322 [==============================] - ETA: 38s - loss: 0.0178 - accuracy: 0.997 - ETA: 38s - loss: 0.0177 - accuracy: 0.997 - ET
A: 37s - loss: 0.0176 - accuracy: 0.997 - ETA: 37s - loss: 0.0176 - accuracy: 0.997 - ETA: 37s - loss: 0.0175 - accuracy: 0.997 - ETA:
37s - loss: 0.0184 - accuracy: 0.997 - ETA: 37s - loss: 0.0183 - accuracy: 0.997 - ETA: 36s - loss: 0.0183 - accuracy: 0.997 - ETA: 36
s - loss: 0.0182 - accuracy: 0.997 - ETA: 36s - loss: 0.0181 - accuracy: 0.997 - ETA: 36s - loss: 0.0181 - accuracy: 0.997 - ETA: 35s
 - loss: 0.0180 - accuracy: 0.997 - ETA: 35s - loss: 0.0180 - accuracy: 0.997 - ETA: 35s - loss: 0.0179 - accuracy: 0.997 - ETA: 35s -
loss: 0.0187 - accuracy: 0.997 - ETA: 34s - loss: 0.0186 - accuracy: 0.997 - ETA: 34s - loss: 0.0186 - accuracy: 0.997 - ETA: 34s - lo
ss: 0.0185 - accuracy: 0.997 - ETA: 34s - loss: 0.0184 - accuracy: 0.997 - ETA: 33s - loss: 0.0184 - accuracy: 0.997 - ETA: 33s - los
s: 0.0192 - accuracy: 0.997 - ETA: 33s - loss: 0.0191 - accuracy: 0.997 - ETA: 33s - loss: 0.0190 - accuracy: 0.997 - ETA: 32s - loss:
0.0190 - accuracy: 0.997 - ETA: 32s - loss: 0.0189 - accuracy: 0.997 - ETA: 32s - loss: 0.0189 - accuracy: 0.997 - ETA: 32s - loss: 0.
0195 - accuracy: 0.997 - ETA: 32s - loss: 0.0195 - accuracy: 0.997 - ETA: 31s - loss: 0.0194 - accuracy: 0.997 - ETA: 31s - loss: 0.01
94 - accuracy: 0.997 - ETA: 31s - loss: 0.0193 - accuracy: 0.997 - ETA: 30s - loss: 0.0193 - accuracy: 0.997 - ETA: 30s - loss: 0.0192
- accuracy: 0.997 - ETA: 30s - loss: 0.0192 - accuracy: 0.997 - ETA: 30s - loss: 0.0191 - accuracy: 0.997 - ETA: 29s - loss: 0.0190 -
 accuracy: 0.997 - ETA: 29s - loss: 0.0190 - accuracy: 0.997 - ETA: 29s - loss: 0.0189 - accuracy: 0.997 - ETA: 28s - loss: 0.0189 - a
ccuracy: 0.997 - ETA: 28s - loss: 0.0188 - accuracy: 0.997 - ETA: 28s - loss: 0.0187 - accuracy: 0.997 - ETA: 28s - loss: 0.0187 - acc
uracy: 0.997 - ETA: 27s - loss: 0.0186 - accuracy: 0.997 - ETA: 27s - loss: 0.0185 - accuracy: 0.997 - ETA: 27s - loss: 0.0185 - accur
acy: 0.997 - ETA: 27s - loss: 0.0184 - accuracy: 0.997 - ETA: 26s - loss: 0.0201 - accuracy: 0.997 - ETA: 26s - loss: 0.0200 - accurac
y: 0.997 - ETA: 26s - loss: 0.0199 - accuracy: 0.997 - ETA: 25s - loss: 0.0199 - accuracy: 0.997 - ETA: 25s - loss: 0.0198 - accuracy:
0.997 - ETA: 25s - loss: 0.0198 - accuracy: 0.997 - ETA: 25s - loss: 0.0197 - accuracy: 0.997 - ETA: 24s - loss: 0.0197 - accuracy: 0.
997 - ETA: 24s - loss: 0.0196 - accuracy: 0.997 - ETA: 24s - loss: 0.0203 - accuracy: 0.997 - ETA: 23s - loss: 0.0202 - accuracy: 0.99
7 - ETA: 23s - loss: 0.0202 - accuracy: 0.997 - ETA: 23s - loss: 0.0208 - accuracy: 0.997 - ETA: 23s - loss: 0.0208 - accuracy: 0.997
 - ETA: 22s - loss: 0.0207 - accuracy: 0.997 - ETA: 22s - loss: 0.0207 - accuracy: 0.997 - ETA: 22s - loss: 0.0206 - accuracy: 0.997 -
ETA: 22s - loss: 0.0206 - accuracy: 0.997 - ETA: 21s - loss: 0.0205 - accuracy: 0.997 - ETA: 21s - loss: 0.0205 - accuracy: 0.997 - ET
A: 21s - loss: 0.0204 - accuracy: 0.997 - ETA: 20s - loss: 0.0204 - accuracy: 0.997 - ETA: 20s - loss: 0.0203 - accuracy: 0.997 - ETA:
20s - loss: 0.0203 - accuracy: 0.997 - ETA: 20s - loss: 0.0202 - accuracy: 0.997 - ETA: 19s - loss: 0.0202 - accuracy: 0.997 - ETA: 19
s - loss: 0.0201 - accuracy: 0.997 - ETA: 19s - loss: 0.0200 - accuracy: 0.997 - ETA: 18s - loss: 0.0200 - accuracy: 0.997 - ETA: 18s
 - loss: 0.0199 - accuracy: 0.997 - ETA: 18s - loss: 0.0199 - accuracy: 0.997 - ETA: 17s - loss: 0.0198 - accuracy: 0.997 - ETA: 17s -
loss: 0.0198 - accuracy: 0.997 - ETA: 17s - loss: 0.0197 - accuracy: 0.997 - ETA: 17s - loss: 0.0196 - accuracy: 0.997 - ETA: 16s - lo
ss: 0.0196 - accuracy: 0.997 - ETA: 16s - loss: 0.0195 - accuracy: 0.997 - ETA: 16s - loss: 0.0195 - accuracy: 0.997 - ETA: 15s - los
s: 0.0194 - accuracy: 0.997 - ETA: 15s - loss: 0.0193 - accuracy: 0.997 - ETA: 15s - loss: 0.0193 - accuracy: 0.997 - ETA: 14s - loss:
0.0192 - accuracy: 0.997 - ETA: 14s - loss: 0.0192 - accuracy: 0.997 - ETA: 14s - loss: 0.0191 - accuracy: 0.997 - ETA: 14s - loss: 0.
0190 - accuracy: 0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss: 0.01
96 - accuracy: 0.997 - ETA: 12s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - loss: 0.0194
- accuracy: 0.997 - ETA: 12s - loss: 0.0194 - accuracy: 0.997 - ETA: 11s - loss: 0.0193 - accuracy: 0.997 - ETA: 11s - loss: 0.0193 -
 accuracy: 0.997 - ETA: 11s - loss: 0.0192 - accuracy: 0.997 - ETA: 10s - loss: 0.0191 - accuracy: 0.997 - ETA: 10s - loss: 0.0198 - a
ccuracy: 0.997 - ETA: 10s - loss: 0.0197 - accuracy: 0.997 - ETA: 9s - loss: 0.0197 - accuracy: 0.997 - ETA: 9s - loss: 0.0196 - accur
acy: 0.99 - ETA: 9s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0201 - accuracy: 0.9
9 - ETA: 8s - loss: 0.0200 - accuracy: 0.99 - ETA: 7s - loss: 0.0200 - accuracy: 0.99 - ETA: 7s - loss: 0.0199 - accuracy: 0.99 - ETA:
7s - loss: 0.0199 - accuracy: 0.99 - ETA: 6s - loss: 0.0198 - accuracy: 0.99 - ETA: 6s - loss: 0.0198 - accuracy: 0.99 - ETA: 6s - los
s: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0197 - accuracy: 0.99 - ETA: 5s - loss: 0.0196 - accuracy: 0.99 - ETA: 5s - loss: 0.019
6 - accuracy: 0.99 - ETA: 5s - loss: 0.0196 - accuracy: 0.99 - ETA: 4s - loss: 0.0195 - accuracy: 0.99 - ETA: 4s - loss: 0.0195 - accu
racy: 0.99 - ETA: 4s - loss: 0.0194 - accuracy: 0.99 - ETA: 3s - loss: 0.0194 - accuracy: 0.99 - ETA: 3s - loss: 0.0193 - accuracy: 0.
99 - ETA: 3s - loss: 0.0193 - accuracy: 0.99 - ETA: 2s - loss: 0.0192 - accuracy: 0.99 - ETA: 2s - loss: 0.0192 - accuracy: 0.99 - ET
A: 2s - loss: 0.0197 - accuracy: 0.99 - ETA: 1s - loss: 0.0196 - accuracy: 0.99 - ETA: 1s - loss: 0.0196 - accuracy: 0.99 - ETA: 1s -
 loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss:
 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - 109s 338ms/step - loss: 0.0200 - accuracy: 0.9975 - val_loss: 0.0
234 - val_accuracy: 0.9968
Epoch 12/50
135/322 [===========>..................] - ETA: 0s - loss: 0.0052 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0054 - accuracy: 1.00 - ETA:
 1:20 - loss: 0.0054 - accuracy: 1.00 - ETA: 1:28 - loss: 0.0054 - accuracy: 1.00 - ETA: 1:30 - loss: 0.0054 - accuracy: 1.00 - ETA:
 1:29 - loss: 0.0054 - accuracy: 1.00 - ETA: 1:23 - loss: 0.0053 - accuracy: 1.00 - ETA: 1:19 - loss: 0.0053 - accuracy: 1.00 - ETA:
 1:26 - loss: 0.0052 - accuracy: 1.00 - ETA: 1:33 - loss: 0.0052 - accuracy: 1.00 - ETA: 1:33 - loss: 0.0051 - accuracy: 1.00 - ETA:
 1:31 - loss: 0.0051 - accuracy: 1.00 - ETA: 1:31 - loss: 0.0050 - accuracy: 1.00 - ETA: 1:33 - loss: 0.0049 - accuracy: 1.00 - ETA:
 1:39 - loss: 0.0049 - accuracy: 1.00 - ETA: 1:40 - loss: 0.0048 - accuracy: 1.00 - ETA: 1:38 - loss: 0.0048 - accuracy: 1.00 - ETA:
 1:35 - loss: 0.0047 - accuracy: 1.00 - ETA: 1:32 - loss: 0.0047 - accuracy: 1.00 - ETA: 1:30 - loss: 0.0046 - accuracy: 1.00 - ETA:
 1:30 - loss: 0.0045 - accuracy: 1.00 - ETA: 1:30 - loss: 0.0045 - accuracy: 1.00 - ETA: 1:28 - loss: 0.0044 - accuracy: 1.00 - ETA:
 1:26 - loss: 0.0044 - accuracy: 1.00 - ETA: 1:25 - loss: 0.0043 - accuracy: 1.00 - ETA: 1:25 - loss: 0.0043 - accuracy: 1.00 - ETA:
 1:24 - loss: 0.0042 - accuracy: 1.00 - ETA: 1:24 - loss: 0.0042 - accuracy: 1.00 - ETA: 1:22 - loss: 0.0041 - accuracy: 1.00 - ETA:
 1:22 - loss: 0.0041 - accuracy: 1.00 - ETA: 1:24 - loss: 0.0106 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0103 - accuracy: 0.99 - ETA:
 1:30 - loss: 0.0101 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0099 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0098 - accuracy: 0.99 - ETA:
 1:28 - loss: 0.0096 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0094 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0144 - accuracy: 0.99 - ETA:
 1:28 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0185 - accuracy: 0.99 - ETA:
 1:26 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0217 - accuracy: 0.99 - ETA:
 1:24 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0209 - accuracy: 0.99 - ETA:
 1:22 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0202 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0225 - accuracy: 0.99 - ETA:
 1:17 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0247 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0239 - accuracy: 0.99 - ETA:
 1:14 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0232 - accuracy: 0.99 - ETA:
 1:12 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0225 - accuracy: 0.99 - ETA:
 1:10 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0217 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0210 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0204 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0197 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0191 - accuracy: 0.99 - ETA:
```

```
 1:04 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0185 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0205 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0199 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0194 - accuracy: 0.9976 - ETA:
1:50 - loss: 0.0059 - accuracy: 1.00 - ETA: 1:48 - loss: 0.0058 - accuracy: 1.00 - ETA: 1:47 - loss: 0.0057 - accuracy: 1.00 - ETA: 1:
47 - loss: 0.0057 - accuracy: 1.00 - ETA: 1:49 - loss: 0.0056 - accuracy: 1.00 - ETA: 1:48 - loss: 0.0055 - accuracy: 1.00 - ETA: 1:46
- loss: 0.0055 - accuracy: 1.00 - ETA: 1:47 - loss: 0.0054 - accuracy: 1.00 - ETA: 1:47 - loss: 0.0054 - accuracy: 1.00 - ETA: 1:45 -
 loss: 0.0053 - accuracy: 1.00 - ETA: 1:44 - loss: 0.0053 - accuracy: 1.00 - ETA: 1:44 - loss: 0.0052 - accuracy: 1.00 - ETA: 1:44 - l
oss: 0.0052 - accuracy: 1.00 - ETA: 1:43 - loss: 0.0051 - accuracy: 1.00 - ETA: 1:42 - loss: 0.0091 - accuracy: 0.99 - ETA: 1:41 - los
s: 0.0090 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0089 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0088 - accuracy: 0.99 - ETA: 1:40 - loss:
0.0087 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0086 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0085 - accuracy: 0.99 - ETA: 1:38 - loss: 0.
0085 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0084 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0083 - accuracy: 0.99 - ETA: 1:38 - loss: 0.00
82 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0081 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0080 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0080
- accuracy: 0.99 - ETA: 1:35 - loss: 0.0079 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0078 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0108 -
 accuracy: 0.99 - ETA: 1:32 - loss: 0.0107 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0106 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0105 - a
ccuracy: 0.99 - ETA: 1:30 - loss: 0.0105 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0104 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0103 - acc
uracy: 0.99 - ETA: 1:28 - loss: 0.0102 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0101 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0100 - accur
acy: 0.99 - ETA: 1:26 - loss: 0.0100 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0099 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0098 - accurac
y: 0.99 - ETA: 1:23 - loss: 0.0097 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0097 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0096 - accuracy:
0.99 - ETA: 1:23 - loss: 0.0095 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0095 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0094 - accuracy: 0.
99 - ETA: 1:21 - loss: 0.0093 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0093 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0092 - accuracy: 0.99
- ETA: 1:19 - loss: 0.0091 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0091 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0111 - accuracy: 0.99 -
 ETA: 1:18 - loss: 0.0110 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0109 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0108 - accuracy: 0.99 - E
TA: 1:17 - loss: 0.0108 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0107 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0125 - accuracy: 0.99 - ET
A: 1:15 - loss: 0.0124 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0124 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0123 - accuracy: 0.99 - ETA:
1:14 - loss: 0.0122 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0121 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0121 - accuracy: 0.99 - ETA: 1:
12 - loss: 0.0120 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:11
- loss: 0.0135 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0134 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0134 - accuracy: 0.99 - ETA: 1:10 -
 loss: 0.0133 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0132 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0132 - accuracy: 0.99 - ETA: 1:08 - l
oss: 0.0146 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:08 - los
s: 0.0143 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0143 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0142 - accuracy: 0.99 - ETA: 1:07 - loss:
0.0156 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0154 - accuracy: 0.99 - ETA: 1:05 - loss: 0.
0154 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0152 - accuracy: 0.99 - ETA: 1:04 - loss: 0.01
52 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0150 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0150
- accuracy: 0.99 - ETA: 1:03 - loss: 0.0149 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0161 - accuracy: 0.9981254/322 [===================
===>.......] - ETA: 1:02 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0159 - accu
racy: 0.99 - ETA: 1:01 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0157 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0157 - accura
cy: 0.99 - ETA: 1:01 - loss: 0.0156 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0154 - accurac
y: 0.99 - ETA: 1:00 - loss: 0.0154 - accuracy: 0.99 - ETA: 59s - loss: 0.0153 - accuracy: 0.9983 - ETA: 59s - loss: 0.0152 - accuracy:
0.998 - ETA: 58s - loss: 0.0151 - accuracy: 0.998 - ETA: 58s - loss: 0.0151 - accuracy: 0.998 - ETA: 58s - loss: 0.0150 - accuracy: 0.
998 - ETA: 57s - loss: 0.0149 - accuracy: 0.998 - ETA: 57s - loss: 0.0148 - accuracy: 0.998 - ETA: 57s - loss: 0.0148 - accuracy: 0.99
8 - ETA: 56s - loss: 0.0147 - accuracy: 0.998 - ETA: 56s - loss: 0.0159 - accuracy: 0.998 - ETA: 55s - loss: 0.0159 - accuracy: 0.998
 - ETA: 55s - loss: 0.0158 - accuracy: 0.998 - ETA: 55s - loss: 0.0157 - accuracy: 0.998 - ETA: 55s - loss: 0.0156 - accuracy: 0.998 -
ETA: 55s - loss: 0.0156 - accuracy: 0.998 - ETA: 55s - loss: 0.0155 - accuracy: 0.998 - ETA: 55s - loss: 0.0154 - accuracy: 0.998 - ET
A: 54s - loss: 0.0153 - accuracy: 0.998 - ETA: 54s - loss: 0.0153 - accuracy: 0.998 - ETA: 53s - loss: 0.0152 - accuracy: 0.998 - ETA:
53s - loss: 0.0151 - accuracy: 0.998 - ETA: 53s - loss: 0.0151 - accuracy: 0.998 - ETA: 52s - loss: 0.0150 - accuracy: 0.998 - ETA: 52
s - loss: 0.0149 - accuracy: 0.998 - ETA: 51s - loss: 0.0148 - accuracy: 0.998 - ETA: 51s - loss: 0.0148 - accuracy: 0.998 - ETA: 51s
 - loss: 0.0147 - accuracy: 0.998 - ETA: 51s - loss: 0.0146 - accuracy: 0.998 - ETA: 50s - loss: 0.0158 - accuracy: 0.998 - ETA: 50s -
loss: 0.0157 - accuracy: 0.998 - ETA: 50s - loss: 0.0156 - accuracy: 0.998 - ETA: 49s - loss: 0.0156 - accuracy: 0.998 - ETA: 49s - lo
ss: 0.0155 - accuracy: 0.998 - ETA: 49s - loss: 0.0154 - accuracy: 0.998 - ETA: 48s - loss: 0.0154 - accuracy: 0.998 - ETA: 48s - los
s: 0.0153 - accuracy: 0.998 - ETA: 48s - loss: 0.0153 - accuracy: 0.998 - ETA: 47s - loss: 0.0162 - accuracy: 0.998 - ETA: 47s - loss:
0.0162 - accuracy: 0.998 - ETA: 47s - loss: 0.0161 - accuracy: 0.998 - ETA: 47s - loss: 0.0160 - accuracy: 0.998 - ETA: 46s - loss: 0.
0169 - accuracy: 0.998 - ETA: 46s - loss: 0.0169 - accuracy: 0.998 - ETA: 46s - loss: 0.0168 - accuracy: 0.998 - ETA: 46s - loss: 0.01
67 - accuracy: 0.998 - ETA: 45s - loss: 0.0167 - accuracy: 0.998 - ETA: 45s - loss: 0.0166 - accuracy: 0.998 - ETA: 45s - loss: 0.0166
- accuracy: 0.998 - ETA: 45s - loss: 0.0165 - accuracy: 0.998 - ETA: 44s - loss: 0.0165 - accuracy: 0.998 - ETA: 44s - loss: 0.0164 -
 accuracy: 0.998 - ETA: 44s - loss: 0.0164 - accuracy: 0.998 - ETA: 44s - loss: 0.0163 - accuracy: 0.998 - ETA: 44s - loss: 0.0172 - a
ccuracy: 0.998 - ETA: 44s - loss: 0.0171 - accuracy: 0.998 - ETA: 44s - loss: 0.0171 - accuracy: 0.998 - ETA: 44s - loss: 0.0170 - acc
uracy: 0.998 - ETA: 43s - loss: 0.0169 - accuracy: 0.998 - ETA: 43s - loss: 0.0169 - accuracy: 0.998 - ETA: 43s - loss: 0.0168 - accur
acy: 0.998 - ETA: 42s - loss: 0.0168 - accuracy: 0.998 - ETA: 42s - loss: 0.0167 - accuracy: 0.998 - ETA: 42s - loss: 0.0167 - accurac
y: 0.998 - ETA: 41s - loss: 0.0166 - accuracy: 0.998 - ETA: 41s - loss: 0.0166 - accuracy: 0.998 - ETA: 40s - loss: 0.0165 - accuracy:
0.998 - ETA: 40s - loss: 0.0164 - accuracy: 0.998 - ETA: 40s - loss: 0.0164 - accuracy: 0.998 - ETA: 39s - loss: 0.0163 - accuracy: 0.
998 - ETA: 39s - loss: 0.0163 - accuracy: 0.998 - ETA: 39s - loss: 0.0162 - accuracy: 0.998 - ETA: 39s - loss: 0.0162 - accuracy: 0.99
8 - ETA: 38s - loss: 0.0161 - accuracy: 0.998 - ETA: 38s - loss: 0.0160 - accuracy: 0.998 - ETA: 38s - loss: 0.0160 - accuracy: 0.998
 - ETA: 38s - loss: 0.0159 - accuracy: 0.998 - ETA: 37s - loss: 0.0159 - accuracy: 0.998 - ETA: 37s - loss: 0.0167 - accuracy: 0.998 -
ETA: 37s - loss: 0.0166 - accuracy: 0.998 - ETA: 38s - loss: 0.0166 - accuracy: 0.998 - ETA: 38s - loss: 0.0165 - accuracy: 0.998 - ET
A: 38s - loss: 0.0165 - accuracy: 0.998 - ETA: 38s - loss: 0.0164 - accuracy: 0.998 - ETA: 37s - loss: 0.0164 - accuracy: 0.998 - ETA:
37s - loss: 0.0163 - accuracy: 0.998 - ETA: 37s - loss: 0.0163 - accuracy: 0.998 - ETA: 37s - loss: 0.0162 - accuracy: 0.998 - ETA: 36
s - loss: 0.0161 - accuracy: 0.998 - ETA: 36s - loss: 0.0161 - accuracy: 0.998 - ETA: 36s - loss: 0.0160 - accuracy: 0.998 - ETA: 36s
 - loss: 0.0168 - accuracy: 0.998 - ETA: 36s - loss: 0.0176 - accuracy: 0.997 - ETA: 35s - loss: 0.0175 - accuracy: 0.997 - ETA: 35s -
loss: 0.0175 - accuracy: 0.997 - ETA: 35s - loss: 0.0174 - accuracy: 0.997 - ETA: 34s - loss: 0.0174 - accuracy: 0.997 - ETA: 34s - lo
ss: 0.0173 - accuracy: 0.997 - ETA: 34s - loss: 0.0173 - accuracy: 0.997 - ETA: 34s - loss: 0.0172 - accuracy: 0.998 - ETA: 33s - los
s: 0.0172 - accuracy: 0.998 - ETA: 33s - loss: 0.0171 - accuracy: 0.998 - ETA: 33s - loss: 0.0171 - accuracy: 0.998 - ETA: 32s - loss:
0.0170 - accuracy: 0.998 - ETA: 32s - loss: 0.0170 - accuracy: 0.998 - ETA: 32s - loss: 0.0169 - accuracy: 0.998 - ETA: 31s - loss: 0.
0169 - accuracy: 0.998 - ETA: 31s - loss: 0.0168 - accuracy: 0.998 - ETA: 30s - loss: 0.0168 - accuracy: 0.998 - ETA: 30s - loss: 0.01
75 - accuracy: 0.9979WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.178545). Check your callba
cks.
322/322 [==============================] - ETA: 29s - loss: 0.0174 - accuracy: 0.997 - ETA: 29s - loss: 0.0174 - accuracy: 0.997 - ET
A: 28s - loss: 0.0173 - accuracy: 0.997 - ETA: 28s - loss: 0.0173 - accuracy: 0.997 - ETA: 28s - loss: 0.0179 - accuracy: 0.997 - ETA:
27s - loss: 0.0178 - accuracy: 0.997 - ETA: 27s - loss: 0.0178 - accuracy: 0.997 - ETA: 26s - loss: 0.0177 - accuracy: 0.997 - ETA: 26
s - loss: 0.0184 - accuracy: 0.997 - ETA: 25s - loss: 0.0183 - accuracy: 0.997 - ETA: 25s - loss: 0.0183 - accuracy: 0.997 - ETA: 25s
 - loss: 0.0183 - accuracy: 0.997 - ETA: 24s - loss: 0.0182 - accuracy: 0.997 - ETA: 24s - loss: 0.0182 - accuracy: 0.997 - ETA: 23s -
loss: 0.0181 - accuracy: 0.997 - ETA: 23s - loss: 0.0181 - accuracy: 0.997 - ETA: 22s - loss: 0.0181 - accuracy: 0.997 - ETA: 22s - lo
ss: 0.0180 - accuracy: 0.997 - ETA: 22s - loss: 0.0180 - accuracy: 0.997 - ETA: 21s - loss: 0.0179 - accuracy: 0.997 - ETA: 21s - los
s: 0.0179 - accuracy: 0.997 - ETA: 20s - loss: 0.0178 - accuracy: 0.997 - ETA: 20s - loss: 0.0178 - accuracy: 0.997 - ETA: 20s - loss:
0.0177 - accuracy: 0.997 - ETA: 19s - loss: 0.0177 - accuracy: 0.997 - ETA: 19s - loss: 0.0176 - accuracy: 0.997 - ETA: 18s - loss: 0.
0183 - accuracy: 0.997 - ETA: 18s - loss: 0.0183 - accuracy: 0.997 - ETA: 18s - loss: 0.0182 - accuracy: 0.997 - ETA: 17s - loss: 0.01
82 - accuracy: 0.997 - ETA: 17s - loss: 0.0181 - accuracy: 0.997 - ETA: 16s - loss: 0.0181 - accuracy: 0.997 - ETA: 16s - loss: 0.0180
- accuracy: 0.997 - ETA: 15s - loss: 0.0180 - accuracy: 0.997 - ETA: 15s - loss: 0.0192 - accuracy: 0.997 - ETA: 14s - loss: 0.0191 -
 accuracy: 0.997 - ETA: 14s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss: 0.0196 - a
ccuracy: 0.997 - ETA: 12s - loss: 0.0196 - accuracy: 0.997 - ETA: 12s - loss: 0.0196 - accuracy: 0.997 - ETA: 11s - loss: 0.0195 - acc
uracy: 0.997 - ETA: 11s - loss: 0.0195 - accuracy: 0.997 - ETA: 10s - loss: 0.0200 - accuracy: 0.997 - ETA: 10s - loss: 0.0200 - accur
```

```
acy: 0.997 - ETA: 10s - loss: 0.0200 - accuracy: 0.997 - ETA: 9s - loss: 0.0199 - accuracy: 0.997 - ETA: 9s - loss: 0.0199 - accuracy:
0.99 - ETA: 8s - loss: 0.0199 - accuracy: 0.99 - ETA: 8s - loss: 0.0198 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 - accuracy: 0.99 - E
TA: 7s - loss: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 5s -
loss: 0.0201 - accuracy: 0.99 - ETA: 5s - loss: 0.0201 - accuracy: 0.99 - ETA: 4s - loss: 0.0201 - accuracy: 0.99 - ETA: 4s - loss: 0.
0200 - accuracy: 0.99 - ETA: 4s - loss: 0.0200 - accuracy: 0.99 - ETA: 3s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s - loss: 0.0204 - a
ccuracy: 0.99 - ETA: 2s - loss: 0.0204 - accuracy: 0.99 - ETA: 2s - loss: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.0203 - accuracy:
0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - E
TA: 0s - loss: 0.0201 - accuracy: 0.99 - 151s 468ms/step - loss: 0.0201 - accuracy: 0.9975 - val_loss: 0.0231 - val_accuracy: 0.9968
Epoch 14/50
186/322 [===============>............] - ETA: 0s - loss: 0.0049 - accuracy: 1.00 - ETA: 1:22 - loss: 0.0048 - accuracy: 1.00 - ETA:
 2:07 - loss: 0.0048 - accuracy: 1.00 - ETA: 2:08 - loss: 0.0047 - accuracy: 1.00 - ETA: 1:57 - loss: 0.0046 - accuracy: 1.00 - ETA:
 1:57 - loss: 0.0045 - accuracy: 1.00 - ETA: 2:01 - loss: 0.0044 - accuracy: 1.00 - ETA: 1:57 - loss: 0.0044 - accuracy: 1.00 - ETA:
 1:54 - loss: 0.0043 - accuracy: 1.00 - ETA: 1:52 - loss: 0.0042 - accuracy: 1.00 - ETA: 1:50 - loss: 0.0041 - accuracy: 1.00 - ETA:
 1:55 - loss: 0.0041 - accuracy: 1.00 - ETA: 1:55 - loss: 0.0040 - accuracy: 1.00 - ETA: 1:53 - loss: 0.0039 - accuracy: 1.00 - ETA:
 1:50 - loss: 0.0039 - accuracy: 1.00 - ETA: 1:53 - loss: 0.0038 - accuracy: 1.00 - ETA: 1:51 - loss: 0.0038 - accuracy: 1.00 - ETA:
 1:49 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0240 - accuracy: 0.99 - ETA:
 1:47 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0214 - accuracy: 0.99 - ETA:
 1:43 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0276 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0267 - accuracy: 0.99 - ETA:
 1:41 - loss: 0.0260 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0253 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0246 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0228 - accuracy: 0.99 - ETA:
 1:42 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0214 - accuracy: 0.99 - ETA:
 1:58 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0245 - accuracy: 0.99 - ETA:
 1:56 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0232 - accuracy: 0.99 - ETA:
 1:51 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0257 - accuracy: 0.99 - ETA:
 1:48 - loss: 0.0253 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0249 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0245 - accuracy: 0.99 - ETA:
 1:44 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0269 - accuracy: 0.99 - ETA:
 1:44 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0262 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0258 - accuracy: 0.99 - ETA:
 1:45 - loss: 0.0255 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0248 - accuracy: 0.99 - ETA:
 1:43 - loss: 0.0245 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0239 - accuracy: 0.99 - ETA:
 1:41 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0230 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0221 - accuracy: 0.99 - ETA:
 1:53 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0213 - accuracy: 0.99 - ETA:
 1:54 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0206 - accuracy: 0.99 - ETA:
 1:53 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0199 - accuracy: 0.99 - ETA:
 1:51 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0192 - accuracy: 0.99 - ETA:
 1:49 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0186 - accuracy: 0.99 - ETA:
 1:47 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0180 - accuracy: 0.99 - ETA:
 1:45 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0175 - accuracy: 0.99 - ETA:
 1:42 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0172 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0170 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0167 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0190 - accuracy: 0.99 - ETA:
 1:38 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0185 - accuracy: 0.99 - ETA:
 1:38 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0180 - accuracy: 0.99 - ETA:
 1:38 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0175 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0171 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0170 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0167 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0163 - accuracy: 0.99 - ETA:
 1:38 - loss: 0.0162 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0160 - accuracy: 0.99 - ETA:
 1:36 - loss: 0.0159 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0156 - accuracy: 0.99 - ETA:
 1:34 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0154 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0170 - accuracy: 0.99 - ETA:
 1:33 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0167 - accuracy: 0.99 - ETA:
 1:31 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0180 - accuracy: 0.99 - ETA:
 1:30 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0193 - accuracy: 0.99 - ETA:
 1:28 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0204 - accuracy: 0.99 - ETA:
 1:27 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0202 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0222 - accuracy: 0.99 - ETA:
 1:23 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0220 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0218 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0216 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0213 - accuracy: 0.99 - ETA:
 1:14 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0210 - accuracy: 0.99 - ETA:
 1:13 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0207 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0204 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0201 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0210 - accuracy: 0.99 - ETA:
 1:10 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0207 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0204 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0213 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0210 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0218 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0215 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0213 - accuracy: 0.99 - ETA: 59s - loss: 0.0222 - accuracy: 0.9971 - ETA:
 59s - loss: 0.0221 - accuracy: 0.9971266/322 [=======================>......] - ETA: 58s - loss: 0.0220 - accuracy: 0.997 - ETA: 58s
 - loss: 0.0219 - accuracy: 0.997 - ETA: 57s - loss: 0.0218 - accuracy: 0.997 - ETA: 57s - loss: 0.0218 - accuracy: 0.997 - ETA: 56s -
loss: 0.0217 - accuracy: 0.997 - ETA: 56s - loss: 0.0216 - accuracy: 0.997 - ETA: 55s - loss: 0.0215 - accuracy: 0.997 - ETA: 55s - lo
ss: 0.0214 - accuracy: 0.997 - ETA: 54s - loss: 0.0213 - accuracy: 0.997 - ETA: 54s - loss: 0.0213 - accuracy: 0.997 - ETA: 53s - los
s: 0.0212 - accuracy: 0.997 - ETA: 52s - loss: 0.0211 - accuracy: 0.997 - ETA: 52s - loss: 0.0210 - accuracy: 0.997 - ETA: 51s - loss:
0.0219 - accuracy: 0.997 - ETA: 51s - loss: 0.0218 - accuracy: 0.997 - ETA: 50s - loss: 0.0217 - accuracy: 0.997 - ETA: 50s - loss: 0.
0216 - accuracy: 0.997 - ETA: 49s - loss: 0.0216 - accuracy: 0.997 - ETA: 49s - loss: 0.0215 - accuracy: 0.997 - ETA: 48s - loss: 0.02
14 - accuracy: 0.997 - ETA: 47s - loss: 0.0213 - accuracy: 0.997 - ETA: 47s - loss: 0.0213 - accuracy: 0.997 - ETA: 46s - loss: 0.0212
- accuracy: 0.997 - ETA: 46s - loss: 0.0211 - accuracy: 0.997 - ETA: 45s - loss: 0.0219 - accuracy: 0.997 - ETA: 45s - loss: 0.0218 -
 accuracy: 0.997 - ETA: 44s - loss: 0.0217 - accuracy: 0.997 - ETA: 44s - loss: 0.0216 - accuracy: 0.997 - ETA: 43s - loss: 0.0216 - a
ccuracy: 0.997 - ETA: 43s - loss: 0.0215 - accuracy: 0.997 - ETA: 42s - loss: 0.0214 - accuracy: 0.997 - ETA: 42s - loss: 0.0213 - acc
uracy: 0.997 - ETA: 41s - loss: 0.0212 - accuracy: 0.997 - ETA: 41s - loss: 0.0220 - accuracy: 0.997 - ETA: 40s - loss: 0.0219 - accur
acy: 0.997 - ETA: 40s - loss: 0.0218 - accuracy: 0.997 - ETA: 39s - loss: 0.0218 - accuracy: 0.997 - ETA: 39s - loss: 0.0217 - accurac
y: 0.997 - ETA: 39s - loss: 0.0216 - accuracy: 0.997 - ETA: 38s - loss: 0.0215 - accuracy: 0.997 - ETA: 38s - loss: 0.0215 - accuracy:
0.997 - ETA: 37s - loss: 0.0214 - accuracy: 0.997 - ETA: 37s - loss: 0.0213 - accuracy: 0.997 - ETA: 36s - loss: 0.0212 - accuracy: 0.
997 - ETA: 36s - loss: 0.0212 - accuracy: 0.997 - ETA: 35s - loss: 0.0211 - accuracy: 0.997 - ETA: 35s - loss: 0.0210 - accuracy: 0.99
7 - ETA: 35s - loss: 0.0209 - accuracy: 0.997 - ETA: 34s - loss: 0.0209 - accuracy: 0.997 - ETA: 34s - loss: 0.0208 - accuracy: 0.997
 - ETA: 34s - loss: 0.0207 - accuracy: 0.997 - ETA: 34s - loss: 0.0207 - accuracy: 0.997 - ETA: 33s - loss: 0.0206 - accuracy: 0.997 -
ETA: 33s - loss: 0.0205 - accuracy: 0.997 - ETA: 32s - loss: 0.0204 - accuracy: 0.997 - ETA: 32s - loss: 0.0204 - accuracy: 0.997 - ET
A: 32s - loss: 0.0203 - accuracy: 0.997 - ETA: 32s - loss: 0.0202 - accuracy: 0.997 - ETA: 31s - loss: 0.0202 - accuracy: 0.997 - ETA:
```

```
31s - loss: 0.0201 - accuracy: 0.997 - ETA: 31s - loss: 0.0200 - accuracy: 0.997 - ETA: 30s - loss: 0.0200 - accuracy: 0.997 - ETA: 30
s - loss: 0.0199 - accuracy: 0.997 - ETA: 30s - loss: 0.0198 - accuracy: 0.997 - ETA: 30s - loss: 0.0197 - accuracy: 0.997 - ETA: 29s
 - loss: 0.0197 - accuracy: 0.997 - ETA: 29s - loss: 0.0196 - accuracy: 0.997 - ETA: 29s - loss: 0.0195 - accuracy: 0.997 - ETA: 28s -
loss: 0.0195 - accuracy: 0.997 - ETA: 28s - loss: 0.0194 - accuracy: 0.997 - ETA: 27s - loss: 0.0193 - accuracy: 0.997 - ETA: 27s - lo
ss: 0.0193 - accuracy: 0.997 - ETA: 27s - loss: 0.0192 - accuracy: 0.997 - ETA: 27s - loss: 0.0192 - accuracy: 0.997 - ETA: 26s - los
s: 0.0191 - accuracy: 0.997 - ETA: 26s - loss: 0.0199 - accuracy: 0.997 - ETA: 25s - loss: 0.0198 - accuracy: 0.997 - ETA: 25s - loss:
0.0197 - accuracy: 0.997 - ETA: 25s - loss: 0.0197 - accuracy: 0.997 - ETA: 24s - loss: 0.0196 - accuracy: 0.9975WARNING:tensorflow:Me
thod (on_train_batch_end) is slow compared to the batch update (0.251071). Check your callbacks.
267/322 [=======================>......] - ETA: 24s - loss: 0.0196 - accuracy: 0.9975WARNING:tensorflow:Method (on_train_batch_end) is
slow compared to the batch update (0.251071). Check your callbacks.
268/322 [=======================>......] - ETA: 23s - loss: 0.0195 - accuracy: 0.9976WARNING:tensorflow:Method (on_train_batch_end) is
slow compared to the batch update (0.179530). Check your callbacks.
322/322 [==============================] - ETA: 23s - loss: 0.0203 - accuracy: 0.997 - ETA: 22s - loss: 0.0202 - accuracy: 0.997 - ET
A: 22s - loss: 0.0201 - accuracy: 0.997 - ETA: 21s - loss: 0.0201 - accuracy: 0.997 - ETA: 21s - loss: 0.0200 - accuracy: 0.997 - ETA:
20s - loss: 0.0200 - accuracy: 0.997 - ETA: 20s - loss: 0.0199 - accuracy: 0.997 - ETA: 19s - loss: 0.0198 - accuracy: 0.997 - ETA: 19
s - loss: 0.0198 - accuracy: 0.997 - ETA: 19s - loss: 0.0197 - accuracy: 0.997 - ETA: 18s - loss: 0.0197 - accuracy: 0.997 - ETA: 18s
 - loss: 0.0196 - accuracy: 0.997 - ETA: 17s - loss: 0.0196 - accuracy: 0.997 - ETA: 17s - loss: 0.0201 - accuracy: 0.997 - ETA: 16s -
loss: 0.0201 - accuracy: 0.997 - ETA: 16s - loss: 0.0200 - accuracy: 0.997 - ETA: 15s - loss: 0.0200 - accuracy: 0.997 - ETA: 15s - lo
ss: 0.0199 - accuracy: 0.997 - ETA: 15s - loss: 0.0199 - accuracy: 0.997 - ETA: 14s - loss: 0.0198 - accuracy: 0.997 - ETA: 14s - los
s: 0.0198 - accuracy: 0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss:
0.0196 - accuracy: 0.997 - ETA: 12s - loss: 0.0196 - accuracy: 0.997 - ETA: 12s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - loss: 0.
0195 - accuracy: 0.997 - ETA: 11s - loss: 0.0194 - accuracy: 0.997 - ETA: 11s - loss: 0.0194 - accuracy: 0.997 - ETA: 10s - loss: 0.01
93 - accuracy: 0.997 - ETA: 10s - loss: 0.0205 - accuracy: 0.997 - ETA: 10s - loss: 0.0205 - accuracy: 0.997 - ETA: 9s - loss: 0.0204
 - accuracy: 0.997 - ETA: 9s - loss: 0.0204 - accuracy: 0.99 - ETA: 8s - loss: 0.0203 - accuracy: 0.99 - ETA: 8s - loss: 0.0203 - accu
racy: 0.99 - ETA: 7s - loss: 0.0202 - accuracy: 0.99 - ETA: 7s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0201 - accuracy: 0.
99 - ETA: 6s - loss: 0.0201 - accuracy: 0.99 - ETA: 6s - loss: 0.0201 - accuracy: 0.99 - ETA: 5s - loss: 0.0200 - accuracy: 0.99 - ET
A: 5s - loss: 0.0200 - accuracy: 0.99 - ETA: 4s - loss: 0.0199 - accuracy: 0.99 - ETA: 4s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s -
 loss: 0.0198 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accuracy: 0.99 - ETA: 2s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss:
 0.0197 - accuracy: 0.99 - ETA: 1s - loss: 0.0196 - accuracy: 0.99 - ETA: 1s - loss: 0.0196 - accuracy: 0.99 - ETA: 0s - loss: 0.0195
 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - 168s 520ms/step - loss: 0.0201
- accuracy: 0.9975 - val_loss: 0.0233 - val_accuracy: 0.9968
Epoch 15/50
  7/322 [..............................] - ETA: 0s - loss: 0.0041 - accuracy: 1.00 - ETA: 58s - loss: 0.0043 - accuracy: 1.000 - ETA:
 1:46 - loss: 0.0044 - accuracy: 1.00 - ETA: 2:14 - loss: 0.0045 - accuracy: 1.00 - ETA: 2:25 - loss: 0.0045 - accuracy: 1.00 - ETA:
 2:32 - loss: 0.0045 - accuracy: 1.00 - ETA: 2:24 - loss: 0.0045 - accuracy: 1.0000WARNING:tensorflow:Method (on_train_batch_end) is s
low compared to the batch update (0.174020). Check your callbacks.
  8/322 [..............................] - ETA: 2:13 - loss: 0.0045 - accuracy: 1.0000WARNING:tensorflow:Method (on_train_batch_end) i
s slow compared to the batch update (0.151026). Check your callbacks.
 82/322 [======>.......................] - ETA: 2:07 - loss: 0.0044 - accuracy: 1.00 - ETA: 1:59 - loss: 0.0239 - accuracy: 0.99 - ET
A: 2:01 - loss: 0.0221 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0206 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0194 - accuracy: 0.99 - ETA:
2:04 - loss: 0.0183 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0174 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0166 - accuracy: 0.99 - ETA: 2:
21 - loss: 0.0266 - accuracy: 0.99 - ETA: 2:19 - loss: 0.0254 - accuracy: 0.99 - ETA: 2:22 - loss: 0.0243 - accuracy: 0.99 - ETA: 2:29
- loss: 0.0234 - accuracy: 0.99 - ETA: 2:40 - loss: 0.0225 - accuracy: 0.99 - ETA: 2:43 - loss: 0.0217 - accuracy: 0.99 - ETA: 2:48 -
 loss: 0.0210 - accuracy: 0.99 - ETA: 2:51 - loss: 0.0203 - accuracy: 0.99 - ETA: 2:52 - loss: 0.0197 - accuracy: 0.99 - ETA: 2:51 - l
oss: 0.0191 - accuracy: 0.99 - ETA: 2:58 - loss: 0.0186 - accuracy: 0.99 - ETA: 3:01 - loss: 0.0181 - accuracy: 0.99 - ETA: 3:02 - los
s: 0.0176 - accuracy: 0.99 - ETA: 3:01 - loss: 0.0172 - accuracy: 0.99 - ETA: 3:02 - loss: 0.0168 - accuracy: 0.99 - ETA: 3:03 - loss:
0.0164 - accuracy: 0.99 - ETA: 3:02 - loss: 0.0160 - accuracy: 0.99 - ETA: 3:00 - loss: 0.0157 - accuracy: 0.99 - ETA: 3:06 - loss: 0.
0153 - accuracy: 0.99 - ETA: 3:06 - loss: 0.0150 - accuracy: 0.99 - ETA: 3:05 - loss: 0.0147 - accuracy: 0.99 - ETA: 3:09 - loss: 0.01
44 - accuracy: 0.99 - ETA: 3:08 - loss: 0.0141 - accuracy: 0.99 - ETA: 3:08 - loss: 0.0138 - accuracy: 0.99 - ETA: 3:11 - loss: 0.0136
- accuracy: 0.99 - ETA: 3:13 - loss: 0.0133 - accuracy: 0.99 - ETA: 3:18 - loss: 0.0131 - accuracy: 0.99 - ETA: 3:21 - loss: 0.0128 -
 accuracy: 0.99 - ETA: 3:22 - loss: 0.0126 - accuracy: 0.99 - ETA: 3:23 - loss: 0.0167 - accuracy: 0.99 - ETA: 3:24 - loss: 0.0164 - a
ccuracy: 0.99 - ETA: 3:24 - loss: 0.0161 - accuracy: 0.99 - ETA: 3:24 - loss: 0.0159 - accuracy: 0.99 - ETA: 3:26 - loss: 0.0156 - acc
uracy: 0.99 - ETA: 3:31 - loss: 0.0154 - accuracy: 0.99 - ETA: 3:33 - loss: 0.0152 - accuracy: 0.99 - ETA: 3:37 - loss: 0.0149 - accur
acy: 0.99 - ETA: 3:37 - loss: 0.0147 - accuracy: 0.99 - ETA: 3:37 - loss: 0.0145 - accuracy: 0.99 - ETA: 3:36 - loss: 0.0180 - accurac
y: 0.99 - ETA: 3:34 - loss: 0.0177 - accuracy: 0.99 - ETA: 3:34 - loss: 0.0175 - accuracy: 0.99 - ETA: 3:37 - loss: 0.0173 - accuracy:
0.99 - ETA: 3:38 - loss: 0.0170 - accuracy: 0.99 - ETA: 3:38 - loss: 0.0168 - accuracy: 0.99 - ETA: 3:36 - loss: 0.0166 - accuracy: 0.
99 - ETA: 3:37 - loss: 0.0164 - accuracy: 0.99 - ETA: 3:37 - loss: 0.0162 - accuracy: 0.99 - ETA: 3:38 - loss: 0.0160 - accuracy: 0.99
- ETA: 3:36 - loss: 0.0158 - accuracy: 0.99 - ETA: 3:36 - loss: 0.0185 - accuracy: 0.99 - ETA: 3:36 - loss: 0.0183 - accuracy: 0.99 -
 ETA: 3:35 - loss: 0.0181 - accuracy: 0.99 - ETA: 3:34 - loss: 0.0179 - accuracy: 0.99 - ETA: 3:33 - loss: 0.0203 - accuracy: 0.99 - E
TA: 3:33 - loss: 0.0201 - accuracy: 0.99 - ETA: 3:32 - loss: 0.0199 - accuracy: 0.99 - ETA: 3:30 - loss: 0.0197 - accuracy: 0.99 - ET
A: 3:29 - loss: 0.0195 - accuracy: 0.99 - ETA: 3:28 - loss: 0.0193 - accuracy: 0.99 - ETA: 3:27 - loss: 0.0192 - accuracy: 0.99 - ETA:
3:26 - loss: 0.0190 - accuracy: 0.99 - ETA: 3:25 - loss: 0.0188 - accuracy: 0.99 - ETA: 3:24 - loss: 0.0187 - accuracy: 0.99 - ETA: 3:
23 - loss: 0.0185 - accuracy: 0.99 - ETA: 3:20 - loss: 0.0183 - accuracy: 0.9977WARNING:tensorflow:Method (on_train_batch_end) is slow
compared to the batch update (0.169541). Check your callbacks.
268/322 [=======================>......] - ETA: 3:18 - loss: 0.0182 - accuracy: 0.99 - ETA: 3:16 - loss: 0.0180 - accuracy: 0.99 - ET
A: 3:13 - loss: 0.0179 - accuracy: 0.99 - ETA: 3:12 - loss: 0.0177 - accuracy: 0.99 - ETA: 3:10 - loss: 0.0176 - accuracy: 0.99 - ETA:
3:09 - loss: 0.0174 - accuracy: 0.99 - ETA: 3:18 - loss: 0.0173 - accuracy: 0.99 - ETA: 3:17 - loss: 0.0171 - accuracy: 0.99 - ETA: 3:
15 - loss: 0.0170 - accuracy: 0.99 - ETA: 3:14 - loss: 0.0168 - accuracy: 0.99 - ETA: 3:12 - loss: 0.0167 - accuracy: 0.99 - ETA: 3:10
- loss: 0.0166 - accuracy: 0.99 - ETA: 3:09 - loss: 0.0164 - accuracy: 0.99 - ETA: 3:07 - loss: 0.0163 - accuracy: 0.99 - ETA: 3:04 -
 loss: 0.0161 - accuracy: 0.99 - ETA: 3:02 - loss: 0.0181 - accuracy: 0.99 - ETA: 3:00 - loss: 0.0180 - accuracy: 0.99 - ETA: 2:59 - l
oss: 0.0178 - accuracy: 0.99 - ETA: 2:57 - loss: 0.0177 - accuracy: 0.99 - ETA: 2:55 - loss: 0.0175 - accuracy: 0.99 - ETA: 2:53 - los
s: 0.0174 - accuracy: 0.99 - ETA: 2:52 - loss: 0.0173 - accuracy: 0.99 - ETA: 2:50 - loss: 0.0171 - accuracy: 0.99 - ETA: 2:48 - loss:
0.0170 - accuracy: 0.99 - ETA: 2:46 - loss: 0.0169 - accuracy: 0.99 - ETA: 2:44 - loss: 0.0168 - accuracy: 0.99 - ETA: 2:43 - loss: 0.
0166 - accuracy: 0.99 - ETA: 2:41 - loss: 0.0165 - accuracy: 0.99 - ETA: 2:39 - loss: 0.0164 - accuracy: 0.99 - ETA: 2:37 - loss: 0.01
63 - accuracy: 0.99 - ETA: 2:36 - loss: 0.0162 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0160 - accuracy: 0.99 - ETA: 2:33 - loss: 0.0159
- accuracy: 0.99 - ETA: 2:31 - loss: 0.0158 - accuracy: 0.99 - ETA: 2:29 - loss: 0.0175 - accuracy: 0.99 - ETA: 2:28 - loss: 0.0174 -
 accuracy: 0.99 - ETA: 2:26 - loss: 0.0173 - accuracy: 0.99 - ETA: 2:25 - loss: 0.0172 - accuracy: 0.99 - ETA: 2:25 - loss: 0.0171 - a
ccuracy: 0.99 - ETA: 2:24 - loss: 0.0169 - accuracy: 0.99 - ETA: 2:22 - loss: 0.0168 - accuracy: 0.99 - ETA: 2:21 - loss: 0.0167 - acc
uracy: 0.99 - ETA: 2:20 - loss: 0.0166 - accuracy: 0.99 - ETA: 2:19 - loss: 0.0180 - accuracy: 0.99 - ETA: 2:18 - loss: 0.0179 - accur
acy: 0.99 - ETA: 2:18 - loss: 0.0178 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0177 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0176 - accurac
y: 0.99 - ETA: 2:15 - loss: 0.0175 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0200 - accuracy: 0.99 - ETA: 2:13 - loss: 0.0199 - accuracy:
0.99 - ETA: 2:12 - loss: 0.0198 - accuracy: 0.99 - ETA: 2:11 - loss: 0.0197 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0196 - accuracy: 0.
99 - ETA: 2:10 - loss: 0.0195 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0194 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0193 - accuracy: 0.99
- ETA: 2:08 - loss: 0.0192 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0192 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0191 - accuracy: 0.99 -
 ETA: 2:04 - loss: 0.0190 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0189 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0188 - accuracy: 0.99 - E
TA: 2:01 - loss: 0.0187 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0198 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0197 - accuracy: 0.99 - ET
A: 1:59 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0194 - accuracy: 0.99 - ETA:
1:57 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:
54 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:51
- loss: 0.0200 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:48 -
 loss: 0.0197 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:47 - l
```

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oss: 0.0194 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:44 - los
s: 0.0192 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:41 - loss:
0.0189 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:38 - loss: 0.
0186 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:36 - loss: 0.01
95 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0192
- accuracy: 0.99 - ETA: 1:32 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0190 -
 accuracy: 0.99 - ETA: 1:30 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0187 - a
ccuracy: 0.99 - ETA: 1:27 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0185 - acc
uracy: 0.99 - ETA: 1:24 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0182 - accur
acy: 0.99 - ETA: 1:22 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0180 - accurac
y: 0.99 - ETA: 1:19 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0178 - accuracy:
0.99 - ETA: 1:17 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0175 - accuracy: 0.
99 - ETA: 1:14 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0173 - accuracy: 0.99
- ETA: 1:12 - loss: 0.0172 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0172 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0171 - accuracy: 0.99 -
 ETA: 1:09 - loss: 0.0170 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0170 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0169 - accuracy: 0.99 - E
TA: 1:07 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0167 - accuracy: 0.99 - ET
A: 1:04 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0165 - accuracy: 0.99 - ETA:
1:02 - loss: 0.0164 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0164 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0163 - accuracy: 0.99 - ETA: 1:
00 - loss: 0.0162 - accuracy: 0.99 - ETA: 59s - loss: 0.0162 - accuracy: 0.9980 - ETA: 58s - loss: 0.0161 - accuracy: 0.998 - ETA: 58s
- loss: 0.0161 - accuracy: 0.998 - ETA: 57s - loss: 0.0160 - accuracy: 0.998 - ETA: 56s - loss: 0.0159 - accuracy: 0.998 - ETA: 56s -
 loss: 0.0159 - accuracy: 0.998 - ETA: 55s - loss: 0.0158 - accuracy: 0.998 - ETA: 54s - loss: 0.0157 - accuracy: 0.998 - ETA: 54s - l
oss: 0.0157 - accuracy: 0.998 - ETA: 53s - loss: 0.0156 - accuracy: 0.998 - ETA: 52s - loss: 0.0166 - accuracy: 0.998 - ETA: 51s - los
s: 0.0165 - accuracy: 0.998 - ETA: 51s - loss: 0.0165 - accuracy: 0.998 - ETA: 50s - loss: 0.0164 - accuracy: 0.998 - ETA: 50s - loss:
0.0164 - accuracy: 0.998 - ETA: 49s - loss: 0.0163 - accuracy: 0.998 - ETA: 48s - loss: 0.0163 - accuracy: 0.998 - ETA: 48s - loss: 0.
0162 - accuracy: 0.998 - ETA: 47s - loss: 0.0161 - accuracy: 0.998 - ETA: 46s - loss: 0.0161 - accuracy: 0.998 - ETA: 46s - loss: 0.01
60 - accuracy: 0.998 - ETA: 45s - loss: 0.0160 - accuracy: 0.998 - ETA: 45s - loss: 0.0159 - accuracy: 0.998 - ETA: 44s - loss: 0.0168
- accuracy: 0.997 - ETA: 43s - loss: 0.0167 - accuracy: 0.998 - ETA: 43s - loss: 0.0167 - accuracy: 0.998 - ETA: 42s - loss: 0.0166 -
 accuracy: 0.998 - ETA: 42s - loss: 0.0165 - accuracy: 0.998 - ETA: 41s - loss: 0.0165 - accuracy: 0.998 - ETA: 41s - loss: 0.0164 - a
ccuracy: 0.998 - ETA: 41s - loss: 0.0164 - accuracy: 0.998 - ETA: 40s - loss: 0.0163 - accuracy: 0.998 - ETA: 40s - loss: 0.0163 - acc
uracy: 0.998 - ETA: 39s - loss: 0.0162 - accuracy: 0.998 - ETA: 39s - loss: 0.0162 - accuracy: 0.998 - ETA: 38s - loss: 0.0161 - accur
acy: 0.998 - ETA: 38s - loss: 0.0161 - accuracy: 0.998 - ETA: 37s - loss: 0.0160 - accuracy: 0.998 - ETA: 37s - loss: 0.0160 - accurac
y: 0.998 - ETA: 36s - loss: 0.0159 - accuracy: 0.998 - ETA: 35s - loss: 0.0159 - accuracy: 0.998 - ETA: 35s - loss: 0.0158 - accuracy:
0.998 - ETA: 34s - loss: 0.0158 - accuracy: 0.998 - ETA: 33s - loss: 0.0158 - accuracy: 0.998 - ETA: 33s - loss: 0.0157 - accuracy: 0.
998 - ETA: 32s - loss: 0.0163 - accuracy: 0.998 - ETA: 32s - loss: 0.0163 - accuracy: 0.998 - ETA: 31s - loss: 0.0162 - accuracy: 0.99
8 - ETA: 30s - loss: 0.0162 - accuracy: 0.9980297/322 [==========================>...] - ETA: 30s - loss: 0.0161 - accuracy: 0.998 - E
TA: 29s - loss: 0.0161 - accuracy: 0.998 - ETA: 29s - loss: 0.0161 - accuracy: 0.998 - ETA: 28s - loss: 0.0160 - accuracy: 0.998 - ET
A: 27s - loss: 0.0160 - accuracy: 0.998 - ETA: 27s - loss: 0.0159 - accuracy: 0.998 - ETA: 26s - loss: 0.0159 - accuracy: 0.998 - ETA:
26s - loss: 0.0158 - accuracy: 0.998 - ETA: 25s - loss: 0.0158 - accuracy: 0.998 - ETA: 24s - loss: 0.0157 - accuracy: 0.998 - ETA: 24
s - loss: 0.0157 - accuracy: 0.998 - ETA: 23s - loss: 0.0156 - accuracy: 0.998 - ETA: 23s - loss: 0.0156 - accuracy: 0.998 - ETA: 22s
 - loss: 0.0156 - accuracy: 0.998 - ETA: 21s - loss: 0.0162 - accuracy: 0.998 - ETA: 21s - loss: 0.0162 - accuracy: 0.998 - ETA: 20s -
loss: 0.0161 - accuracy: 0.998 - ETA: 20s - loss: 0.0161 - accuracy: 0.998 - ETA: 19s - loss: 0.0161 - accuracy: 0.998 - ETA: 19s - lo
ss: 0.0160 - accuracy: 0.998 - ETA: 18s - loss: 0.0160 - accuracy: 0.998 - ETA: 18s - loss: 0.0159 - accuracy: 0.998 - ETA: 17s - los
s: 0.0159 - accuracy: 0.998 - ETA: 17s - loss: 0.0158 - accuracy: 0.998 - ETA: 16s - loss: 0.0158 - accuracy: 0.998 - ETA: 15s - loss:
0.0164 - accuracy: 0.998 - ETA: 15s - loss: 0.0163 - accuracy: 0.998 - ETA: 14s - loss: 0.0163 - accuracy: 0.998 - ETA: 14s - loss: 0.
0163 - accuracy: 0.9980WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.315580). Check your call
backs.
322/322 [==============================] - ETA: 13s - loss: 0.0162 - accuracy: 0.998 - ETA: 13s - loss: 0.0167 - accuracy: 0.997 - ET
A: 12s - loss: 0.0173 - accuracy: 0.997 - ETA: 12s - loss: 0.0173 - accuracy: 0.997 - ETA: 11s - loss: 0.0172 - accuracy: 0.997 - ETA:
11s - loss: 0.0172 - accuracy: 0.997 - ETA: 10s - loss: 0.0172 - accuracy: 0.997 - ETA: 9s - loss: 0.0171 - accuracy: 0.997 - ETA: 9s
 - loss: 0.0181 - accuracy: 0.99 - ETA: 8s - loss: 0.0181 - accuracy: 0.99 - ETA: 8s - loss: 0.0181 - accuracy: 0.99 - ETA: 7s - loss:
0.0180 - accuracy: 0.99 - ETA: 6s - loss: 0.0180 - accuracy: 0.99 - ETA: 6s - loss: 0.0180 - accuracy: 0.99 - ETA: 5s - loss: 0.0180 -
accuracy: 0.99 - ETA: 5s - loss: 0.0180 - accuracy: 0.99 - ETA: 4s - loss: 0.0179 - accuracy: 0.99 - ETA: 4s - loss: 0.0179 - accurac
y: 0.99 - ETA: 3s - loss: 0.0179 - accuracy: 0.99 - ETA: 2s - loss: 0.0183 - accuracy: 0.99 - ETA: 2s - loss: 0.0183 - accuracy: 0.99
 - ETA: 1s - loss: 0.0183 - accuracy: 0.99 - ETA: 1s - loss: 0.0188 - accuracy: 0.99 - ETA: 0s - loss: 0.0187 - accuracy: 0.99 - ETA:
 0s - loss: 0.0192 - accuracy: 0.99 - 202s 628ms/step - loss: 0.0192 - accuracy: 0.9975 - val_loss: 0.0265 - val_accuracy: 0.9968
Epoch 16/50
186/322 [================>.............] - ETA: 0s - loss: 0.0118 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0132 - accuracy: 1.00 - ETA:
 1:29 - loss: 0.0145 - accuracy: 1.00 - ETA: 1:57 - loss: 0.0154 - accuracy: 1.00 - ETA: 2:05 - loss: 0.0428 - accuracy: 0.99 - ETA:
 2:04 - loss: 0.0390 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0362 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0341 - accuracy: 0.99 - ETA:
 2:05 - loss: 0.0323 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0307 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0292 - accuracy: 0.99 - ETA:
 2:01 - loss: 0.0278 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0253 - accuracy: 0.99 - ETA:
 1:54 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0222 - accuracy: 0.99 - ETA:
 1:51 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0294 - accuracy: 0.99 - ETA:
 1:45 - loss: 0.0283 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0264 - accuracy: 0.99 - ETA:
 1:45 - loss: 0.0255 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0240 - accuracy: 0.99 - ETA:
 1:47 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0220 - accuracy: 0.99 - ETA:
 1:43 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0204 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0189 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0177 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0170 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0167 - accuracy: 0.99 - ETA:
 1:36 - loss: 0.0163 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0157 - accuracy: 0.99 - ETA:
 1:34 - loss: 0.0154 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0152 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0149 - accuracy: 0.99 - ETA:
 1:33 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0142 - accuracy: 0.99 - ETA:
 1:31 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0137 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0179 - accuracy: 0.99 - ETA:
 1:30 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0171 - accuracy: 0.99 - ETA:
 1:29 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0164 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0162 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0159 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0157 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0183 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0177 - accuracy: 0.99 - ETA:
 1:42 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0200 - accuracy: 0.99 - ETA:
 1:47 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0194 - accuracy: 0.99 - ETA:
 1:55 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0211 - accuracy: 0.99 - ETA:
 1:57 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0225 - accuracy: 0.99 - ETA:
 1:57 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0221 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0219 - accuracy: 0.99 - ETA:
 2:05 - loss: 0.0218 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0216 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0215 - accuracy: 0.99 - ETA:
 2:09 - loss: 0.0213 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0211 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0228 - accuracy: 0.99 - ETA:
 2:07 - loss: 0.0227 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0225 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0241 - accuracy: 0.99 - ETA:
 2:05 - loss: 0.0239 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0237 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0236 - accuracy: 0.99 - ETA:
 2:04 - loss: 0.0234 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0233 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0231 - accuracy: 0.99 - ETA:
 2:02 - loss: 0.0229 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0228 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0226 - accuracy: 0.99 - ETA:
 2:00 - loss: 0.0225 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0222 - accuracy: 0.99 - ETA:
```

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 2:00 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0217 - accuracy: 0.99 - ETA:
 1:58 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0212 - accuracy: 0.99 - ETA:
 1:57 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0224 - accuracy: 0.99 - ETA:
 1:57 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0219 - accuracy: 0.99 - ETA:
 1:57 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0215 - accuracy: 0.99 - ETA:
 1:55 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0211 - accuracy: 0.99 - ETA:
 1:53 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0206 - accuracy: 0.99 - ETA:
 1:51 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0202 - accuracy: 0.99 - ETA:
 1:49 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0198 - accuracy: 0.99 - ETA:
 1:48 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0195 - accuracy: 0.99 - ETA:
 1:47 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0191 - accuracy: 0.99 - ETA:
 1:45 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0188 - accuracy: 0.99 - ETA:
 1:44 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0199 - accuracy: 0.99 - ETA:
 1:42 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0195 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0192 - accuracy: 0.99 - ETA:
 1:38 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0189 - accuracy: 0.99 - ETA:
 1:36 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0199 - accuracy: 0.99 - ETA:
 1:33 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0196 - accuracy: 0.99 - ETA:
 1:30 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0193 - accuracy: 0.99 - ETA:
 1:27 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0190 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0187 - accuracy: 0.99 - ETA:
 1:22 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0196 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0204 - accuracy: 0.99 - ETA:
 1:17 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0212 - accuracy: 0.99 - ETA:
 1:15 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0210 - accuracy: 0.99 - ETA:
 1:13 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0207 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0205 - accuracy: 0.99 - ETA:
 1:09 - loss: 0.0205 - accuracy: 0.9975322/322 [==============================] - ETA: 1:08 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:0
7 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:05
 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:03 -
loss: 0.0208 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:01 - lo
ss: 0.0205 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:00 - los
s: 0.0203 - accuracy: 0.99 - ETA: 59s - loss: 0.0202 - accuracy: 0.9975 - ETA: 58s - loss: 0.0202 - accuracy: 0.997 - ETA: 58s - loss:
0.0201 - accuracy: 0.997 - ETA: 57s - loss: 0.0200 - accuracy: 0.997 - ETA: 57s - loss: 0.0199 - accuracy: 0.997 - ETA: 56s - loss: 0.
0198 - accuracy: 0.997 - ETA: 55s - loss: 0.0198 - accuracy: 0.997 - ETA: 55s - loss: 0.0197 - accuracy: 0.997 - ETA: 54s - loss: 0.01
96 - accuracy: 0.997 - ETA: 54s - loss: 0.0195 - accuracy: 0.997 - ETA: 53s - loss: 0.0195 - accuracy: 0.997 - ETA: 53s - loss: 0.0194
- accuracy: 0.997 - ETA: 52s - loss: 0.0202 - accuracy: 0.997 - ETA: 52s - loss: 0.0202 - accuracy: 0.997 - ETA: 51s - loss: 0.0201 -
 accuracy: 0.997 - ETA: 51s - loss: 0.0200 - accuracy: 0.997 - ETA: 50s - loss: 0.0199 - accuracy: 0.997 - ETA: 50s - loss: 0.0199 - a
ccuracy: 0.997 - ETA: 49s - loss: 0.0198 - accuracy: 0.997 - ETA: 49s - loss: 0.0197 - accuracy: 0.997 - ETA: 48s - loss: 0.0196 - acc
uracy: 0.997 - ETA: 48s - loss: 0.0196 - accuracy: 0.997 - ETA: 47s - loss: 0.0195 - accuracy: 0.997 - ETA: 47s - loss: 0.0203 - accur
acy: 0.997 - ETA: 46s - loss: 0.0211 - accuracy: 0.997 - ETA: 45s - loss: 0.0210 - accuracy: 0.997 - ETA: 45s - loss: 0.0209 - accurac
y: 0.997 - ETA: 44s - loss: 0.0208 - accuracy: 0.997 - ETA: 44s - loss: 0.0208 - accuracy: 0.997 - ETA: 43s - loss: 0.0207 - accuracy:
0.997 - ETA: 42s - loss: 0.0206 - accuracy: 0.997 - ETA: 42s - loss: 0.0206 - accuracy: 0.997 - ETA: 41s - loss: 0.0205 - accuracy: 0.
997 - ETA: 41s - loss: 0.0204 - accuracy: 0.997 - ETA: 40s - loss: 0.0204 - accuracy: 0.997 - ETA: 40s - loss: 0.0203 - accuracy: 0.99
7 - ETA: 39s - loss: 0.0202 - accuracy: 0.997 - ETA: 39s - loss: 0.0202 - accuracy: 0.997 - ETA: 38s - loss: 0.0201 - accuracy: 0.997
 - ETA: 38s - loss: 0.0201 - accuracy: 0.997 - ETA: 37s - loss: 0.0200 - accuracy: 0.997 - ETA: 37s - loss: 0.0199 - accuracy: 0.997 -
ETA: 36s - loss: 0.0199 - accuracy: 0.997 - ETA: 35s - loss: 0.0198 - accuracy: 0.997 - ETA: 35s - loss: 0.0204 - accuracy: 0.997 - ET
A: 34s - loss: 0.0204 - accuracy: 0.997 - ETA: 34s - loss: 0.0203 - accuracy: 0.997 - ETA: 33s - loss: 0.0203 - accuracy: 0.997 - ETA:
33s - loss: 0.0202 - accuracy: 0.997 - ETA: 32s - loss: 0.0201 - accuracy: 0.997 - ETA: 32s - loss: 0.0201 - accuracy: 0.997 - ETA: 31
s - loss: 0.0200 - accuracy: 0.997 - ETA: 31s - loss: 0.0199 - accuracy: 0.997 - ETA: 30s - loss: 0.0199 - accuracy: 0.997 - ETA: 30s
 - loss: 0.0198 - accuracy: 0.997 - ETA: 29s - loss: 0.0198 - accuracy: 0.997 - ETA: 29s - loss: 0.0197 - accuracy: 0.997 - ETA: 28s -
loss: 0.0196 - accuracy: 0.997 - ETA: 28s - loss: 0.0196 - accuracy: 0.997 - ETA: 28s - loss: 0.0195 - accuracy: 0.997 - ETA: 27s - lo
ss: 0.0194 - accuracy: 0.997 - ETA: 27s - loss: 0.0194 - accuracy: 0.997 - ETA: 26s - loss: 0.0193 - accuracy: 0.997 - ETA: 26s - los
s: 0.0193 - accuracy: 0.997 - ETA: 25s - loss: 0.0192 - accuracy: 0.997 - ETA: 25s - loss: 0.0191 - accuracy: 0.997 - ETA: 24s - loss:
0.0191 - accuracy: 0.997 - ETA: 24s - loss: 0.0190 - accuracy: 0.997 - ETA: 23s - loss: 0.0190 - accuracy: 0.997 - ETA: 23s - loss: 0.
0189 - accuracy: 0.997 - ETA: 22s - loss: 0.0188 - accuracy: 0.997 - ETA: 22s - loss: 0.0188 - accuracy: 0.997 - ETA: 21s - loss: 0.01
87 - accuracy: 0.997 - ETA: 21s - loss: 0.0194 - accuracy: 0.997 - ETA: 20s - loss: 0.0194 - accuracy: 0.997 - ETA: 20s - loss: 0.0193
- accuracy: 0.997 - ETA: 19s - loss: 0.0193 - accuracy: 0.997 - ETA: 19s - loss: 0.0192 - accuracy: 0.997 - ETA: 18s - loss: 0.0191 -
 accuracy: 0.997 - ETA: 18s - loss: 0.0191 - accuracy: 0.997 - ETA: 17s - loss: 0.0190 - accuracy: 0.997 - ETA: 17s - loss: 0.0190 - a
ccuracy: 0.997 - ETA: 16s - loss: 0.0189 - accuracy: 0.997 - ETA: 16s - loss: 0.0189 - accuracy: 0.997 - ETA: 16s - loss: 0.0188 - acc
uracy: 0.997 - ETA: 15s - loss: 0.0194 - accuracy: 0.997 - ETA: 15s - loss: 0.0194 - accuracy: 0.997 - ETA: 14s - loss: 0.0193 - accur
acy: 0.997 - ETA: 14s - loss: 0.0193 - accuracy: 0.997 - ETA: 13s - loss: 0.0192 - accuracy: 0.997 - ETA: 13s - loss: 0.0192 - accurac
y: 0.997 - ETA: 12s - loss: 0.0191 - accuracy: 0.997 - ETA: 12s - loss: 0.0191 - accuracy: 0.997 - ETA: 12s - loss: 0.0190 - accuracy:
0.997 - ETA: 11s - loss: 0.0190 - accuracy: 0.997 - ETA: 11s - loss: 0.0189 - accuracy: 0.997 - ETA: 10s - loss: 0.0189 - accuracy: 0.
997 - ETA: 10s - loss: 0.0188 - accuracy: 0.997 - ETA: 9s - loss: 0.0194 - accuracy: 0.997 - ETA: 9s - loss: 0.0193 - accuracy: 0.99 -
ETA: 8s - loss: 0.0193 - accuracy: 0.99 - ETA: 8s - loss: 0.0199 - accuracy: 0.99 - ETA: 8s - loss: 0.0198 - accuracy: 0.99 - ETA: 7s
 - loss: 0.0198 - accuracy: 0.99 - ETA: 7s - loss: 0.0203 - accuracy: 0.99 - ETA: 6s - loss: 0.0203 - accuracy: 0.99 - ETA: 6s - loss:
0.0202 - accuracy: 0.99 - ETA: 5s - loss: 0.0207 - accuracy: 0.99 - ETA: 5s - loss: 0.0207 - accuracy: 0.99 - ETA: 5s - loss: 0.0207 -
accuracy: 0.99 - ETA: 4s - loss: 0.0206 - accuracy: 0.99 - ETA: 4s - loss: 0.0206 - accuracy: 0.99 - ETA: 3s - loss: 0.0206 - accurac
y: 0.99 - ETA: 3s - loss: 0.0205 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99
 - ETA: 2s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0204 - accuracy: 0.99 - ETA:
 0s - loss: 0.0203 - accuracy: 0.99 - ETA: 0s - loss: 0.0203 - accuracy: 0.99 - ETA: 0s - loss: 0.0203 - accuracy: 0.99 - 138s 428ms/s
tep - loss: 0.0203 - accuracy: 0.9975 - val_loss: 0.0236 - val_accuracy: 0.9968
Epoch 17/50
186/322 [================>.............] - ETA: 0s - loss: 0.0060 - accuracy: 1.00 - ETA: 28s - loss: 0.0057 - accuracy: 1.000 - ETA:
 1:05 - loss: 0.0055 - accuracy: 1.00 - ETA: 1:14 - loss: 0.0053 - accuracy: 1.00 - ETA: 1:17 - loss: 0.0051 - accuracy: 1.00 - ETA:
 1:17 - loss: 0.0049 - accuracy: 1.00 - ETA: 1:13 - loss: 0.0048 - accuracy: 1.00 - ETA: 1:10 - loss: 0.0046 - accuracy: 1.00 - ETA:
 1:25 - loss: 0.0045 - accuracy: 1.00 - ETA: 1:25 - loss: 0.0044 - accuracy: 1.00 - ETA: 1:22 - loss: 0.0043 - accuracy: 1.00 - ETA:
 1:19 - loss: 0.0042 - accuracy: 1.00 - ETA: 1:16 - loss: 0.0041 - accuracy: 1.00 - ETA: 1:16 - loss: 0.0040 - accuracy: 1.00 - ETA:
 1:18 - loss: 0.0039 - accuracy: 1.00 - ETA: 1:17 - loss: 0.0039 - accuracy: 1.00 - ETA: 1:14 - loss: 0.0038 - accuracy: 1.00 - ETA:
 1:12 - loss: 0.0037 - accuracy: 1.00 - ETA: 1:11 - loss: 0.0037 - accuracy: 1.00 - ETA: 1:10 - loss: 0.0036 - accuracy: 1.00 - ETA:
 1:09 - loss: 0.0036 - accuracy: 1.00 - ETA: 1:12 - loss: 0.0035 - accuracy: 1.00 - ETA: 1:12 - loss: 0.0035 - accuracy: 1.00 - ETA:
 1:11 - loss: 0.0034 - accuracy: 1.00 - ETA: 1:10 - loss: 0.0034 - accuracy: 1.00 - ETA: 1:09 - loss: 0.0034 - accuracy: 1.00 - ETA:
 1:08 - loss: 0.0033 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0033 - accuracy: 1.00 - ETA: 1:09 - loss: 0.0109 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0106 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0104 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0101 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0099 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0097 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0095 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0094 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0199 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0188 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0179 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0213 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0204 - accuracy: 0.99 - ETA:
```

```
 1:02 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0195 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0188 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0182 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0180 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0175 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0197 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0192 - accuracy: 0.99 - ETA: 59s - loss: 0.0190 - accuracy: 0.9977 - ETA:
 59s - loss: 0.0188 - accuracy: 0.997 - ETA: 59s - loss: 0.0186 - accuracy: 0.997 - ETA: 59s - loss: 0.0184 - accuracy: 0.997 - ETA: 5
9s - loss: 0.0182 - accuracy: 0.997 - ETA: 59s - loss: 0.0180 - accuracy: 0.997 - ETA: 59s - loss: 0.0179 - accuracy: 0.997 - ETA: 58s
- loss: 0.0177 - accuracy: 0.997 - ETA: 58s - loss: 0.0175 - accuracy: 0.997 - ETA: 57s - loss: 0.0173 - accuracy: 0.998 - ETA: 58s -
 loss: 0.0171 - accuracy: 0.998 - ETA: 58s - loss: 0.0170 - accuracy: 0.998 - ETA: 58s - loss: 0.0168 - accuracy: 0.998 - ETA: 57s - l
oss: 0.0166 - accuracy: 0.998 - ETA: 57s - loss: 0.0165 - accuracy: 0.998 - ETA: 57s - loss: 0.0186 - accuracy: 0.997 - ETA: 57s - los
s: 0.0185 - accuracy: 0.997 - ETA: 57s - loss: 0.0183 - accuracy: 0.997 - ETA: 56s - loss: 0.0181 - accuracy: 0.997 - ETA: 56s - loss:
0.0179 - accuracy: 0.997 - ETA: 56s - loss: 0.0178 - accuracy: 0.997 - ETA: 55s - loss: 0.0176 - accuracy: 0.997 - ETA: 55s - loss: 0.
0175 - accuracy: 0.997 - ETA: 55s - loss: 0.0173 - accuracy: 0.997 - ETA: 54s - loss: 0.0172 - accuracy: 0.998 - ETA: 54s - loss: 0.01
70 - accuracy: 0.998 - ETA: 54s - loss: 0.0169 - accuracy: 0.998 - ETA: 54s - loss: 0.0167 - accuracy: 0.998 - ETA: 54s - loss: 0.0166
- accuracy: 0.998 - ETA: 53s - loss: 0.0165 - accuracy: 0.998 - ETA: 53s - loss: 0.0163 - accuracy: 0.998 - ETA: 53s - loss: 0.0162 -
 accuracy: 0.998 - ETA: 53s - loss: 0.0161 - accuracy: 0.998 - ETA: 53s - loss: 0.0159 - accuracy: 0.998 - ETA: 53s - loss: 0.0158 - a
ccuracy: 0.998 - ETA: 53s - loss: 0.0157 - accuracy: 0.998 - ETA: 53s - loss: 0.0156 - accuracy: 0.998 - ETA: 52s - loss: 0.0154 - acc
uracy: 0.998 - ETA: 52s - loss: 0.0153 - accuracy: 0.998 - ETA: 52s - loss: 0.0152 - accuracy: 0.998 - ETA: 52s - loss: 0.0151 - accur
acy: 0.998 - ETA: 52s - loss: 0.0150 - accuracy: 0.998 - ETA: 52s - loss: 0.0149 - accuracy: 0.998 - ETA: 52s - loss: 0.0147 - accurac
y: 0.998 - ETA: 51s - loss: 0.0146 - accuracy: 0.998 - ETA: 51s - loss: 0.0145 - accuracy: 0.998 - ETA: 51s - loss: 0.0144 - accuracy:
0.998 - ETA: 51s - loss: 0.0143 - accuracy: 0.998 - ETA: 50s - loss: 0.0162 - accuracy: 0.998 - ETA: 50s - loss: 0.0160 - accuracy: 0.
998 - ETA: 50s - loss: 0.0159 - accuracy: 0.998 - ETA: 50s - loss: 0.0158 - accuracy: 0.998 - ETA: 49s - loss: 0.0157 - accuracy: 0.99
8 - ETA: 49s - loss: 0.0156 - accuracy: 0.998 - ETA: 49s - loss: 0.0155 - accuracy: 0.998 - ETA: 49s - loss: 0.0154 - accuracy: 0.998
 - ETA: 49s - loss: 0.0153 - accuracy: 0.998 - ETA: 49s - loss: 0.0152 - accuracy: 0.998 - ETA: 48s - loss: 0.0151 - accuracy: 0.998 -
ETA: 48s - loss: 0.0150 - accuracy: 0.998 - ETA: 48s - loss: 0.0149 - accuracy: 0.998 - ETA: 47s - loss: 0.0148 - accuracy: 0.998 - ET
A: 47s - loss: 0.0147 - accuracy: 0.998 - ETA: 47s - loss: 0.0147 - accuracy: 0.998 - ETA: 46s - loss: 0.0146 - accuracy: 0.998 - ETA:
46s - loss: 0.0145 - accuracy: 0.998 - ETA: 46s - loss: 0.0144 - accuracy: 0.998 - ETA: 46s - loss: 0.0143 - accuracy: 0.998 - ETA: 46
s - loss: 0.0142 - accuracy: 0.998 - ETA: 46s - loss: 0.0156 - accuracy: 0.998 - ETA: 45s - loss: 0.0155 - accuracy: 0.998 - ETA: 45s
 - loss: 0.0184 - accuracy: 0.997 - ETA: 45s - loss: 0.0183 - accuracy: 0.997 - ETA: 45s - loss: 0.0182 - accuracy: 0.997 - ETA: 45s -
loss: 0.0181 - accuracy: 0.997 - ETA: 44s - loss: 0.0181 - accuracy: 0.997 - ETA: 44s - loss: 0.0191 - accuracy: 0.997 - ETA: 44s - lo
ss: 0.0190 - accuracy: 0.997 - ETA: 44s - loss: 0.0190 - accuracy: 0.997 - ETA: 44s - loss: 0.0189 - accuracy: 0.997 - ETA: 44s - los
s: 0.0188 - accuracy: 0.997 - ETA: 44s - loss: 0.0188 - accuracy: 0.997 - ETA: 43s - loss: 0.0197 - accuracy: 0.997 - ETA: 43s - loss:
0.0197 - accuracy: 0.997 - ETA: 43s - loss: 0.0196 - accuracy: 0.997 - ETA: 43s - loss: 0.0196 - accuracy: 0.997 - ETA: 42s - loss: 0.
0195 - accuracy: 0.997 - ETA: 42s - loss: 0.0194 - accuracy: 0.997 - ETA: 42s - loss: 0.0194 - accuracy: 0.997 - ETA: 42s - loss: 0.01
93 - accuracy: 0.997 - ETA: 41s - loss: 0.0192 - accuracy: 0.997 - ETA: 41s - loss: 0.0192 - accuracy: 0.997 - ETA: 41s - loss: 0.0191
- accuracy: 0.997 - ETA: 40s - loss: 0.0190 - accuracy: 0.997 - ETA: 41s - loss: 0.0190 - accuracy: 0.997 - ETA: 40s - loss: 0.0199 -
 accuracy: 0.997 - ETA: 40s - loss: 0.0209 - accuracy: 0.997 - ETA: 40s - loss: 0.0208 - accuracy: 0.997 - ETA: 40s - loss: 0.0207 - a
ccuracy: 0.997 - ETA: 39s - loss: 0.0207 - accuracy: 0.997 - ETA: 39s - loss: 0.0206 - accuracy: 0.997 - ETA: 39s - loss: 0.0205 - acc
uracy: 0.997 - ETA: 38s - loss: 0.0205 - accuracy: 0.997 - ETA: 38s - loss: 0.0204 - accuracy: 0.997 - ETA: 38s - loss: 0.0203 - accur
acy: 0.997 - ETA: 38s - loss: 0.0202 - accuracy: 0.997 - ETA: 37s - loss: 0.0202 - accuracy: 0.997 - ETA: 37s - loss: 0.0201 - accurac
y: 0.997 - ETA: 37s - loss: 0.0200 - accuracy: 0.997 - ETA: 36s - loss: 0.0199 - accuracy: 0.997 - ETA: 36s - loss: 0.0198 - accuracy:
0.997 - ETA: 36s - loss: 0.0197 - accuracy: 0.997 - ETA: 35s - loss: 0.0207 - accuracy: 0.997 - ETA: 35s - loss: 0.0206 - accuracy: 0.
997 - ETA: 35s - loss: 0.0205 - accuracy: 0.997 - ETA: 35s - loss: 0.0204 - accuracy: 0.997 - ETA: 35s - loss: 0.0203 - accuracy: 0.99
7 - ETA: 34s - loss: 0.0202 - accuracy: 0.997 - ETA: 34s - loss: 0.0202 - accuracy: 0.9975322/322 [==============================] - E
TA: 34s - loss: 0.0201 - accuracy: 0.997 - ETA: 33s - loss: 0.0200 - accuracy: 0.997 - ETA: 33s - loss: 0.0199 - accuracy: 0.997 - ET
A: 33s - loss: 0.0208 - accuracy: 0.997 - ETA: 33s - loss: 0.0208 - accuracy: 0.997 - ETA: 32s - loss: 0.0207 - accuracy: 0.997 - ETA:
32s - loss: 0.0215 - accuracy: 0.997 - ETA: 32s - loss: 0.0214 - accuracy: 0.997 - ETA: 31s - loss: 0.0214 - accuracy: 0.997 - ETA: 31
s - loss: 0.0213 - accuracy: 0.997 - ETA: 31s - loss: 0.0212 - accuracy: 0.997 - ETA: 30s - loss: 0.0211 - accuracy: 0.997 - ETA: 30s
 - loss: 0.0211 - accuracy: 0.997 - ETA: 30s - loss: 0.0210 - accuracy: 0.997 - ETA: 30s - loss: 0.0209 - accuracy: 0.997 - ETA: 29s -
loss: 0.0208 - accuracy: 0.997 - ETA: 29s - loss: 0.0208 - accuracy: 0.997 - ETA: 29s - loss: 0.0207 - accuracy: 0.997 - ETA: 28s - lo
ss: 0.0206 - accuracy: 0.997 - ETA: 28s - loss: 0.0205 - accuracy: 0.997 - ETA: 28s - loss: 0.0205 - accuracy: 0.997 - ETA: 28s - los
s: 0.0204 - accuracy: 0.997 - ETA: 27s - loss: 0.0203 - accuracy: 0.997 - ETA: 27s - loss: 0.0202 - accuracy: 0.997 - ETA: 27s - loss:
0.0202 - accuracy: 0.997 - ETA: 27s - loss: 0.0201 - accuracy: 0.997 - ETA: 26s - loss: 0.0200 - accuracy: 0.997 - ETA: 26s - loss: 0.
0199 - accuracy: 0.997 - ETA: 26s - loss: 0.0198 - accuracy: 0.997 - ETA: 26s - loss: 0.0198 - accuracy: 0.997 - ETA: 26s - loss: 0.01
97 - accuracy: 0.997 - ETA: 25s - loss: 0.0196 - accuracy: 0.997 - ETA: 25s - loss: 0.0195 - accuracy: 0.997 - ETA: 25s - loss: 0.0195
- accuracy: 0.997 - ETA: 25s - loss: 0.0194 - accuracy: 0.997 - ETA: 25s - loss: 0.0193 - accuracy: 0.997 - ETA: 25s - loss: 0.0192 -
 accuracy: 0.997 - ETA: 25s - loss: 0.0192 - accuracy: 0.997 - ETA: 25s - loss: 0.0200 - accuracy: 0.997 - ETA: 24s - loss: 0.0200 - a
ccuracy: 0.997 - ETA: 24s - loss: 0.0199 - accuracy: 0.997 - ETA: 24s - loss: 0.0198 - accuracy: 0.997 - ETA: 24s - loss: 0.0197 - acc
uracy: 0.997 - ETA: 24s - loss: 0.0197 - accuracy: 0.997 - ETA: 24s - loss: 0.0196 - accuracy: 0.997 - ETA: 24s - loss: 0.0195 - accur
acy: 0.997 - ETA: 23s - loss: 0.0195 - accuracy: 0.997 - ETA: 23s - loss: 0.0194 - accuracy: 0.997 - ETA: 23s - loss: 0.0193 - accurac
y: 0.997 - ETA: 23s - loss: 0.0193 - accuracy: 0.997 - ETA: 23s - loss: 0.0192 - accuracy: 0.997 - ETA: 23s - loss: 0.0191 - accuracy:
0.997 - ETA: 22s - loss: 0.0199 - accuracy: 0.997 - ETA: 22s - loss: 0.0207 - accuracy: 0.997 - ETA: 22s - loss: 0.0206 - accuracy: 0.
997 - ETA: 22s - loss: 0.0205 - accuracy: 0.997 - ETA: 22s - loss: 0.0205 - accuracy: 0.997 - ETA: 22s - loss: 0.0204 - accuracy: 0.99
7 - ETA: 22s - loss: 0.0211 - accuracy: 0.997 - ETA: 21s - loss: 0.0210 - accuracy: 0.997 - ETA: 21s - loss: 0.0210 - accuracy: 0.997
 - ETA: 21s - loss: 0.0209 - accuracy: 0.997 - ETA: 21s - loss: 0.0209 - accuracy: 0.997 - ETA: 21s - loss: 0.0208 - accuracy: 0.997 -
ETA: 20s - loss: 0.0214 - accuracy: 0.997 - ETA: 20s - loss: 0.0214 - accuracy: 0.997 - ETA: 20s - loss: 0.0213 - accuracy: 0.997 - ET
A: 20s - loss: 0.0218 - accuracy: 0.997 - ETA: 19s - loss: 0.0218 - accuracy: 0.997 - ETA: 19s - loss: 0.0218 - accuracy: 0.997 - ETA:
19s - loss: 0.0217 - accuracy: 0.997 - ETA: 19s - loss: 0.0217 - accuracy: 0.997 - ETA: 18s - loss: 0.0216 - accuracy: 0.997 - ETA: 18
s - loss: 0.0216 - accuracy: 0.997 - ETA: 18s - loss: 0.0215 - accuracy: 0.997 - ETA: 17s - loss: 0.0215 - accuracy: 0.997 - ETA: 17s
 - loss: 0.0214 - accuracy: 0.997 - ETA: 17s - loss: 0.0214 - accuracy: 0.997 - ETA: 17s - loss: 0.0213 - accuracy: 0.997 - ETA: 16s -
loss: 0.0213 - accuracy: 0.997 - ETA: 16s - loss: 0.0212 - accuracy: 0.997 - ETA: 16s - loss: 0.0212 - accuracy: 0.997 - ETA: 15s - lo
ss: 0.0211 - accuracy: 0.997 - ETA: 15s - loss: 0.0210 - accuracy: 0.997 - ETA: 15s - loss: 0.0210 - accuracy: 0.997 - ETA: 15s - los
s: 0.0209 - accuracy: 0.997 - ETA: 14s - loss: 0.0209 - accuracy: 0.997 - ETA: 14s - loss: 0.0208 - accuracy: 0.997 - ETA: 14s - loss:
0.0207 - accuracy: 0.997 - ETA: 13s - loss: 0.0207 - accuracy: 0.997 - ETA: 13s - loss: 0.0206 - accuracy: 0.997 - ETA: 13s - loss: 0.
0205 - accuracy: 0.997 - ETA: 13s - loss: 0.0205 - accuracy: 0.997 - ETA: 12s - loss: 0.0204 - accuracy: 0.997 - ETA: 12s - loss: 0.02
04 - accuracy: 0.997 - ETA: 12s - loss: 0.0203 - accuracy: 0.997 - ETA: 11s - loss: 0.0202 - accuracy: 0.997 - ETA: 11s - loss: 0.0202
- accuracy: 0.997 - ETA: 11s - loss: 0.0201 - accuracy: 0.997 - ETA: 11s - loss: 0.0200 - accuracy: 0.997 - ETA: 10s - loss: 0.0200 -
 accuracy: 0.997 - ETA: 10s - loss: 0.0199 - accuracy: 0.997 - ETA: 10s - loss: 0.0199 - accuracy: 0.997 - ETA: 9s - loss: 0.0198 - ac
curacy: 0.997 - ETA: 9s - loss: 0.0197 - accuracy: 0.99 - ETA: 9s - loss: 0.0197 - accuracy: 0.99 - ETA: 9s - loss: 0.0196 - accuracy:
0.99 - ETA: 8s - loss: 0.0196 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0194 - accuracy: 0.99 - E
TA: 7s - loss: 0.0194 - accuracy: 0.99 - ETA: 7s - loss: 0.0193 - accuracy: 0.99 - ETA: 7s - loss: 0.0193 - accuracy: 0.99 - ETA: 6s -
loss: 0.0192 - accuracy: 0.99 - ETA: 6s - loss: 0.0192 - accuracy: 0.99 - ETA: 6s - loss: 0.0191 - accuracy: 0.99 - ETA: 5s - loss: 0.
0191 - accuracy: 0.99 - ETA: 5s - loss: 0.0190 - accuracy: 0.99 - ETA: 5s - loss: 0.0189 - accuracy: 0.99 - ETA: 4s - loss: 0.0189 - a
ccuracy: 0.99 - ETA: 4s - loss: 0.0188 - accuracy: 0.99 - ETA: 4s - loss: 0.0188 - accuracy: 0.99 - ETA: 4s - loss: 0.0187 - accuracy:
0.99 - ETA: 3s - loss: 0.0187 - accuracy: 0.99 - ETA: 3s - loss: 0.0186 - accuracy: 0.99 - ETA: 3s - loss: 0.0186 - accuracy: 0.99 - E
TA: 2s - loss: 0.0185 - accuracy: 0.99 - ETA: 2s - loss: 0.0192 - accuracy: 0.99 - ETA: 2s - loss: 0.0192 - accuracy: 0.99 - ETA: 1s -
loss: 0.0191 - accuracy: 0.99 - ETA: 1s - loss: 0.0191 - accuracy: 0.99 - ETA: 1s - loss: 0.0190 - accuracy: 0.99 - ETA: 0s - loss: 0.
0197 - accuracy: 0.99 - ETA: 0s - loss: 0.0196 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - a
ccuracy: 0.99 - 104s 322ms/step - loss: 0.0202 - accuracy: 0.9975 - val_loss: 0.0281 - val_accuracy: 0.9968
Epoch 18/50
```

```
 48/322 [===>..........................] - ETA: 0s - loss: 0.0091 - accuracy: 1.00 - ETA: 47s - loss: 0.0092 - accuracy: 1.000 - ETA:
 1:16 - loss: 0.0089 - accuracy: 1.00 - ETA: 1:16 - loss: 0.0084 - accuracy: 1.00 - ETA: 1:10 - loss: 0.0080 - accuracy: 1.00 - ETA:
 1:05 - loss: 0.0076 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0074 - accuracy: 1.00 - ETA: 59s - loss: 0.0072 - accuracy: 1.0000 - ETA:
 57s - loss: 0.0071 - accuracy: 1.000 - ETA: 1:02 - loss: 0.0070 - accuracy: 1.00 - ETA: 1:00 - loss: 0.0069 - accuracy: 1.00 - ETA:
 1:00 - loss: 0.0068 - accuracy: 1.00 - ETA: 1:00 - loss: 0.0067 - accuracy: 1.00 - ETA: 1:00 - loss: 0.0066 - accuracy: 1.00 - ETA: 5
9s - loss: 0.0065 - accuracy: 1.0000 - ETA: 1:03 - loss: 0.0064 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:
01 - loss: 0.0167 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0156 - accuracy: 0.99 - ETA: 59s
 - loss: 0.0151 - accuracy: 0.9985 - ETA: 59s - loss: 0.0147 - accuracy: 0.998 - ETA: 59s - loss: 0.0144 - accuracy: 0.998 - ETA: 59s
 - loss: 0.0140 - accuracy: 0.998 - ETA: 59s - loss: 0.0137 - accuracy: 0.998 - ETA: 58s - loss: 0.0133 - accuracy: 0.998 - ETA: 57s -
loss: 0.0130 - accuracy: 0.998 - ETA: 56s - loss: 0.0191 - accuracy: 0.997 - ETA: 59s - loss: 0.0186 - accuracy: 0.997 - ETA: 1:00 - l
oss: 0.0182 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:00 - los
s: 0.0170 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0167 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0163 - accuracy: 0.99 - ETA: 1:00 - loss:
0.0160 - accuracy: 0.99 - ETA: 59s - loss: 0.0157 - accuracy: 0.9983 - ETA: 59s - loss: 0.0199 - accuracy: 0.997 - ETA: 1:01 - loss:
 0.0196 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:09 - loss:
 0.0185 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:15 - loss:
 0.0176 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:14 - loss:
 0.0168 - accuracy: 0.9980WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.126531). Check your c
allbacks.
234/322 [====================>.........] - ETA: 1:15 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0163 - accuracy: 0.99 - ET
A: 1:16 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0156 - accuracy: 0.99 - ETA:
1:14 - loss: 0.0154 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0152 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0149 - accuracy: 0.99 - ETA: 1:
14 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:13
- loss: 0.0142 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:17 -
 loss: 0.0169 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0167 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:19 - l
oss: 0.0163 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0159 - accuracy: 0.99 - ETA: 1:24 - los
s: 0.0157 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0156 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0154 - accuracy: 0.99 - ETA: 1:26 - loss:
0.0152 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0149 - accuracy: 0.99 - ETA: 1:31 - loss: 0.
0147 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0146 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:35 - loss: 0.01
43 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0141 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0139
- accuracy: 0.99 - ETA: 1:34 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0158 -
 accuracy: 0.99 - ETA: 1:33 - loss: 0.0157 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0154 - a
ccuracy: 0.99 - ETA: 1:35 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0150 - acc
uracy: 0.99 - ETA: 1:36 - loss: 0.0149 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0148 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0146 - accur
acy: 0.99 - ETA: 1:35 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0162 - accurac
y: 0.99 - ETA: 1:36 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0178 - accuracy:
0.99 - ETA: 1:35 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0192 - accuracy: 0.
99 - ETA: 1:35 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0189 - accuracy: 0.99
- ETA: 1:34 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0201 - accuracy: 0.99 -
 ETA: 1:34 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0197 - accuracy: 0.99 - E
TA: 1:34 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0194 - accuracy: 0.99 - ET
A: 1:33 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0191 - accuracy: 0.99 - ETA:
1:31 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:
30 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:29
- loss: 0.0184 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:29 -
 loss: 0.0180 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:28 - l
oss: 0.0177 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:28 - los
s: 0.0188 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:28 - loss:
0.0185 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:28 - loss: 0.
0210 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:28 - loss: 0.02
07 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0204
- accuracy: 0.99 - ETA: 1:28 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0201 -
 accuracy: 0.99 - ETA: 1:26 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0210 - a
ccuracy: 0.99 - ETA: 1:24 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0207 - acc
uracy: 0.99 - ETA: 1:22 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0215 - accur
acy: 0.99 - ETA: 1:20 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0212 - accurac
y: 0.99 - ETA: 1:18 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0210 - accuracy:
0.99 - ETA: 1:16 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0207 - accuracy: 0.
99 - ETA: 1:14 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0215 - accuracy: 0.99
- ETA: 1:12 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0212 - accuracy: 0.99 -
 ETA: 1:11 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0209 - accuracy: 0.99 - E
TA: 1:08 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0206 - accuracy: 0.99 - ET
A: 1:07 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0214 - accuracy: 0.99 - ETA:
1:05 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:
03 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:02
- loss: 0.0208 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:00 -
 loss: 0.0205 - accuracy: 0.99 - ETA: 59s - loss: 0.0204 - accuracy: 0.9974 - ETA: 59s - loss: 0.0204 - accuracy: 0.997 - ETA: 58s - l
oss: 0.0203 - accuracy: 0.997 - ETA: 58s - loss: 0.0202 - accuracy: 0.997 - ETA: 57s - loss: 0.0201 - accuracy: 0.997 - ETA: 57s - los
s: 0.0200 - accuracy: 0.997 - ETA: 57s - loss: 0.0209 - accuracy: 0.997 - ETA: 56s - loss: 0.0208 - accuracy: 0.997 - ETA: 56s - loss:
0.0207 - accuracy: 0.997 - ETA: 55s - loss: 0.0216 - accuracy: 0.997 - ETA: 54s - loss: 0.0215 - accuracy: 0.997 - ETA: 54s - loss: 0.
0214 - accuracy: 0.997 - ETA: 53s - loss: 0.0222 - accuracy: 0.997 - ETA: 53s - loss: 0.0221 - accuracy: 0.997 - ETA: 52s - loss: 0.02
21 - accuracy: 0.997 - ETA: 52s - loss: 0.0220 - accuracy: 0.997 - ETA: 51s - loss: 0.0219 - accuracy: 0.997 - ETA: 51s - loss: 0.0219
- accuracy: 0.997 - ETA: 50s - loss: 0.0218 - accuracy: 0.997 - ETA: 49s - loss: 0.0217 - accuracy: 0.997 - ETA: 49s - loss: 0.0217 -
 accuracy: 0.997 - ETA: 48s - loss: 0.0216 - accuracy: 0.997 - ETA: 48s - loss: 0.0215 - accuracy: 0.997 - ETA: 47s - loss: 0.0215 - a
ccuracy: 0.997 - ETA: 47s - loss: 0.0214 - accuracy: 0.997 - ETA: 46s - loss: 0.0213 - accuracy: 0.997 - ETA: 46s - loss: 0.0212 - acc
uracy: 0.997 - ETA: 45s - loss: 0.0212 - accuracy: 0.997 - ETA: 44s - loss: 0.0211 - accuracy: 0.997 - ETA: 44s - loss: 0.0210 - accur
acy: 0.997 - ETA: 43s - loss: 0.0209 - accuracy: 0.997 - ETA: 43s - loss: 0.0209 - accuracy: 0.997 - ETA: 42s - loss: 0.0208 - accurac
y: 0.997 - ETA: 42s - loss: 0.0215 - accuracy: 0.997 - ETA: 41s - loss: 0.0215 - accuracy: 0.997 - ETA: 41s - loss: 0.0214 - accuracy:
0.997 - ETA: 40s - loss: 0.0213 - accuracy: 0.997 - ETA: 40s - loss: 0.0212 - accuracy: 0.997 - ETA: 39s - loss: 0.0212 - accuracy: 0.
997 - ETA: 39s - loss: 0.0211 - accuracy: 0.997 - ETA: 38s - loss: 0.0210 - accuracy: 0.997 - ETA: 38s - loss: 0.0210 - accuracy: 0.99
7 - ETA: 37s - loss: 0.0209 - accuracy: 0.9973322/322 [==============================] - ETA: 37s - loss: 0.0208 - accuracy: 0.997 - E
TA: 36s - loss: 0.0207 - accuracy: 0.997 - ETA: 36s - loss: 0.0207 - accuracy: 0.997 - ETA: 35s - loss: 0.0206 - accuracy: 0.997 - ET
A: 35s - loss: 0.0205 - accuracy: 0.997 - ETA: 34s - loss: 0.0204 - accuracy: 0.997 - ETA: 34s - loss: 0.0212 - accuracy: 0.997 - ETA:
33s - loss: 0.0211 - accuracy: 0.997 - ETA: 33s - loss: 0.0210 - accuracy: 0.997 - ETA: 32s - loss: 0.0210 - accuracy: 0.997 - ETA: 32
s - loss: 0.0209 - accuracy: 0.997 - ETA: 31s - loss: 0.0208 - accuracy: 0.997 - ETA: 31s - loss: 0.0208 - accuracy: 0.997 - ETA: 30s
 - loss: 0.0207 - accuracy: 0.997 - ETA: 30s - loss: 0.0206 - accuracy: 0.997 - ETA: 29s - loss: 0.0213 - accuracy: 0.997 - ETA: 29s -
loss: 0.0212 - accuracy: 0.997 - ETA: 28s - loss: 0.0212 - accuracy: 0.997 - ETA: 28s - loss: 0.0211 - accuracy: 0.997 - ETA: 28s - lo
ss: 0.0210 - accuracy: 0.997 - ETA: 27s - loss: 0.0210 - accuracy: 0.997 - ETA: 27s - loss: 0.0209 - accuracy: 0.997 - ETA: 26s - los
s: 0.0209 - accuracy: 0.997 - ETA: 26s - loss: 0.0208 - accuracy: 0.997 - ETA: 25s - loss: 0.0207 - accuracy: 0.997 - ETA: 25s - loss:
0.0207 - accuracy: 0.997 - ETA: 24s - loss: 0.0206 - accuracy: 0.997 - ETA: 24s - loss: 0.0205 - accuracy: 0.997 - ETA: 23s - loss: 0.
0205 - accuracy: 0.997 - ETA: 23s - loss: 0.0204 - accuracy: 0.997 - ETA: 23s - loss: 0.0203 - accuracy: 0.997 - ETA: 22s - loss: 0.02
03 - accuracy: 0.997 - ETA: 22s - loss: 0.0202 - accuracy: 0.997 - ETA: 21s - loss: 0.0202 - accuracy: 0.997 - ETA: 21s - loss: 0.0201
```

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- accuracy: 0.997 - ETA: 20s - loss: 0.0200 - accuracy: 0.997 - ETA: 20s - loss: 0.0200 - accuracy: 0.997 - ETA: 19s - loss: 0.0199 -
 accuracy: 0.997 - ETA: 19s - loss: 0.0198 - accuracy: 0.997 - ETA: 19s - loss: 0.0198 - accuracy: 0.997 - ETA: 18s - loss: 0.0197 - a
ccuracy: 0.997 - ETA: 18s - loss: 0.0197 - accuracy: 0.997 - ETA: 17s - loss: 0.0196 - accuracy: 0.997 - ETA: 17s - loss: 0.0195 - acc
uracy: 0.997 - ETA: 16s - loss: 0.0202 - accuracy: 0.997 - ETA: 16s - loss: 0.0202 - accuracy: 0.997 - ETA: 16s - loss: 0.0201 - accur
acy: 0.997 - ETA: 15s - loss: 0.0201 - accuracy: 0.997 - ETA: 15s - loss: 0.0200 - accuracy: 0.997 - ETA: 14s - loss: 0.0200 - accurac
y: 0.997 - ETA: 14s - loss: 0.0199 - accuracy: 0.997 - ETA: 14s - loss: 0.0198 - accuracy: 0.997 - ETA: 13s - loss: 0.0198 - accuracy:
0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 12s - loss: 0.0197 - accuracy: 0.997 - ETA: 12s - loss: 0.0196 - accuracy: 0.
997 - ETA: 12s - loss: 0.0196 - accuracy: 0.997 - ETA: 11s - loss: 0.0195 - accuracy: 0.997 - ETA: 11s - loss: 0.0194 - accuracy: 0.99
7 - ETA: 10s - loss: 0.0194 - accuracy: 0.997 - ETA: 10s - loss: 0.0193 - accuracy: 0.997 - ETA: 10s - loss: 0.0193 - accuracy: 0.997
 - ETA: 9s - loss: 0.0192 - accuracy: 0.997 - ETA: 9s - loss: 0.0192 - accuracy: 0.99 - ETA: 8s - loss: 0.0191 - accuracy: 0.99 - ETA:
8s - loss: 0.0191 - accuracy: 0.99 - ETA: 8s - loss: 0.0190 - accuracy: 0.99 - ETA: 7s - loss: 0.0189 - accuracy: 0.99 - ETA: 7s - los
s: 0.0189 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 6s - loss: 0.0201 - accuracy: 0.99 - ETA: 6s - loss: 0.020
1 - accuracy: 0.99 - ETA: 5s - loss: 0.0200 - accuracy: 0.99 - ETA: 5s - loss: 0.0200 - accuracy: 0.99 - ETA: 5s - loss: 0.0199 - accu
racy: 0.99 - ETA: 4s - loss: 0.0199 - accuracy: 0.99 - ETA: 4s - loss: 0.0198 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accuracy: 0.
99 - ETA: 3s - loss: 0.0197 - accuracy: 0.99 - ETA: 3s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ET
A: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 1s - loss: 0.0201 - accuracy: 0.99 - ETA: 1s - loss: 0.0201 - accuracy: 0.99 - ETA: 1s -
 loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss:
 0.0199 - accuracy: 0.99 - 127s 394ms/step - loss: 0.0199 - accuracy: 0.9975 - val_loss: 0.0230 - val_accuracy: 0.9968
Epoch 19/50
186/322 [================>.............] - ETA: 0s - loss: 0.0053 - accuracy: 1.00 - ETA: 54s - loss: 0.0054 - accuracy: 1.000 - ETA:
 1:32 - loss: 0.0053 - accuracy: 1.00 - ETA: 1:39 - loss: 0.0053 - accuracy: 1.00 - ETA: 1:36 - loss: 0.0052 - accuracy: 1.00 - ETA:
 1:35 - loss: 0.0051 - accuracy: 1.00 - ETA: 1:47 - loss: 0.0050 - accuracy: 1.00 - ETA: 1:45 - loss: 0.0280 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0255 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0217 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0182 - accuracy: 0.99 - ETA:
 1:17 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0158 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0152 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0146 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0141 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0132 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0128 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0124 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0120 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0117 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0114 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0111 - accuracy: 0.99 - ETA: 59s - loss: 0.0108 - accuracy: 0.9989 - ETA:
 59s - loss: 0.0106 - accuracy: 0.999 - ETA: 58s - loss: 0.0103 - accuracy: 0.999 - ETA: 58s - loss: 0.0101 - accuracy: 0.999 - ETA: 5
8s - loss: 0.0099 - accuracy: 0.999 - ETA: 57s - loss: 0.0097 - accuracy: 0.999 - ETA: 56s - loss: 0.0095 - accuracy: 0.999 - ETA: 56s
- loss: 0.0093 - accuracy: 0.999 - ETA: 55s - loss: 0.0091 - accuracy: 0.999 - ETA: 55s - loss: 0.0143 - accuracy: 0.998 - ETA: 55s -
 loss: 0.0140 - accuracy: 0.998 - ETA: 56s - loss: 0.0138 - accuracy: 0.998 - ETA: 55s - loss: 0.0135 - accuracy: 0.998 - ETA: 54s - l
oss: 0.0181 - accuracy: 0.997 - ETA: 54s - loss: 0.0178 - accuracy: 0.997 - ETA: 53s - loss: 0.0175 - accuracy: 0.997 - ETA: 53s - los
s: 0.0172 - accuracy: 0.997 - ETA: 52s - loss: 0.0169 - accuracy: 0.998 - ETA: 52s - loss: 0.0166 - accuracy: 0.998 - ETA: 52s - loss:
0.0164 - accuracy: 0.998 - ETA: 51s - loss: 0.0198 - accuracy: 0.997 - ETA: 51s - loss: 0.0195 - accuracy: 0.997 - ETA: 50s - loss: 0.
0192 - accuracy: 0.997 - ETA: 50s - loss: 0.0222 - accuracy: 0.997 - ETA: 49s - loss: 0.0219 - accuracy: 0.997 - ETA: 49s - loss: 0.02
49 - accuracy: 0.996 - ETA: 48s - loss: 0.0246 - accuracy: 0.996 - ETA: 48s - loss: 0.0243 - accuracy: 0.996 - ETA: 48s - loss: 0.0241
- accuracy: 0.996 - ETA: 48s - loss: 0.0238 - accuracy: 0.996 - ETA: 48s - loss: 0.0236 - accuracy: 0.996 - ETA: 48s - loss: 0.0233 -
 accuracy: 0.996 - ETA: 48s - loss: 0.0231 - accuracy: 0.996 - ETA: 47s - loss: 0.0229 - accuracy: 0.997 - ETA: 47s - loss: 0.0227 - a
ccuracy: 0.997 - ETA: 47s - loss: 0.0224 - accuracy: 0.997 - ETA: 47s - loss: 0.0222 - accuracy: 0.997 - ETA: 47s - loss: 0.0220 - acc
uracy: 0.997 - ETA: 46s - loss: 0.0218 - accuracy: 0.997 - ETA: 46s - loss: 0.0216 - accuracy: 0.997 - ETA: 46s - loss: 0.0213 - accur
acy: 0.997 - ETA: 45s - loss: 0.0237 - accuracy: 0.996 - ETA: 45s - loss: 0.0234 - accuracy: 0.996 - ETA: 45s - loss: 0.0232 - accurac
y: 0.997 - ETA: 45s - loss: 0.0229 - accuracy: 0.997 - ETA: 45s - loss: 0.0227 - accuracy: 0.997 - ETA: 44s - loss: 0.0225 - accuracy:
0.997 - ETA: 44s - loss: 0.0223 - accuracy: 0.997 - ETA: 43s - loss: 0.0220 - accuracy: 0.997 - ETA: 43s - loss: 0.0218 - accuracy: 0.
997 - ETA: 43s - loss: 0.0216 - accuracy: 0.997 - ETA: 43s - loss: 0.0214 - accuracy: 0.997 - ETA: 43s - loss: 0.0212 - accuracy: 0.99
7 - ETA: 43s - loss: 0.0210 - accuracy: 0.997 - ETA: 42s - loss: 0.0208 - accuracy: 0.997 - ETA: 42s - loss: 0.0206 - accuracy: 0.997
 - ETA: 42s - loss: 0.0204 - accuracy: 0.997 - ETA: 41s - loss: 0.0202 - accuracy: 0.997 - ETA: 41s - loss: 0.0200 - accuracy: 0.997 -
ETA: 41s - loss: 0.0198 - accuracy: 0.997 - ETA: 41s - loss: 0.0196 - accuracy: 0.997 - ETA: 41s - loss: 0.0194 - accuracy: 0.997 - ET
A: 40s - loss: 0.0192 - accuracy: 0.997 - ETA: 40s - loss: 0.0191 - accuracy: 0.997 - ETA: 40s - loss: 0.0189 - accuracy: 0.997 - ETA:
39s - loss: 0.0187 - accuracy: 0.997 - ETA: 39s - loss: 0.0185 - accuracy: 0.997 - ETA: 39s - loss: 0.0184 - accuracy: 0.997 - ETA: 39
s - loss: 0.0182 - accuracy: 0.997 - ETA: 39s - loss: 0.0181 - accuracy: 0.997 - ETA: 39s - loss: 0.0179 - accuracy: 0.997 - ETA: 38s
 - loss: 0.0177 - accuracy: 0.997 - ETA: 38s - loss: 0.0176 - accuracy: 0.997 - ETA: 38s - loss: 0.0174 - accuracy: 0.997 - ETA: 38s -
loss: 0.0173 - accuracy: 0.997 - ETA: 37s - loss: 0.0172 - accuracy: 0.997 - ETA: 37s - loss: 0.0170 - accuracy: 0.997 - ETA: 37s - lo
ss: 0.0169 - accuracy: 0.997 - ETA: 37s - loss: 0.0167 - accuracy: 0.998 - ETA: 37s - loss: 0.0166 - accuracy: 0.998 - ETA: 36s - los
s: 0.0165 - accuracy: 0.998 - ETA: 36s - loss: 0.0164 - accuracy: 0.998 - ETA: 36s - loss: 0.0162 - accuracy: 0.998 - ETA: 36s - loss:
0.0181 - accuracy: 0.997 - ETA: 35s - loss: 0.0179 - accuracy: 0.997 - ETA: 35s - loss: 0.0178 - accuracy: 0.997 - ETA: 35s - loss: 0.
0177 - accuracy: 0.997 - ETA: 35s - loss: 0.0176 - accuracy: 0.997 - ETA: 35s - loss: 0.0174 - accuracy: 0.997 - ETA: 35s - loss: 0.01
73 - accuracy: 0.997 - ETA: 34s - loss: 0.0172 - accuracy: 0.997 - ETA: 34s - loss: 0.0171 - accuracy: 0.997 - ETA: 34s - loss: 0.0170
- accuracy: 0.997 - ETA: 34s - loss: 0.0168 - accuracy: 0.998 - ETA: 34s - loss: 0.0167 - accuracy: 0.998 - ETA: 33s - loss: 0.0166 -
 accuracy: 0.998 - ETA: 33s - loss: 0.0165 - accuracy: 0.998 - ETA: 33s - loss: 0.0164 - accuracy: 0.998 - ETA: 33s - loss: 0.0163 - a
ccuracy: 0.998 - ETA: 33s - loss: 0.0162 - accuracy: 0.998 - ETA: 32s - loss: 0.0178 - accuracy: 0.997 - ETA: 32s - loss: 0.0177 - acc
uracy: 0.997 - ETA: 32s - loss: 0.0176 - accuracy: 0.997 - ETA: 32s - loss: 0.0175 - accuracy: 0.997 - ETA: 32s - loss: 0.0174 - accur
acy: 0.997 - ETA: 32s - loss: 0.0187 - accuracy: 0.997 - ETA: 31s - loss: 0.0186 - accuracy: 0.997 - ETA: 31s - loss: 0.0185 - accurac
y: 0.997 - ETA: 31s - loss: 0.0184 - accuracy: 0.997 - ETA: 31s - loss: 0.0183 - accuracy: 0.997 - ETA: 31s - loss: 0.0182 - accuracy:
0.997 - ETA: 31s - loss: 0.0194 - accuracy: 0.997 - ETA: 30s - loss: 0.0193 - accuracy: 0.997 - ETA: 30s - loss: 0.0192 - accuracy: 0.
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- accuracy: 0.997 - ETA: 22s - loss: 0.0187 - accuracy: 0.9976124/322 [==========>..................] - ETA: 22s - loss: 0.0186 - acc
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 ETA: 4s - loss: 0.0180 - accuracy: 0.99 - ETA: 4s - loss: 0.0180 - accuracy: 0.99 - ETA: 4s - loss: 0.0179 - accuracy: 0.99 - ETA: 3s
- loss: 0.0185 - accuracy: 0.99 - ETA: 3s - loss: 0.0185 - accuracy: 0.99 - ETA: 3s - loss: 0.0191 - accuracy: 0.99 - ETA: 3s - loss:
 0.0197 - accuracy: 0.99 - ETA: 3s - loss: 0.0196 - accuracy: 0.99 - ETA: 3s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s - loss: 0.0195
 - accuracy: 0.99 - ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0194 - accur
acy: 0.99 - ETA: 2s - loss: 0.0194 - accuracy: 0.99 - ETA: 2s - loss: 0.0194 - accuracy: 0.99 - ETA: 2s - loss: 0.0198 - accuracy: 0.9
9 - ETA: 1s - loss: 0.0198 - accuracy: 0.99 - ETA: 1s - loss: 0.0198 - accuracy: 0.99 - ETA: 1s - loss: 0.0197 - accuracy: 0.9975322/3
22 [==============================] - ETA: 1s - loss: 0.0197 - accuracy: 0.99 - ETA: 1s - loss: 0.0197 - accuracy: 0.99 - ETA: 1s - lo
ss: 0.0196 - accuracy: 0.99 - ETA: 0s - loss: 0.0196 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.02
00 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - acc
uracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - 53s 163ms/step - loss: 0.0199 - accuracy: 0.9975 - val_loss: 0.0234 - val_accu
racy: 0.9968
Epoch 23/50
186/322 [================>.............] - ETA: 0s - loss: 0.0067 - accuracy: 1.00 - ETA: 19s - loss: 0.0067 - accuracy: 1.000 - ETA:
 26s - loss: 0.0064 - accuracy: 1.000 - ETA: 31s - loss: 0.0062 - accuracy: 1.000 - ETA: 41s - loss: 0.0060 - accuracy: 1.000 - ETA: 4
3s - loss: 0.0058 - accuracy: 1.000 - ETA: 42s - loss: 0.0057 - accuracy: 1.000 - ETA: 42s - loss: 0.0055 - accuracy: 1.000 - ETA: 41s
- loss: 0.0053 - accuracy: 1.000 - ETA: 41s - loss: 0.0052 - accuracy: 1.000 - ETA: 41s - loss: 0.0050 - accuracy: 1.000 - ETA: 40s -
 loss: 0.0049 - accuracy: 1.000 - ETA: 40s - loss: 0.0048 - accuracy: 1.000 - ETA: 43s - loss: 0.0046 - accuracy: 1.000 - ETA: 43s - l
oss: 0.0045 - accuracy: 1.000 - ETA: 42s - loss: 0.0044 - accuracy: 1.000 - ETA: 43s - loss: 0.0044 - accuracy: 1.000 - ETA: 43s - los
s: 0.0043 - accuracy: 1.000 - ETA: 42s - loss: 0.0042 - accuracy: 1.000 - ETA: 42s - loss: 0.0041 - accuracy: 1.000 - ETA: 41s - loss:
0.0040 - accuracy: 1.000 - ETA: 42s - loss: 0.0040 - accuracy: 1.000 - ETA: 43s - loss: 0.0039 - accuracy: 1.000 - ETA: 43s - loss: 0.
0039 - accuracy: 1.000 - ETA: 43s - loss: 0.0038 - accuracy: 1.000 - ETA: 43s - loss: 0.0038 - accuracy: 1.000 - ETA: 42s - loss: 0.00
37 - accuracy: 1.000 - ETA: 42s - loss: 0.0037 - accuracy: 1.000 - ETA: 42s - loss: 0.0111 - accuracy: 0.998 - ETA: 41s - loss: 0.0108
- accuracy: 0.999 - ETA: 42s - loss: 0.0106 - accuracy: 0.999 - ETA: 42s - loss: 0.0103 - accuracy: 0.999 - ETA: 42s - loss: 0.0101 -
 accuracy: 0.999 - ETA: 42s - loss: 0.0099 - accuracy: 0.999 - ETA: 41s - loss: 0.0097 - accuracy: 0.999 - ETA: 41s - loss: 0.0095 - a
ccuracy: 0.999 - ETA: 41s - loss: 0.0093 - accuracy: 0.999 - ETA: 40s - loss: 0.0091 - accuracy: 0.999 - ETA: 40s - loss: 0.0090 - acc
uracy: 0.999 - ETA: 40s - loss: 0.0088 - accuracy: 0.999 - ETA: 41s - loss: 0.0087 - accuracy: 0.999 - ETA: 41s - loss: 0.0085 - accur
acy: 0.999 - ETA: 40s - loss: 0.0084 - accuracy: 0.999 - ETA: 40s - loss: 0.0130 - accuracy: 0.998 - ETA: 40s - loss: 0.0127 - accurac
y: 0.998 - ETA: 39s - loss: 0.0125 - accuracy: 0.998 - ETA: 39s - loss: 0.0123 - accuracy: 0.998 - ETA: 39s - loss: 0.0121 - accuracy:
0.998 - ETA: 39s - loss: 0.0120 - accuracy: 0.998 - ETA: 39s - loss: 0.0118 - accuracy: 0.998 - ETA: 39s - loss: 0.0116 - accuracy: 0.
998 - ETA: 39s - loss: 0.0115 - accuracy: 0.998 - ETA: 39s - loss: 0.0150 - accuracy: 0.998 - ETA: 38s - loss: 0.0148 - accuracy: 0.99
8 - ETA: 38s - loss: 0.0146 - accuracy: 0.998 - ETA: 38s - loss: 0.0144 - accuracy: 0.998 - ETA: 38s - loss: 0.0173 - accuracy: 0.997
 - ETA: 38s - loss: 0.0171 - accuracy: 0.997 - ETA: 38s - loss: 0.0169 - accuracy: 0.997 - ETA: 38s - loss: 0.0167 - accuracy: 0.997 -
ETA: 38s - loss: 0.0165 - accuracy: 0.998 - ETA: 38s - loss: 0.0163 - accuracy: 0.998 - ETA: 37s - loss: 0.0161 - accuracy: 0.998 - ET
A: 37s - loss: 0.0160 - accuracy: 0.998 - ETA: 37s - loss: 0.0158 - accuracy: 0.998 - ETA: 37s - loss: 0.0157 - accuracy: 0.998 - ETA:
37s - loss: 0.0182 - accuracy: 0.997 - ETA: 37s - loss: 0.0180 - accuracy: 0.997 - ETA: 37s - loss: 0.0179 - accuracy: 0.997 - ETA: 36
s - loss: 0.0202 - accuracy: 0.997 - ETA: 36s - loss: 0.0200 - accuracy: 0.997 - ETA: 36s - loss: 0.0198 - accuracy: 0.997 - ETA: 36s
 - loss: 0.0196 - accuracy: 0.997 - ETA: 35s - loss: 0.0216 - accuracy: 0.997 - ETA: 35s - loss: 0.0215 - accuracy: 0.997 - ETA: 35s -
loss: 0.0213 - accuracy: 0.997 - ETA: 35s - loss: 0.0212 - accuracy: 0.997 - ETA: 35s - loss: 0.0210 - accuracy: 0.997 - ETA: 35s - lo
ss: 0.0226 - accuracy: 0.996 - ETA: 35s - loss: 0.0225 - accuracy: 0.996 - ETA: 35s - loss: 0.0223 - accuracy: 0.996 - ETA: 34s - los
s: 0.0222 - accuracy: 0.997 - ETA: 34s - loss: 0.0220 - accuracy: 0.997 - ETA: 34s - loss: 0.0219 - accuracy: 0.997 - ETA: 34s - loss:
0.0217 - accuracy: 0.997 - ETA: 34s - loss: 0.0215 - accuracy: 0.997 - ETA: 34s - loss: 0.0214 - accuracy: 0.997 - ETA: 34s - loss: 0.
0212 - accuracy: 0.997 - ETA: 34s - loss: 0.0210 - accuracy: 0.997 - ETA: 34s - loss: 0.0209 - accuracy: 0.997 - ETA: 33s - loss: 0.02
07 - accuracy: 0.997 - ETA: 33s - loss: 0.0205 - accuracy: 0.997 - ETA: 33s - loss: 0.0203 - accuracy: 0.997 - ETA: 33s - loss: 0.0202
- accuracy: 0.997 - ETA: 33s - loss: 0.0220 - accuracy: 0.997 - ETA: 33s - loss: 0.0218 - accuracy: 0.997 - ETA: 33s - loss: 0.0216 -
 accuracy: 0.997 - ETA: 32s - loss: 0.0215 - accuracy: 0.997 - ETA: 32s - loss: 0.0213 - accuracy: 0.997 - ETA: 32s - loss: 0.0211 - a
ccuracy: 0.997 - ETA: 32s - loss: 0.0209 - accuracy: 0.997 - ETA: 32s - loss: 0.0208 - accuracy: 0.997 - ETA: 32s - loss: 0.0206 - acc
uracy: 0.997 - ETA: 32s - loss: 0.0204 - accuracy: 0.997 - ETA: 31s - loss: 0.0203 - accuracy: 0.997 - ETA: 31s - loss: 0.0201 - accur
acy: 0.997 - ETA: 31s - loss: 0.0200 - accuracy: 0.997 - ETA: 31s - loss: 0.0198 - accuracy: 0.997 - ETA: 31s - loss: 0.0197 - accurac
y: 0.997 - ETA: 31s - loss: 0.0195 - accuracy: 0.997 - ETA: 31s - loss: 0.0194 - accuracy: 0.997 - ETA: 30s - loss: 0.0192 - accuracy:
0.997 - ETA: 30s - loss: 0.0191 - accuracy: 0.997 - ETA: 30s - loss: 0.0207 - accuracy: 0.997 - ETA: 30s - loss: 0.0206 - accuracy: 0.
997 - ETA: 30s - loss: 0.0204 - accuracy: 0.997 - ETA: 30s - loss: 0.0203 - accuracy: 0.997 - ETA: 29s - loss: 0.0201 - accuracy: 0.99
7 - ETA: 29s - loss: 0.0200 - accuracy: 0.997 - ETA: 29s - loss: 0.0199 - accuracy: 0.997 - ETA: 29s - loss: 0.0197 - accuracy: 0.997
 - ETA: 29s - loss: 0.0196 - accuracy: 0.997 - ETA: 29s - loss: 0.0195 - accuracy: 0.997 - ETA: 29s - loss: 0.0193 - accuracy: 0.997 -
ETA: 29s - loss: 0.0192 - accuracy: 0.997 - ETA: 28s - loss: 0.0205 - accuracy: 0.997 - ETA: 28s - loss: 0.0204 - accuracy: 0.997 - ET
A: 28s - loss: 0.0218 - accuracy: 0.997 - ETA: 28s - loss: 0.0217 - accuracy: 0.997 - ETA: 28s - loss: 0.0216 - accuracy: 0.997 - ETA:
28s - loss: 0.0214 - accuracy: 0.997 - ETA: 28s - loss: 0.0213 - accuracy: 0.997 - ETA: 27s - loss: 0.0212 - accuracy: 0.997 - ETA: 27
s - loss: 0.0211 - accuracy: 0.997 - ETA: 27s - loss: 0.0222 - accuracy: 0.997 - ETA: 27s - loss: 0.0221 - accuracy: 0.997 - ETA: 27s
 - loss: 0.0220 - accuracy: 0.997 - ETA: 27s - loss: 0.0231 - accuracy: 0.996 - ETA: 27s - loss: 0.0230 - accuracy: 0.996 - ETA: 26s -
loss: 0.0228 - accuracy: 0.996 - ETA: 26s - loss: 0.0227 - accuracy: 0.996 - ETA: 26s - loss: 0.0226 - accuracy: 0.996 - ETA: 26s - lo
ss: 0.0237 - accuracy: 0.996 - ETA: 26s - loss: 0.0236 - accuracy: 0.996 - ETA: 26s - loss: 0.0245 - accuracy: 0.996 - ETA: 26s - los
s: 0.0244 - accuracy: 0.996 - ETA: 25s - loss: 0.0243 - accuracy: 0.996 - ETA: 25s - loss: 0.0243 - accuracy: 0.996 - ETA: 25s - loss:
0.0242 - accuracy: 0.996 - ETA: 25s - loss: 0.0241 - accuracy: 0.996 - ETA: 25s - loss: 0.0240 - accuracy: 0.996 - ETA: 25s - loss: 0.
0239 - accuracy: 0.996 - ETA: 24s - loss: 0.0239 - accuracy: 0.996 - ETA: 24s - loss: 0.0238 - accuracy: 0.996 - ETA: 24s - loss: 0.02
37 - accuracy: 0.996 - ETA: 24s - loss: 0.0236 - accuracy: 0.996 - ETA: 24s - loss: 0.0234 - accuracy: 0.996 - ETA: 24s - loss: 0.0233
- accuracy: 0.996 - ETA: 24s - loss: 0.0232 - accuracy: 0.996 - ETA: 23s - loss: 0.0231 - accuracy: 0.996 - ETA: 23s - loss: 0.0230 -
 accuracy: 0.996 - ETA: 23s - loss: 0.0240 - accuracy: 0.996 - ETA: 23s - loss: 0.0250 - accuracy: 0.996 - ETA: 23s - loss: 0.0248 - a
ccuracy: 0.996 - ETA: 23s - loss: 0.0258 - accuracy: 0.996 - ETA: 23s - loss: 0.0257 - accuracy: 0.996 - ETA: 23s - loss: 0.0256 - acc
uracy: 0.996 - ETA: 23s - loss: 0.0255 - accuracy: 0.996 - ETA: 23s - loss: 0.0254 - accuracy: 0.996 - ETA: 23s - loss: 0.0253 - accur
acy: 0.996 - ETA: 22s - loss: 0.0252 - accuracy: 0.996 - ETA: 22s - loss: 0.0250 - accuracy: 0.996 - ETA: 22s - loss: 0.0249 - accurac
y: 0.996 - ETA: 22s - loss: 0.0248 - accuracy: 0.996 - ETA: 22s - loss: 0.0247 - accuracy: 0.996 - ETA: 22s - loss: 0.0246 - accuracy:
0.996 - ETA: 22s - loss: 0.0245 - accuracy: 0.996 - ETA: 22s - loss: 0.0254 - accuracy: 0.996 - ETA: 21s - loss: 0.0253 - accuracy: 0.
996 - ETA: 21s - loss: 0.0252 - accuracy: 0.996 - ETA: 21s - loss: 0.0251 - accuracy: 0.996 - ETA: 21s - loss: 0.0250 - accuracy: 0.99
6 - ETA: 21s - loss: 0.0249 - accuracy: 0.996 - ETA: 21s - loss: 0.0248 - accuracy: 0.996 - ETA: 21s - loss: 0.0256 - accuracy: 0.996
 - ETA: 20s - loss: 0.0255 - accuracy: 0.9965322/322 [==============================] - ETA: 20s - loss: 0.0254 - accuracy: 0.996 - ET
A: 20s - loss: 0.0253 - accuracy: 0.996 - ETA: 20s - loss: 0.0252 - accuracy: 0.996 - ETA: 20s - loss: 0.0251 - accuracy: 0.996 - ETA:
20s - loss: 0.0250 - accuracy: 0.996 - ETA: 20s - loss: 0.0249 - accuracy: 0.996 - ETA: 19s - loss: 0.0248 - accuracy: 0.996 - ETA: 19
```

```
s - loss: 0.0247 - accuracy: 0.996 - ETA: 19s - loss: 0.0246 - accuracy: 0.996 - ETA: 19s - loss: 0.0245 - accuracy: 0.996 - ETA: 19s
 - loss: 0.0253 - accuracy: 0.996 - ETA: 18s - loss: 0.0252 - accuracy: 0.996 - ETA: 18s - loss: 0.0251 - accuracy: 0.996 - ETA: 18s -
loss: 0.0250 - accuracy: 0.996 - ETA: 18s - loss: 0.0249 - accuracy: 0.996 - ETA: 18s - loss: 0.0248 - accuracy: 0.996 - ETA: 18s - lo
ss: 0.0247 - accuracy: 0.996 - ETA: 18s - loss: 0.0246 - accuracy: 0.996 - ETA: 17s - loss: 0.0245 - accuracy: 0.996 - ETA: 17s - los
s: 0.0244 - accuracy: 0.996 - ETA: 17s - loss: 0.0243 - accuracy: 0.996 - ETA: 17s - loss: 0.0242 - accuracy: 0.996 - ETA: 17s - loss:
0.0241 - accuracy: 0.996 - ETA: 17s - loss: 0.0240 - accuracy: 0.996 - ETA: 17s - loss: 0.0239 - accuracy: 0.996 - ETA: 16s - loss: 0.
0238 - accuracy: 0.996 - ETA: 16s - loss: 0.0237 - accuracy: 0.996 - ETA: 16s - loss: 0.0236 - accuracy: 0.996 - ETA: 16s - loss: 0.02
35 - accuracy: 0.996 - ETA: 16s - loss: 0.0234 - accuracy: 0.996 - ETA: 16s - loss: 0.0233 - accuracy: 0.996 - ETA: 15s - loss: 0.0233
- accuracy: 0.996 - ETA: 15s - loss: 0.0232 - accuracy: 0.996 - ETA: 15s - loss: 0.0231 - accuracy: 0.996 - ETA: 15s - loss: 0.0230 -
 accuracy: 0.996 - ETA: 15s - loss: 0.0229 - accuracy: 0.996 - ETA: 15s - loss: 0.0228 - accuracy: 0.996 - ETA: 14s - loss: 0.0227 - a
ccuracy: 0.996 - ETA: 14s - loss: 0.0226 - accuracy: 0.996 - ETA: 14s - loss: 0.0225 - accuracy: 0.997 - ETA: 14s - loss: 0.0224 - acc
uracy: 0.997 - ETA: 14s - loss: 0.0233 - accuracy: 0.996 - ETA: 14s - loss: 0.0232 - accuracy: 0.996 - ETA: 14s - loss: 0.0231 - accur
acy: 0.996 - ETA: 13s - loss: 0.0230 - accuracy: 0.996 - ETA: 13s - loss: 0.0230 - accuracy: 0.996 - ETA: 13s - loss: 0.0229 - accurac
y: 0.996 - ETA: 13s - loss: 0.0228 - accuracy: 0.996 - ETA: 13s - loss: 0.0227 - accuracy: 0.996 - ETA: 13s - loss: 0.0226 - accuracy:
0.997 - ETA: 12s - loss: 0.0225 - accuracy: 0.997 - ETA: 12s - loss: 0.0224 - accuracy: 0.997 - ETA: 12s - loss: 0.0224 - accuracy: 0.
997 - ETA: 12s - loss: 0.0223 - accuracy: 0.997 - ETA: 12s - loss: 0.0222 - accuracy: 0.997 - ETA: 12s - loss: 0.0221 - accuracy: 0.99
7 - ETA: 12s - loss: 0.0220 - accuracy: 0.997 - ETA: 11s - loss: 0.0220 - accuracy: 0.997 - ETA: 11s - loss: 0.0219 - accuracy: 0.997
 - ETA: 11s - loss: 0.0218 - accuracy: 0.997 - ETA: 11s - loss: 0.0217 - accuracy: 0.997 - ETA: 11s - loss: 0.0217 - accuracy: 0.997 -
ETA: 11s - loss: 0.0216 - accuracy: 0.997 - ETA: 10s - loss: 0.0215 - accuracy: 0.997 - ETA: 10s - loss: 0.0214 - accuracy: 0.997 - ET
A: 10s - loss: 0.0214 - accuracy: 0.997 - ETA: 10s - loss: 0.0213 - accuracy: 0.997 - ETA: 10s - loss: 0.0212 - accuracy: 0.997 - ETA:
10s - loss: 0.0211 - accuracy: 0.997 - ETA: 10s - loss: 0.0211 - accuracy: 0.997 - ETA: 9s - loss: 0.0210 - accuracy: 0.997 - ETA: 9s
 - loss: 0.0209 - accuracy: 0.99 - ETA: 9s - loss: 0.0208 - accuracy: 0.99 - ETA: 9s - loss: 0.0208 - accuracy: 0.99 - ETA: 9s - loss:
0.0207 - accuracy: 0.99 - ETA: 9s - loss: 0.0206 - accuracy: 0.99 - ETA: 8s - loss: 0.0206 - accuracy: 0.99 - ETA: 8s - loss: 0.0205 -
accuracy: 0.99 - ETA: 8s - loss: 0.0204 - accuracy: 0.99 - ETA: 8s - loss: 0.0204 - accuracy: 0.99 - ETA: 8s - loss: 0.0211 - accurac
y: 0.99 - ETA: 8s - loss: 0.0211 - accuracy: 0.99 - ETA: 8s - loss: 0.0210 - accuracy: 0.99 - ETA: 7s - loss: 0.0209 - accuracy: 0.99
 - ETA: 7s - loss: 0.0209 - accuracy: 0.99 - ETA: 7s - loss: 0.0208 - accuracy: 0.99 - ETA: 7s - loss: 0.0207 - accuracy: 0.99 - ETA:
 7s - loss: 0.0207 - accuracy: 0.99 - ETA: 7s - loss: 0.0206 - accuracy: 0.99 - ETA: 6s - loss: 0.0205 - accuracy: 0.99 - ETA: 6s - lo
ss: 0.0205 - accuracy: 0.99 - ETA: 6s - loss: 0.0204 - accuracy: 0.99 - ETA: 6s - loss: 0.0203 - accuracy: 0.99 - ETA: 6s - loss: 0.02
03 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 5s - loss: 0.0201 - acc
uracy: 0.99 - ETA: 5s - loss: 0.0207 - accuracy: 0.99 - ETA: 5s - loss: 0.0206 - accuracy: 0.99 - ETA: 5s - loss: 0.0206 - accuracy:
 0.99 - ETA: 5s - loss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss: 0.0204 - accuracy: 0.99 -
 ETA: 4s - loss: 0.0204 - accuracy: 0.99 - ETA: 4s - loss: 0.0203 - accuracy: 0.99 - ETA: 4s - loss: 0.0202 - accuracy: 0.99 - ETA: 4s
- loss: 0.0202 - accuracy: 0.99 - ETA: 4s - loss: 0.0201 - accuracy: 0.99 - ETA: 4s - loss: 0.0201 - accuracy: 0.99 - ETA: 3s - loss:
 0.0200 - accuracy: 0.99 - ETA: 3s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s - loss: 0.0198
 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accuracy: 0.99 - ETA: 3s - loss: 0.0197 - accuracy: 0.99 - ETA: 3s - loss: 0.0197 - accur
acy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s - loss: 0.0195 - accuracy: 0.9
9 - ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0194 - accuracy: 0.99 - ETA: 2s - loss: 0.0193 - accuracy: 0.99 - ETA:
1s - loss: 0.0193 - accuracy: 0.99 - ETA: 1s - loss: 0.0192 - accuracy: 0.99 - ETA: 1s - loss: 0.0192 - accuracy: 0.99 - ETA: 1s - los
s: 0.0191 - accuracy: 0.99 - ETA: 1s - loss: 0.0191 - accuracy: 0.99 - ETA: 1s - loss: 0.0190 - accuracy: 0.99 - ETA: 1s - loss: 0.019
0 - accuracy: 0.99 - ETA: 0s - loss: 0.0189 - accuracy: 0.99 - ETA: 0s - loss: 0.0189 - accuracy: 0.99 - ETA: 0s - loss: 0.0195 - accu
racy: 0.99 - ETA: 0s - loss: 0.0194 - accuracy: 0.99 - ETA: 0s - loss: 0.0194 - accuracy: 0.99 - ETA: 0s - loss: 0.0193 - accuracy: 0.
99 - ETA: 0s - loss: 0.0193 - accuracy: 0.99 - 52s 161ms/step - loss: 0.0193 - accuracy: 0.9975 - val_loss: 0.0239 - val_accuracy: 0.9
968
Epoch 24/50
186/322 [================>.............] - ETA: 0s - loss: 0.0030 - accuracy: 1.00 - ETA: 26s - loss: 0.0030 - accuracy: 1.000 - ETA:
 30s - loss: 0.0030 - accuracy: 1.000 - ETA: 32s - loss: 0.0030 - accuracy: 1.000 - ETA: 37s - loss: 0.0030 - accuracy: 1.000 - ETA: 3
8s - loss: 0.0347 - accuracy: 0.994 - ETA: 38s - loss: 0.0302 - accuracy: 0.995 - ETA: 40s - loss: 0.0268 - accuracy: 0.996 - ETA: 42s
- loss: 0.0242 - accuracy: 0.996 - ETA: 41s - loss: 0.0221 - accuracy: 0.996 - ETA: 42s - loss: 0.0204 - accuracy: 0.997 - ETA: 42s -
 loss: 0.0190 - accuracy: 0.997 - ETA: 42s - loss: 0.0178 - accuracy: 0.997 - ETA: 42s - loss: 0.0168 - accuracy: 0.997 - ETA: 42s - l
oss: 0.0159 - accuracy: 0.997 - ETA: 42s - loss: 0.0267 - accuracy: 0.996 - ETA: 43s - loss: 0.0254 - accuracy: 0.996 - ETA: 43s - los
s: 0.0242 - accuracy: 0.996 - ETA: 42s - loss: 0.0232 - accuracy: 0.996 - ETA: 42s - loss: 0.0222 - accuracy: 0.996 - ETA: 41s - loss:
0.0214 - accuracy: 0.997 - ETA: 42s - loss: 0.0206 - accuracy: 0.997 - ETA: 41s - loss: 0.0199 - accuracy: 0.997 - ETA: 42s - loss: 0.
0192 - accuracy: 0.997 - ETA: 42s - loss: 0.0262 - accuracy: 0.996 - ETA: 42s - loss: 0.0318 - accuracy: 0.995 - ETA: 42s - loss: 0.03
09 - accuracy: 0.995 - ETA: 41s - loss: 0.0300 - accuracy: 0.995 - ETA: 41s - loss: 0.0292 - accuracy: 0.995 - ETA: 41s - loss: 0.0284
- accuracy: 0.995 - ETA: 41s - loss: 0.0277 - accuracy: 0.996 - ETA: 41s - loss: 0.0271 - accuracy: 0.996 - ETA: 41s - loss: 0.0265 -
 accuracy: 0.996 - ETA: 41s - loss: 0.0259 - accuracy: 0.996 - ETA: 41s - loss: 0.0254 - accuracy: 0.996 - ETA: 40s - loss: 0.0249 - a
ccuracy: 0.996 - ETA: 40s - loss: 0.0244 - accuracy: 0.996 - ETA: 40s - loss: 0.0239 - accuracy: 0.996 - ETA: 40s - loss: 0.0234 - acc
uracy: 0.996 - ETA: 40s - loss: 0.0230 - accuracy: 0.996 - ETA: 40s - loss: 0.0225 - accuracy: 0.997 - ETA: 40s - loss: 0.0221 - accur
acy: 0.997 - ETA: 40s - loss: 0.0217 - accuracy: 0.997 - ETA: 40s - loss: 0.0213 - accuracy: 0.997 - ETA: 39s - loss: 0.0209 - accurac
y: 0.997 - ETA: 39s - loss: 0.0248 - accuracy: 0.996 - ETA: 39s - loss: 0.0243 - accuracy: 0.996 - ETA: 39s - loss: 0.0239 - accuracy:
0.996 - ETA: 39s - loss: 0.0235 - accuracy: 0.996 - ETA: 39s - loss: 0.0231 - accuracy: 0.996 - ETA: 39s - loss: 0.0227 - accuracy: 0.
996 - ETA: 39s - loss: 0.0224 - accuracy: 0.997 - ETA: 38s - loss: 0.0220 - accuracy: 0.997 - ETA: 38s - loss: 0.0217 - accuracy: 0.99
7 - ETA: 38s - loss: 0.0214 - accuracy: 0.997 - ETA: 38s - loss: 0.0210 - accuracy: 0.997 - ETA: 38s - loss: 0.0207 - accuracy: 0.997
 - ETA: 37s - loss: 0.0204 - accuracy: 0.997 - ETA: 38s - loss: 0.0201 - accuracy: 0.997 - ETA: 37s - loss: 0.0232 - accuracy: 0.996 -
ETA: 37s - loss: 0.0228 - accuracy: 0.996 - ETA: 37s - loss: 0.0225 - accuracy: 0.997 - ETA: 37s - loss: 0.0222 - accuracy: 0.997 - ET
A: 37s - loss: 0.0219 - accuracy: 0.997 - ETA: 37s - loss: 0.0247 - accuracy: 0.996 - ETA: 36s - loss: 0.0244 - accuracy: 0.996 - ETA:
37s - loss: 0.0241 - accuracy: 0.996 - ETA: 36s - loss: 0.0238 - accuracy: 0.996 - ETA: 36s - loss: 0.0235 - accuracy: 0.996 - ETA: 36
s - loss: 0.0233 - accuracy: 0.996 - ETA: 36s - loss: 0.0230 - accuracy: 0.996 - ETA: 36s - loss: 0.0227 - accuracy: 0.997 - ETA: 35s
 - loss: 0.0225 - accuracy: 0.997 - ETA: 35s - loss: 0.0223 - accuracy: 0.997 - ETA: 35s - loss: 0.0220 - accuracy: 0.997 - ETA: 35s -
loss: 0.0218 - accuracy: 0.997 - ETA: 35s - loss: 0.0216 - accuracy: 0.997 - ETA: 35s - loss: 0.0213 - accuracy: 0.997 - ETA: 35s - lo
ss: 0.0211 - accuracy: 0.997 - ETA: 35s - loss: 0.0209 - accuracy: 0.997 - ETA: 35s - loss: 0.0207 - accuracy: 0.997 - ETA: 34s - los
s: 0.0228 - accuracy: 0.997 - ETA: 34s - loss: 0.0226 - accuracy: 0.997 - ETA: 34s - loss: 0.0224 - accuracy: 0.997 - ETA: 34s - loss:
0.0222 - accuracy: 0.997 - ETA: 34s - loss: 0.0220 - accuracy: 0.997 - ETA: 34s - loss: 0.0218 - accuracy: 0.997 - ETA: 34s - loss: 0.
0216 - accuracy: 0.997 - ETA: 34s - loss: 0.0214 - accuracy: 0.997 - ETA: 33s - loss: 0.0212 - accuracy: 0.997 - ETA: 33s - loss: 0.02
29 - accuracy: 0.996 - ETA: 33s - loss: 0.0227 - accuracy: 0.996 - ETA: 33s - loss: 0.0225 - accuracy: 0.997 - ETA: 33s - loss: 0.0223
- accuracy: 0.997 - ETA: 33s - loss: 0.0222 - accuracy: 0.997 - ETA: 33s - loss: 0.0220 - accuracy: 0.997 - ETA: 33s - loss: 0.0237 -
 accuracy: 0.996 - ETA: 32s - loss: 0.0254 - accuracy: 0.996 - ETA: 32s - loss: 0.0252 - accuracy: 0.996 - ETA: 32s - loss: 0.0250 - a
ccuracy: 0.996 - ETA: 32s - loss: 0.0248 - accuracy: 0.996 - ETA: 32s - loss: 0.0246 - accuracy: 0.996 - ETA: 32s - loss: 0.0245 - acc
uracy: 0.996 - ETA: 32s - loss: 0.0243 - accuracy: 0.996 - ETA: 32s - loss: 0.0242 - accuracy: 0.996 - ETA: 31s - loss: 0.0240 - accur
acy: 0.996 - ETA: 31s - loss: 0.0239 - accuracy: 0.996 - ETA: 31s - loss: 0.0237 - accuracy: 0.996 - ETA: 31s - loss: 0.0235 - accurac
y: 0.996 - ETA: 31s - loss: 0.0234 - accuracy: 0.996 - ETA: 31s - loss: 0.0232 - accuracy: 0.996 - ETA: 31s - loss: 0.0231 - accuracy:
0.996 - ETA: 31s - loss: 0.0229 - accuracy: 0.997 - ETA: 30s - loss: 0.0228 - accuracy: 0.997 - ETA: 30s - loss: 0.0226 - accuracy: 0.
997 - ETA: 30s - loss: 0.0224 - accuracy: 0.997 - ETA: 30s - loss: 0.0223 - accuracy: 0.997 - ETA: 30s - loss: 0.0221 - accuracy: 0.99
7 - ETA: 30s - loss: 0.0220 - accuracy: 0.997 - ETA: 29s - loss: 0.0218 - accuracy: 0.997 - ETA: 29s - loss: 0.0217 - accuracy: 0.997
 - ETA: 29s - loss: 0.0215 - accuracy: 0.997 - ETA: 29s - loss: 0.0214 - accuracy: 0.997 - ETA: 29s - loss: 0.0212 - accuracy: 0.997 -
ETA: 29s - loss: 0.0211 - accuracy: 0.997 - ETA: 28s - loss: 0.0209 - accuracy: 0.997 - ETA: 28s - loss: 0.0225 - accuracy: 0.997 - ET
A: 28s - loss: 0.0223 - accuracy: 0.997 - ETA: 28s - loss: 0.0222 - accuracy: 0.997 - ETA: 28s - loss: 0.0236 - accuracy: 0.996 - ETA:
28s - loss: 0.0234 - accuracy: 0.996 - ETA: 28s - loss: 0.0248 - accuracy: 0.996 - ETA: 27s - loss: 0.0246 - accuracy: 0.996 - ETA: 27
s - loss: 0.0245 - accuracy: 0.996 - ETA: 27s - loss: 0.0244 - accuracy: 0.996 - ETA: 27s - loss: 0.0242 - accuracy: 0.996 - ETA: 27s
 - loss: 0.0241 - accuracy: 0.996 - ETA: 27s - loss: 0.0240 - accuracy: 0.996 - ETA: 27s - loss: 0.0251 - accuracy: 0.996 - ETA: 26s -
loss: 0.0250 - accuracy: 0.996 - ETA: 26s - loss: 0.0248 - accuracy: 0.996 - ETA: 26s - loss: 0.0258 - accuracy: 0.996 - ETA: 26s - lo
```

```
ss: 0.0257 - accuracy: 0.996 - ETA: 26s - loss: 0.0256 - accuracy: 0.996 - ETA: 26s - loss: 0.0255 - accuracy: 0.996 - ETA: 26s - los
s: 0.0254 - accuracy: 0.996 - ETA: 25s - loss: 0.0253 - accuracy: 0.996 - ETA: 25s - loss: 0.0252 - accuracy: 0.996 - ETA: 25s - loss:
0.0251 - accuracy: 0.996 - ETA: 25s - loss: 0.0249 - accuracy: 0.996 - ETA: 25s - loss: 0.0248 - accuracy: 0.996 - ETA: 25s - loss: 0.
0247 - accuracy: 0.996 - ETA: 25s - loss: 0.0246 - accuracy: 0.996 - ETA: 24s - loss: 0.0245 - accuracy: 0.996 - ETA: 24s - loss: 0.02
44 - accuracy: 0.996 - ETA: 24s - loss: 0.0243 - accuracy: 0.996 - ETA: 24s - loss: 0.0241 - accuracy: 0.996 - ETA: 24s - loss: 0.0240
- accuracy: 0.996 - ETA: 23s - loss: 0.0239 - accuracy: 0.996 - ETA: 23s - loss: 0.0238 - accuracy: 0.996 - ETA: 23s - loss: 0.0236 -
 accuracy: 0.996 - ETA: 23s - loss: 0.0235 - accuracy: 0.996 - ETA: 23s - loss: 0.0234 - accuracy: 0.996 - ETA: 23s - loss: 0.0233 - a
ccuracy: 0.997 - ETA: 23s - loss: 0.0232 - accuracy: 0.997 - ETA: 22s - loss: 0.0230 - accuracy: 0.997 - ETA: 22s - loss: 0.0229 - acc
uracy: 0.997 - ETA: 22s - loss: 0.0228 - accuracy: 0.997 - ETA: 22s - loss: 0.0227 - accuracy: 0.997 - ETA: 22s - loss: 0.0226 - accur
acy: 0.997 - ETA: 22s - loss: 0.0224 - accuracy: 0.997 - ETA: 22s - loss: 0.0223 - accuracy: 0.997 - ETA: 22s - loss: 0.0222 - accurac
y: 0.997 - ETA: 21s - loss: 0.0221 - accuracy: 0.997 - ETA: 21s - loss: 0.0220 - accuracy: 0.997 - ETA: 21s - loss: 0.0219 - accuracy:
0.997 - ETA: 21s - loss: 0.0218 - accuracy: 0.997 - ETA: 21s - loss: 0.0217 - accuracy: 0.997 - ETA: 21s - loss: 0.0216 - accuracy: 0.
997 - ETA: 20s - loss: 0.0214 - accuracy: 0.997 - ETA: 20s - loss: 0.0213 - accuracy: 0.997 - ETA: 20s - loss: 0.0212 - accuracy: 0.99
7 - ETA: 20s - loss: 0.0211 - accuracy: 0.997 - ETA: 20s - loss: 0.0222 - accuracy: 0.997 - ETA: 20s - loss: 0.0221 - accuracy: 0.997
 - ETA: 20s - loss: 0.0220 - accuracy: 0.9971322/322 [==============================] - ETA: 20s - loss: 0.0219 - accuracy: 0.997 - ET
A: 19s - loss: 0.0218 - accuracy: 0.997 - ETA: 19s - loss: 0.0217 - accuracy: 0.997 - ETA: 19s - loss: 0.0216 - accuracy: 0.997 - ETA:
19s - loss: 0.0215 - accuracy: 0.997 - ETA: 19s - loss: 0.0214 - accuracy: 0.997 - ETA: 19s - loss: 0.0213 - accuracy: 0.997 - ETA: 18
s - loss: 0.0212 - accuracy: 0.997 - ETA: 18s - loss: 0.0211 - accuracy: 0.997 - ETA: 18s - loss: 0.0210 - accuracy: 0.997 - ETA: 18s
 - loss: 0.0209 - accuracy: 0.997 - ETA: 18s - loss: 0.0208 - accuracy: 0.997 - ETA: 18s - loss: 0.0208 - accuracy: 0.997 - ETA: 17s -
loss: 0.0207 - accuracy: 0.997 - ETA: 17s - loss: 0.0217 - accuracy: 0.997 - ETA: 17s - loss: 0.0216 - accuracy: 0.997 - ETA: 17s - lo
ss: 0.0215 - accuracy: 0.997 - ETA: 17s - loss: 0.0214 - accuracy: 0.997 - ETA: 17s - loss: 0.0213 - accuracy: 0.997 - ETA: 17s - los
s: 0.0212 - accuracy: 0.997 - ETA: 16s - loss: 0.0211 - accuracy: 0.997 - ETA: 16s - loss: 0.0210 - accuracy: 0.997 - ETA: 16s - loss:
0.0210 - accuracy: 0.997 - ETA: 16s - loss: 0.0209 - accuracy: 0.997 - ETA: 16s - loss: 0.0208 - accuracy: 0.997 - ETA: 16s - loss: 0.
0207 - accuracy: 0.997 - ETA: 16s - loss: 0.0206 - accuracy: 0.997 - ETA: 15s - loss: 0.0215 - accuracy: 0.997 - ETA: 15s - loss: 0.02
14 - accuracy: 0.997 - ETA: 15s - loss: 0.0213 - accuracy: 0.997 - ETA: 15s - loss: 0.0212 - accuracy: 0.997 - ETA: 15s - loss: 0.0211
- accuracy: 0.997 - ETA: 15s - loss: 0.0211 - accuracy: 0.997 - ETA: 15s - loss: 0.0210 - accuracy: 0.997 - ETA: 15s - loss: 0.0209 -
 accuracy: 0.997 - ETA: 14s - loss: 0.0208 - accuracy: 0.997 - ETA: 14s - loss: 0.0208 - accuracy: 0.997 - ETA: 14s - loss: 0.0207 - a
ccuracy: 0.997 - ETA: 14s - loss: 0.0206 - accuracy: 0.997 - ETA: 14s - loss: 0.0205 - accuracy: 0.997 - ETA: 14s - loss: 0.0205 - acc
uracy: 0.997 - ETA: 14s - loss: 0.0204 - accuracy: 0.997 - ETA: 13s - loss: 0.0203 - accuracy: 0.997 - ETA: 13s - loss: 0.0202 - accur
acy: 0.997 - ETA: 13s - loss: 0.0202 - accuracy: 0.997 - ETA: 13s - loss: 0.0201 - accuracy: 0.997 - ETA: 13s - loss: 0.0200 - accurac
y: 0.997 - ETA: 13s - loss: 0.0199 - accuracy: 0.997 - ETA: 13s - loss: 0.0199 - accuracy: 0.997 - ETA: 13s - loss: 0.0198 - accuracy:
0.997 - ETA: 12s - loss: 0.0197 - accuracy: 0.997 - ETA: 12s - loss: 0.0197 - accuracy: 0.997 - ETA: 12s - loss: 0.0196 - accuracy: 0.
997 - ETA: 12s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - loss: 0.0194 - accuracy: 0.997 - ETA: 12s - loss: 0.0194 - accuracy: 0.99
7 - ETA: 12s - loss: 0.0202 - accuracy: 0.997 - ETA: 11s - loss: 0.0201 - accuracy: 0.997 - ETA: 11s - loss: 0.0209 - accuracy: 0.997
 - ETA: 11s - loss: 0.0208 - accuracy: 0.997 - ETA: 11s - loss: 0.0207 - accuracy: 0.997 - ETA: 11s - loss: 0.0207 - accuracy: 0.997 -
ETA: 11s - loss: 0.0206 - accuracy: 0.997 - ETA: 11s - loss: 0.0205 - accuracy: 0.997 - ETA: 10s - loss: 0.0205 - accuracy: 0.997 - ET
A: 10s - loss: 0.0204 - accuracy: 0.997 - ETA: 10s - loss: 0.0211 - accuracy: 0.997 - ETA: 10s - loss: 0.0210 - accuracy: 0.997 - ETA:
10s - loss: 0.0209 - accuracy: 0.997 - ETA: 10s - loss: 0.0209 - accuracy: 0.997 - ETA: 9s - loss: 0.0208 - accuracy: 0.997 - ETA: 9s
 - loss: 0.0208 - accuracy: 0.99 - ETA: 9s - loss: 0.0207 - accuracy: 0.99 - ETA: 9s - loss: 0.0206 - accuracy: 0.99 - ETA: 9s - loss:
0.0206 - accuracy: 0.99 - ETA: 9s - loss: 0.0205 - accuracy: 0.99 - ETA: 9s - loss: 0.0205 - accuracy: 0.99 - ETA: 8s - loss: 0.0204 -
accuracy: 0.99 - ETA: 8s - loss: 0.0204 - accuracy: 0.99 - ETA: 8s - loss: 0.0203 - accuracy: 0.99 - ETA: 8s - loss: 0.0202 - accurac
y: 0.99 - ETA: 8s - loss: 0.0202 - accuracy: 0.99 - ETA: 8s - loss: 0.0201 - accuracy: 0.99 - ETA: 8s - loss: 0.0201 - accuracy: 0.99
 - ETA: 7s - loss: 0.0200 - accuracy: 0.99 - ETA: 7s - loss: 0.0206 - accuracy: 0.99 - ETA: 7s - loss: 0.0206 - accuracy: 0.99 - ETA:
 7s - loss: 0.0205 - accuracy: 0.99 - ETA: 7s - loss: 0.0205 - accuracy: 0.99 - ETA: 7s - loss: 0.0204 - accuracy: 0.99 - ETA: 6s - lo
ss: 0.0210 - accuracy: 0.99 - ETA: 6s - loss: 0.0210 - accuracy: 0.99 - ETA: 6s - loss: 0.0209 - accuracy: 0.99 - ETA: 6s - loss: 0.02
08 - accuracy: 0.99 - ETA: 6s - loss: 0.0208 - accuracy: 0.99 - ETA: 6s - loss: 0.0207 - accuracy: 0.99 - ETA: 6s - loss: 0.0207 - acc
uracy: 0.99 - ETA: 5s - loss: 0.0206 - accuracy: 0.99 - ETA: 5s - loss: 0.0206 - accuracy: 0.99 - ETA: 5s - loss: 0.0205 - accuracy:
 0.99 - ETA: 5s - loss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss: 0.0204 - accuracy: 0.99 - ETA: 5s - loss: 0.0203 - accuracy: 0.99 -
 ETA: 4s - loss: 0.0203 - accuracy: 0.99 - ETA: 4s - loss: 0.0202 - accuracy: 0.99 - ETA: 4s - loss: 0.0202 - accuracy: 0.99 - ETA: 4s
- loss: 0.0201 - accuracy: 0.99 - ETA: 4s - loss: 0.0201 - accuracy: 0.99 - ETA: 4s - loss: 0.0200 - accuracy: 0.99 - ETA: 4s - loss:
 0.0200 - accuracy: 0.99 - ETA: 3s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s - loss: 0.0205 - accuracy: 0.99 - ETA: 3s - loss: 0.0204
 - accuracy: 0.99 - ETA: 3s - loss: 0.0204 - accuracy: 0.99 - ETA: 3s - loss: 0.0203 - accuracy: 0.99 - ETA: 3s - loss: 0.0203 - accur
acy: 0.99 - ETA: 2s - loss: 0.0202 - accuracy: 0.99 - ETA: 2s - loss: 0.0201 - accuracy: 0.99 - ETA: 2s - loss: 0.0207 - accuracy: 0.9
9 - ETA: 2s - loss: 0.0207 - accuracy: 0.99 - ETA: 2s - loss: 0.0206 - accuracy: 0.99 - ETA: 2s - loss: 0.0206 - accuracy: 0.99 - ETA:
2s - loss: 0.0205 - accuracy: 0.99 - ETA: 1s - loss: 0.0205 - accuracy: 0.99 - ETA: 1s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - los
s: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.020
2 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accu
racy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.
99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - 54s 167ms/step - loss: 0.0199 - accuracy: 0.9975 - val_loss: 0.0229 - val_accuracy: 0.9
968
Epoch 25/50
115/322 [=========>....................] - ETA: 0s - loss: 0.0034 - accuracy: 1.00 - ETA: 19s - loss: 0.0034 - accuracy: 1.000 - ETA:
 26s - loss: 0.0033 - accuracy: 1.000 - ETA: 29s - loss: 0.0541 - accuracy: 0.992 - ETA: 31s - loss: 0.0439 - accuracy: 0.993 - ETA: 3
5s - loss: 0.0372 - accuracy: 0.994 - ETA: 40s - loss: 0.0614 - accuracy: 0.991 - ETA: 41s - loss: 0.0543 - accuracy: 0.992 - ETA: 41s
- loss: 0.0488 - accuracy: 0.993 - ETA: 40s - loss: 0.0445 - accuracy: 0.993 - ETA: 40s - loss: 0.0409 - accuracy: 0.994 - ETA: 40s -
 loss: 0.0379 - accuracy: 0.994 - ETA: 40s - loss: 0.0354 - accuracy: 0.995 - ETA: 41s - loss: 0.0332 - accuracy: 0.995 - ETA: 42s - l
oss: 0.0313 - accuracy: 0.995 - ETA: 43s - loss: 0.0297 - accuracy: 0.996 - ETA: 43s - loss: 0.0282 - accuracy: 0.996 - ETA: 42s - los
s: 0.0269 - accuracy: 0.996 - ETA: 42s - loss: 0.0257 - accuracy: 0.996 - ETA: 42s - loss: 0.0247 - accuracy: 0.996 - ETA: 41s - loss:
0.0237 - accuracy: 0.997 - ETA: 41s - loss: 0.0228 - accuracy: 0.997 - ETA: 42s - loss: 0.0220 - accuracy: 0.997 - ETA: 42s - loss: 0.
0213 - accuracy: 0.997 - ETA: 42s - loss: 0.0206 - accuracy: 0.997 - ETA: 42s - loss: 0.0199 - accuracy: 0.997 - ETA: 41s - loss: 0.01
93 - accuracy: 0.997 - ETA: 41s - loss: 0.0188 - accuracy: 0.997 - ETA: 41s - loss: 0.0182 - accuracy: 0.997 - ETA: 41s - loss: 0.0177
- accuracy: 0.997 - ETA: 42s - loss: 0.0173 - accuracy: 0.998 - ETA: 42s - loss: 0.0168 - accuracy: 0.998 - ETA: 42s - loss: 0.0164 -
 accuracy: 0.998 - ETA: 41s - loss: 0.0160 - accuracy: 0.998 - ETA: 41s - loss: 0.0156 - accuracy: 0.998 - ETA: 41s - loss: 0.0153 - a
ccuracy: 0.998 - ETA: 40s - loss: 0.0149 - accuracy: 0.998 - ETA: 41s - loss: 0.0203 - accuracy: 0.997 - ETA: 41s - loss: 0.0199 - acc
uracy: 0.997 - ETA: 41s - loss: 0.0195 - accuracy: 0.997 - ETA: 41s - loss: 0.0191 - accuracy: 0.997 - ETA: 41s - loss: 0.0187 - accur
acy: 0.997 - ETA: 41s - loss: 0.0183 - accuracy: 0.997 - ETA: 41s - loss: 0.0180 - accuracy: 0.997 - ETA: 41s - loss: 0.0177 - accurac
y: 0.997 - ETA: 41s - loss: 0.0173 - accuracy: 0.998 - ETA: 41s - loss: 0.0170 - accuracy: 0.998 - ETA: 41s - loss: 0.0167 - accuracy:
0.998 - ETA: 40s - loss: 0.0165 - accuracy: 0.998 - ETA: 40s - loss: 0.0162 - accuracy: 0.998 - ETA: 40s - loss: 0.0159 - accuracy: 0.
998 - ETA: 40s - loss: 0.0157 - accuracy: 0.998 - ETA: 39s - loss: 0.0154 - accuracy: 0.998 - ETA: 40s - loss: 0.0152 - accuracy: 0.99
8 - ETA: 39s - loss: 0.0150 - accuracy: 0.998 - ETA: 39s - loss: 0.0148 - accuracy: 0.998 - ETA: 39s - loss: 0.0146 - accuracy: 0.998
 - ETA: 39s - loss: 0.0144 - accuracy: 0.998 - ETA: 39s - loss: 0.0142 - accuracy: 0.998 - ETA: 38s - loss: 0.0140 - accuracy: 0.998 -
ETA: 38s - loss: 0.0138 - accuracy: 0.998 - ETA: 38s - loss: 0.0136 - accuracy: 0.998 - ETA: 38s - loss: 0.0134 - accuracy: 0.998 - ET
A: 38s - loss: 0.0133 - accuracy: 0.998 - ETA: 38s - loss: 0.0131 - accuracy: 0.998 - ETA: 38s - loss: 0.0161 - accuracy: 0.998 - ETA:
38s - loss: 0.0159 - accuracy: 0.998 - ETA: 37s - loss: 0.0186 - accuracy: 0.997 - ETA: 37s - loss: 0.0184 - accuracy: 0.997 - ETA: 37
s - loss: 0.0182 - accuracy: 0.997 - ETA: 37s - loss: 0.0180 - accuracy: 0.997 - ETA: 37s - loss: 0.0178 - accuracy: 0.997 - ETA: 37s
 - loss: 0.0177 - accuracy: 0.997 - ETA: 37s - loss: 0.0175 - accuracy: 0.997 - ETA: 36s - loss: 0.0173 - accuracy: 0.997 - ETA: 36s -
loss: 0.0171 - accuracy: 0.997 - ETA: 36s - loss: 0.0170 - accuracy: 0.998 - ETA: 36s - loss: 0.0168 - accuracy: 0.998 - ETA: 36s - lo
ss: 0.0166 - accuracy: 0.998 - ETA: 36s - loss: 0.0188 - accuracy: 0.997 - ETA: 36s - loss: 0.0186 - accuracy: 0.997 - ETA: 36s - los
s: 0.0184 - accuracy: 0.997 - ETA: 35s - loss: 0.0182 - accuracy: 0.997 - ETA: 35s - loss: 0.0181 - accuracy: 0.997 - ETA: 35s - loss:
0.0179 - accuracy: 0.997 - ETA: 35s - loss: 0.0178 - accuracy: 0.997 - ETA: 35s - loss: 0.0176 - accuracy: 0.997 - ETA: 35s - loss: 0.
0175 - accuracy: 0.997 - ETA: 34s - loss: 0.0174 - accuracy: 0.9979 20/322 [>.............................] - ETA: 44s - loss: 0.0323
```

```
 - accuracy: 0.995 - ETA: 44s - loss: 0.0311 - accuracy: 0.995 - ETA: 44s - loss: 0.0299 - accuracy: 0.995 - ETA: 44s - loss: 0.0289 -
accuracy: 0.995 - ETA: 44s - loss: 0.0280 - accuracy: 0.996 - ETA: 44s - loss: 0.0271 - accuracy: 0.996 - ETA: 44s - loss: 0.0263 - ac
curacy: 0.996 - ETA: 44s - loss: 0.0256 - accuracy: 0.996 - ETA: 43s - loss: 0.0249 - accuracy: 0.996 - ETA: 43s - loss: 0.0243 - accu
racy: 0.996 - ETA: 43s - loss: 0.0237 - accuracy: 0.996 - ETA: 43s - loss: 0.0231 - accuracy: 0.997 - ETA: 43s - loss: 0.0225 - accura
cy: 0.997 - ETA: 43s - loss: 0.0220 - accuracy: 0.997 - ETA: 43s - loss: 0.0215 - accuracy: 0.997 - ETA: 43s - loss: 0.0210 - accurac
y: 0.997 - ETA: 42s - loss: 0.0206 - accuracy: 0.997 - ETA: 43s - loss: 0.0201 - accuracy: 0.997 - ETA: 42s - loss: 0.0197 - accuracy:
0.997 - ETA: 42s - loss: 0.0239 - accuracy: 0.996 - ETA: 42s - loss: 0.0234 - accuracy: 0.996 - ETA: 42s - loss: 0.0229 - accuracy: 0.
997 - ETA: 42s - loss: 0.0269 - accuracy: 0.996 - ETA: 42s - loss: 0.0264 - accuracy: 0.996 - ETA: 42s - loss: 0.0259 - accuracy: 0.99
6 - ETA: 42s - loss: 0.0294 - accuracy: 0.995 - ETA: 41s - loss: 0.0288 - accuracy: 0.995 - ETA: 41s - loss: 0.0284 - accuracy: 0.996
 - ETA: 41s - loss: 0.0279 - accuracy: 0.996 - ETA: 41s - loss: 0.0275 - accuracy: 0.996 - ETA: 41s - loss: 0.0271 - accuracy: 0.996 -
ETA: 41s - loss: 0.0267 - accuracy: 0.996 - ETA: 41s - loss: 0.0263 - accuracy: 0.996 - ETA: 40s - loss: 0.0259 - accuracy: 0.996 - ET
A: 40s - loss: 0.0256 - accuracy: 0.996 - ETA: 40s - loss: 0.0252 - accuracy: 0.996 - ETA: 40s - loss: 0.0249 - accuracy: 0.996 - ETA:
40s - loss: 0.0245 - accuracy: 0.996 - ETA: 40s - loss: 0.0242 - accuracy: 0.996 - ETA: 40s - loss: 0.0239 - accuracy: 0.996 - ETA: 40
s - loss: 0.0236 - accuracy: 0.996 - ETA: 40s - loss: 0.0233 - accuracy: 0.996 - ETA: 39s - loss: 0.0230 - accuracy: 0.997 - ETA: 39s
 - loss: 0.0227 - accuracy: 0.997 - ETA: 39s - loss: 0.0254 - accuracy: 0.996 - ETA: 39s - loss: 0.0250 - accuracy: 0.996 - ETA: 39s -
loss: 0.0247 - accuracy: 0.996 - ETA: 39s - loss: 0.0244 - accuracy: 0.996 - ETA: 39s - loss: 0.0241 - accuracy: 0.996 - ETA: 39s - lo
ss: 0.0238 - accuracy: 0.996 - ETA: 38s - loss: 0.0236 - accuracy: 0.996 - ETA: 38s - loss: 0.0233 - accuracy: 0.996 - ETA: 38s - los
s: 0.0230 - accuracy: 0.997 - ETA: 38s - loss: 0.0228 - accuracy: 0.997 - ETA: 38s - loss: 0.0250 - accuracy: 0.996 - ETA: 38s - loss:
0.0247 - accuracy: 0.996 - ETA: 37s - loss: 0.0245 - accuracy: 0.996 - ETA: 37s - loss: 0.0242 - accuracy: 0.996 - ETA: 37s - loss: 0.
0240 - accuracy: 0.996 - ETA: 37s - loss: 0.0237 - accuracy: 0.996 - ETA: 37s - loss: 0.0257 - accuracy: 0.996 - ETA: 37s - loss: 0.02
54 - accuracy: 0.996 - ETA: 37s - loss: 0.0252 - accuracy: 0.996 - ETA: 36s - loss: 0.0249 - accuracy: 0.996 - ETA: 36s - loss: 0.0247
- accuracy: 0.996 - ETA: 36s - loss: 0.0245 - accuracy: 0.996 - ETA: 36s - loss: 0.0242 - accuracy: 0.996 - ETA: 36s - loss: 0.0240 -
 accuracy: 0.996 - ETA: 36s - loss: 0.0238 - accuracy: 0.996 - ETA: 35s - loss: 0.0236 - accuracy: 0.996 - ETA: 35s - loss: 0.0254 - a
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uracy: 0.996 - ETA: 35s - loss: 0.0264 - accuracy: 0.996 - ETA: 35s - loss: 0.0262 - accuracy: 0.996 - ETA: 34s - loss: 0.0260 - accur
acy: 0.996 - ETA: 34s - loss: 0.0258 - accuracy: 0.996 - ETA: 34s - loss: 0.0256 - accuracy: 0.996 - ETA: 34s - loss: 0.0254 - accurac
y: 0.996 - ETA: 34s - loss: 0.0252 - accuracy: 0.996 - ETA: 34s - loss: 0.0251 - accuracy: 0.996 - ETA: 33s - loss: 0.0249 - accuracy:
0.996 - ETA: 33s - loss: 0.0247 - accuracy: 0.996 - ETA: 33s - loss: 0.0245 - accuracy: 0.996 - ETA: 33s - loss: 0.0243 - accuracy: 0.
996 - ETA: 33s - loss: 0.0242 - accuracy: 0.996 - ETA: 33s - loss: 0.0240 - accuracy: 0.996 - ETA: 33s - loss: 0.0238 - accuracy: 0.99
6 - ETA: 32s - loss: 0.0236 - accuracy: 0.996 - ETA: 32s - loss: 0.0250 - accuracy: 0.996 - ETA: 32s - loss: 0.0248 - accuracy: 0.996
 - ETA: 32s - loss: 0.0247 - accuracy: 0.996 - ETA: 32s - loss: 0.0245 - accuracy: 0.996 - ETA: 32s - loss: 0.0243 - accuracy: 0.996 -
ETA: 32s - loss: 0.0241 - accuracy: 0.9967303/322 [===========================>..] - ETA: 32s - loss: 0.0240 - accuracy: 0.996 - ETA:
 31s - loss: 0.0238 - accuracy: 0.996 - ETA: 31s - loss: 0.0236 - accuracy: 0.996 - ETA: 31s - loss: 0.0235 - accuracy: 0.996 - ETA: 3
1s - loss: 0.0233 - accuracy: 0.996 - ETA: 31s - loss: 0.0231 - accuracy: 0.996 - ETA: 31s - loss: 0.0230 - accuracy: 0.996 - ETA: 30s
- loss: 0.0228 - accuracy: 0.997 - ETA: 30s - loss: 0.0243 - accuracy: 0.996 - ETA: 30s - loss: 0.0241 - accuracy: 0.996 - ETA: 30s -
 loss: 0.0239 - accuracy: 0.996 - ETA: 30s - loss: 0.0238 - accuracy: 0.996 - ETA: 30s - loss: 0.0236 - accuracy: 0.996 - ETA: 29s - l
oss: 0.0235 - accuracy: 0.996 - ETA: 29s - loss: 0.0233 - accuracy: 0.996 - ETA: 29s - loss: 0.0232 - accuracy: 0.996 - ETA: 29s - los
s: 0.0230 - accuracy: 0.996 - ETA: 29s - loss: 0.0243 - accuracy: 0.996 - ETA: 29s - loss: 0.0242 - accuracy: 0.996 - ETA: 29s - loss:
0.0240 - accuracy: 0.996 - ETA: 29s - loss: 0.0239 - accuracy: 0.996 - ETA: 28s - loss: 0.0237 - accuracy: 0.996 - ETA: 28s - loss: 0.
0236 - accuracy: 0.996 - ETA: 28s - loss: 0.0235 - accuracy: 0.996 - ETA: 28s - loss: 0.0233 - accuracy: 0.996 - ETA: 28s - loss: 0.02
32 - accuracy: 0.996 - ETA: 28s - loss: 0.0231 - accuracy: 0.996 - ETA: 27s - loss: 0.0229 - accuracy: 0.996 - ETA: 27s - loss: 0.0228
- accuracy: 0.997 - ETA: 27s - loss: 0.0227 - accuracy: 0.997 - ETA: 27s - loss: 0.0225 - accuracy: 0.997 - ETA: 27s - loss: 0.0224 -
 accuracy: 0.997 - ETA: 27s - loss: 0.0223 - accuracy: 0.997 - ETA: 27s - loss: 0.0222 - accuracy: 0.997 - ETA: 26s - loss: 0.0220 - a
ccuracy: 0.997 - ETA: 26s - loss: 0.0219 - accuracy: 0.997 - ETA: 26s - loss: 0.0230 - accuracy: 0.996 - ETA: 26s - loss: 0.0229 - acc
uracy: 0.996 - ETA: 26s - loss: 0.0227 - accuracy: 0.997 - ETA: 26s - loss: 0.0226 - accuracy: 0.997 - ETA: 26s - loss: 0.0225 - accur
acy: 0.997 - ETA: 25s - loss: 0.0235 - accuracy: 0.996 - ETA: 25s - loss: 0.0234 - accuracy: 0.996 - ETA: 25s - loss: 0.0233 - accurac
y: 0.996 - ETA: 25s - loss: 0.0232 - accuracy: 0.996 - ETA: 25s - loss: 0.0231 - accuracy: 0.996 - ETA: 24s - loss: 0.0230 - accuracy:
0.996 - ETA: 24s - loss: 0.0229 - accuracy: 0.996 - ETA: 24s - loss: 0.0227 - accuracy: 0.997 - ETA: 24s - loss: 0.0226 - accuracy: 0.
997 - ETA: 24s - loss: 0.0225 - accuracy: 0.997 - ETA: 24s - loss: 0.0224 - accuracy: 0.997 - ETA: 24s - loss: 0.0223 - accuracy: 0.99
7 - ETA: 23s - loss: 0.0222 - accuracy: 0.997 - ETA: 23s - loss: 0.0221 - accuracy: 0.997 - ETA: 23s - loss: 0.0220 - accuracy: 0.997
 - ETA: 23s - loss: 0.0219 - accuracy: 0.997 - ETA: 23s - loss: 0.0218 - accuracy: 0.997 - ETA: 23s - loss: 0.0217 - accuracy: 0.997 -
ETA: 23s - loss: 0.0216 - accuracy: 0.997 - ETA: 22s - loss: 0.0215 - accuracy: 0.997 - ETA: 22s - loss: 0.0214 - accuracy: 0.997 - ET
A: 22s - loss: 0.0224 - accuracy: 0.997 - ETA: 22s - loss: 0.0223 - accuracy: 0.997 - ETA: 22s - loss: 0.0222 - accuracy: 0.997 - ETA:
22s - loss: 0.0221 - accuracy: 0.997 - ETA: 22s - loss: 0.0220 - accuracy: 0.997 - ETA: 21s - loss: 0.0219 - accuracy: 0.997 - ETA: 21
s - loss: 0.0218 - accuracy: 0.997 - ETA: 21s - loss: 0.0217 - accuracy: 0.997 - ETA: 21s - loss: 0.0216 - accuracy: 0.997 - ETA: 21s
 - loss: 0.0225 - accuracy: 0.997 - ETA: 21s - loss: 0.0224 - accuracy: 0.997 - ETA: 20s - loss: 0.0223 - accuracy: 0.997 - ETA: 20s -
loss: 0.0222 - accuracy: 0.997 - ETA: 20s - loss: 0.0222 - accuracy: 0.997 - ETA: 20s - loss: 0.0221 - accuracy: 0.997 - ETA: 20s - lo
ss: 0.0220 - accuracy: 0.997 - ETA: 20s - loss: 0.0228 - accuracy: 0.996 - ETA: 20s - loss: 0.0227 - accuracy: 0.997 - ETA: 19s - los
s: 0.0226 - accuracy: 0.997 - ETA: 19s - loss: 0.0234 - accuracy: 0.996 - ETA: 19s - loss: 0.0233 - accuracy: 0.996 - ETA: 19s - loss:
0.0232 - accuracy: 0.996 - ETA: 19s - loss: 0.0232 - accuracy: 0.996 - ETA: 19s - loss: 0.0231 - accuracy: 0.996 - ETA: 18s - loss: 0.
0230 - accuracy: 0.996 - ETA: 18s - loss: 0.0237 - accuracy: 0.996 - ETA: 18s - loss: 0.0236 - accuracy: 0.996 - ETA: 18s - loss: 0.02
35 - accuracy: 0.996 - ETA: 18s - loss: 0.0235 - accuracy: 0.996 - ETA: 18s - loss: 0.0234 - accuracy: 0.996 - ETA: 17s - loss: 0.0233
- accuracy: 0.996 - ETA: 17s - loss: 0.0232 - accuracy: 0.996 - ETA: 17s - loss: 0.0232 - accuracy: 0.996 - ETA: 17s - loss: 0.0231 -
 accuracy: 0.996 - ETA: 17s - loss: 0.0230 - accuracy: 0.996 - ETA: 17s - loss: 0.0237 - accuracy: 0.996 - ETA: 17s - loss: 0.0236 - a
ccuracy: 0.996 - ETA: 16s - loss: 0.0236 - accuracy: 0.996 - ETA: 16s - loss: 0.0235 - accuracy: 0.996 - ETA: 16s - loss: 0.0234 - acc
uracy: 0.996 - ETA: 16s - loss: 0.0233 - accuracy: 0.996 - ETA: 16s - loss: 0.0232 - accuracy: 0.996 - ETA: 16s - loss: 0.0232 - accur
acy: 0.996 - ETA: 15s - loss: 0.0231 - accuracy: 0.996 - ETA: 15s - loss: 0.0230 - accuracy: 0.996 - ETA: 15s - loss: 0.0229 - accurac
y: 0.996 - ETA: 15s - loss: 0.0228 - accuracy: 0.996 - ETA: 15s - loss: 0.0228 - accuracy: 0.996 - ETA: 15s - loss: 0.0227 - accuracy:
0.997 - ETA: 14s - loss: 0.0226 - accuracy: 0.997 - ETA: 14s - loss: 0.0225 - accuracy: 0.997 - ETA: 14s - loss: 0.0224 - accuracy: 0.
997 - ETA: 14s - loss: 0.0223 - accuracy: 0.997 - ETA: 14s - loss: 0.0223 - accuracy: 0.997 - ETA: 14s - loss: 0.0222 - accuracy: 0.99
7 - ETA: 14s - loss: 0.0221 - accuracy: 0.997 - ETA: 13s - loss: 0.0220 - accuracy: 0.997 - ETA: 13s - loss: 0.0219 - accuracy: 0.997
 - ETA: 13s - loss: 0.0218 - accuracy: 0.997 - ETA: 13s - loss: 0.0218 - accuracy: 0.997 - ETA: 13s - loss: 0.0217 - accuracy: 0.997 -
ETA: 13s - loss: 0.0216 - accuracy: 0.997 - ETA: 12s - loss: 0.0215 - accuracy: 0.997 - ETA: 12s - loss: 0.0214 - accuracy: 0.997 - ET
A: 12s - loss: 0.0214 - accuracy: 0.997 - ETA: 12s - loss: 0.0213 - accuracy: 0.997 - ETA: 12s - loss: 0.0212 - accuracy: 0.997 - ETA:
12s - loss: 0.0211 - accuracy: 0.997 - ETA: 12s - loss: 0.0211 - accuracy: 0.997 - ETA: 11s - loss: 0.0210 - accuracy: 0.997 - ETA: 11
s - loss: 0.0209 - accuracy: 0.997 - ETA: 11s - loss: 0.0208 - accuracy: 0.997 - ETA: 11s - loss: 0.0208 - accuracy: 0.997 - ETA: 11s
 - loss: 0.0207 - accuracy: 0.997 - ETA: 11s - loss: 0.0206 - accuracy: 0.997 - ETA: 10s - loss: 0.0205 - accuracy: 0.997 - ETA: 10s -
loss: 0.0205 - accuracy: 0.997 - ETA: 10s - loss: 0.0204 - accuracy: 0.997 - ETA: 10s - loss: 0.0203 - accuracy: 0.997 - ETA: 10s - lo
ss: 0.0203 - accuracy: 0.997 - ETA: 10s - loss: 0.0202 - accuracy: 0.997 - ETA: 9s - loss: 0.0201 - accuracy: 0.997 - ETA: 9s - loss:
 0.0200 - accuracy: 0.99 - ETA: 9s - loss: 0.0200 - accuracy: 0.99 - ETA: 9s - loss: 0.0199 - accuracy: 0.99 - ETA: 9s - loss: 0.0198
 - accuracy: 0.99 - ETA: 9s - loss: 0.0198 - accuracy: 0.99 - ETA: 9s - loss: 0.0197 - accuracy: 0.99 - ETA: 8s - loss: 0.0196 - accur
acy: 0.99 - ETA: 8s - loss: 0.0196 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.9
9 - ETA: 8s - loss: 0.0194 - accuracy: 0.99 - ETA: 8s - loss: 0.0193 - accuracy: 0.99 - ETA: 7s - loss: 0.0193 - accuracy: 0.99 - ETA:
7s - loss: 0.0192 - accuracy: 0.99 - ETA: 7s - loss: 0.0191 - accuracy: 0.99 - ETA: 7s - loss: 0.0191 - accuracy: 0.99 - ETA: 7s - los
s: 0.0190 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 - accuracy: 0.99 - ETA: 6s - loss: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.019
7 - accuracy: 0.99 - ETA: 6s - loss: 0.0196 - accuracy: 0.99 - ETA: 6s - loss: 0.0196 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accu
racy: 0.99 - ETA: 6s - loss: 0.0194 - accuracy: 0.99 - ETA: 6s - loss: 0.0194 - accuracy: 0.99 - ETA: 5s - loss: 0.0193 - accuracy: 0.
99 - ETA: 5s - loss: 0.0193 - accuracy: 0.99 - ETA: 5s - loss: 0.0192 - accuracy: 0.99 - ETA: 5s - loss: 0.0192 - accuracy: 0.99 - ET
A: 5s - loss: 0.0191 - accuracy: 0.99 - ETA: 5s - loss: 0.0190 - accuracy: 0.99 - ETA: 4s - loss: 0.0190 - accuracy: 0.99 - ETA: 4s -
 loss: 0.0189 - accuracy: 0.99 - ETA: 4s - loss: 0.0189 - accuracy: 0.99 - ETA: 4s - loss: 0.0188 - accuracy: 0.99 - ETA: 4s - loss:
 0.0188 - accuracy: 0.99 - ETA: 4s - loss: 0.0187 - accuracy: 0.99 - ETA: 3s - loss: 0.0186 - accuracy: 0.99 - ETA: 3s - loss: 0.0186
```

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 - accuracy: 0.99 - ETA: 3s - loss: 0.0185 - accuracy: 0.99 - ETA: 3s - loss: 0.0185 - accuracy: 0.99 - ETA: 3s - loss: 0.0184 - accur
acy: 0.99 - ETA: 3s - loss: 0.0184 - accuracy: 0.99 - ETA: 3s - loss: 0.0183 - accuracy: 0.9976322/322 [=============================
=] - ETA: 2s - loss: 0.0183 - accuracy: 0.99 - ETA: 2s - loss: 0.0182 - accuracy: 0.99 - ETA: 2s - loss: 0.0182 - accuracy: 0.99 - ET
A: 2s - loss: 0.0188 - accuracy: 0.99 - ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 1s -
 loss: 0.0194 - accuracy: 0.99 - ETA: 1s - loss: 0.0194 - accuracy: 0.99 - ETA: 1s - loss: 0.0193 - accuracy: 0.99 - ETA: 1s - loss:
 0.0193 - accuracy: 0.99 - ETA: 1s - loss: 0.0192 - accuracy: 0.99 - ETA: 1s - loss: 0.0192 - accuracy: 0.99 - ETA: 0s - loss: 0.0191
 - accuracy: 0.99 - ETA: 0s - loss: 0.0197 - accuracy: 0.99 - ETA: 0s - loss: 0.0196 - accuracy: 0.99 - ETA: 0s - loss: 0.0196 - accur
acy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.9
9 - 54s 168ms/step - loss: 0.0195 - accuracy: 0.9975 - val_loss: 0.0227 - val_accuracy: 0.9968
Epoch 28/50
186/322 [================>............] - ETA: 0s - loss: 0.1826 - accuracy: 0.96 - ETA: 28s - loss: 0.0943 - accuracy: 0.984 - ETA:
 34s - loss: 0.0650 - accuracy: 0.989 - ETA: 36s - loss: 0.0505 - accuracy: 0.992 - ETA: 38s - loss: 0.0418 - accuracy: 0.993 - ETA: 4
0s - loss: 0.0361 - accuracy: 0.994 - ETA: 43s - loss: 0.0320 - accuracy: 0.995 - ETA: 43s - loss: 0.0289 - accuracy: 0.996 - ETA: 42s
- loss: 0.0264 - accuracy: 0.996 - ETA: 44s - loss: 0.0245 - accuracy: 0.996 - ETA: 44s - loss: 0.0228 - accuracy: 0.997 - ETA: 44s -
 loss: 0.0214 - accuracy: 0.997 - ETA: 44s - loss: 0.0202 - accuracy: 0.997 - ETA: 45s - loss: 0.0191 - accuracy: 0.997 - ETA: 45s - l
oss: 0.0182 - accuracy: 0.997 - ETA: 45s - loss: 0.0173 - accuracy: 0.998 - ETA: 46s - loss: 0.0166 - accuracy: 0.998 - ETA: 47s - los
s: 0.0268 - accuracy: 0.996 - ETA: 46s - loss: 0.0256 - accuracy: 0.996 - ETA: 46s - loss: 0.0245 - accuracy: 0.996 - ETA: 46s - loss:
0.0236 - accuracy: 0.997 - ETA: 46s - loss: 0.0227 - accuracy: 0.997 - ETA: 47s - loss: 0.0219 - accuracy: 0.997 - ETA: 48s - loss: 0.
0212 - accuracy: 0.997 - ETA: 48s - loss: 0.0205 - accuracy: 0.997 - ETA: 48s - loss: 0.0199 - accuracy: 0.997 - ETA: 49s - loss: 0.02
60 - accuracy: 0.996 - ETA: 50s - loss: 0.0252 - accuracy: 0.996 - ETA: 49s - loss: 0.0245 - accuracy: 0.996 - ETA: 49s - loss: 0.0238
- accuracy: 0.996 - ETA: 48s - loss: 0.0232 - accuracy: 0.997 - ETA: 49s - loss: 0.0226 - accuracy: 0.997 - ETA: 48s - loss: 0.0220 -
 accuracy: 0.997 - ETA: 48s - loss: 0.0215 - accuracy: 0.997 - ETA: 48s - loss: 0.0210 - accuracy: 0.997 - ETA: 48s - loss: 0.0205 - a
ccuracy: 0.997 - ETA: 48s - loss: 0.0201 - accuracy: 0.997 - ETA: 48s - loss: 0.0196 - accuracy: 0.997 - ETA: 48s - loss: 0.0192 - acc
uracy: 0.997 - ETA: 47s - loss: 0.0188 - accuracy: 0.997 - ETA: 47s - loss: 0.0185 - accuracy: 0.997 - ETA: 47s - loss: 0.0181 - accur
acy: 0.997 - ETA: 48s - loss: 0.0178 - accuracy: 0.997 - ETA: 47s - loss: 0.0174 - accuracy: 0.997 - ETA: 47s - loss: 0.0171 - accurac
y: 0.997 - ETA: 47s - loss: 0.0211 - accuracy: 0.997 - ETA: 47s - loss: 0.0207 - accuracy: 0.997 - ETA: 47s - loss: 0.0203 - accuracy:
0.997 - ETA: 47s - loss: 0.0200 - accuracy: 0.997 - ETA: 47s - loss: 0.0197 - accuracy: 0.997 - ETA: 48s - loss: 0.0193 - accuracy: 0.
997 - ETA: 48s - loss: 0.0190 - accuracy: 0.997 - ETA: 47s - loss: 0.0187 - accuracy: 0.997 - ETA: 47s - loss: 0.0185 - accuracy: 0.99
7 - ETA: 47s - loss: 0.0182 - accuracy: 0.997 - ETA: 47s - loss: 0.0214 - accuracy: 0.997 - ETA: 47s - loss: 0.0211 - accuracy: 0.997
 - ETA: 47s - loss: 0.0208 - accuracy: 0.997 - ETA: 47s - loss: 0.0205 - accuracy: 0.997 - ETA: 46s - loss: 0.0202 - accuracy: 0.997 -
ETA: 46s - loss: 0.0228 - accuracy: 0.996 - ETA: 46s - loss: 0.0225 - accuracy: 0.997 - ETA: 46s - loss: 0.0250 - accuracy: 0.996 - ET
A: 46s - loss: 0.0247 - accuracy: 0.996 - ETA: 45s - loss: 0.0244 - accuracy: 0.996 - ETA: 45s - loss: 0.0242 - accuracy: 0.996 - ETA:
45s - loss: 0.0239 - accuracy: 0.996 - ETA: 45s - loss: 0.0237 - accuracy: 0.996 - ETA: 44s - loss: 0.0234 - accuracy: 0.996 - ETA: 44
s - loss: 0.0232 - accuracy: 0.996 - ETA: 44s - loss: 0.0230 - accuracy: 0.996 - ETA: 43s - loss: 0.0228 - accuracy: 0.997 - ETA: 43s
 - loss: 0.0247 - accuracy: 0.996 - ETA: 43s - loss: 0.0245 - accuracy: 0.996 - ETA: 43s - loss: 0.0243 - accuracy: 0.996 - ETA: 43s -
loss: 0.0240 - accuracy: 0.996 - ETA: 42s - loss: 0.0238 - accuracy: 0.996 - ETA: 42s - loss: 0.0236 - accuracy: 0.996 - ETA: 42s - lo
ss: 0.0234 - accuracy: 0.996 - ETA: 42s - loss: 0.0232 - accuracy: 0.996 - ETA: 42s - loss: 0.0230 - accuracy: 0.996 - ETA: 42s - los
s: 0.0228 - accuracy: 0.997 - ETA: 41s - loss: 0.0225 - accuracy: 0.997 - ETA: 41s - loss: 0.0223 - accuracy: 0.997 - ETA: 41s - loss:
0.0221 - accuracy: 0.997 - ETA: 41s - loss: 0.0219 - accuracy: 0.997 - ETA: 41s - loss: 0.0217 - accuracy: 0.997 - ETA: 40s - loss: 0.
0215 - accuracy: 0.997 - ETA: 40s - loss: 0.0213 - accuracy: 0.997 - ETA: 40s - loss: 0.0211 - accuracy: 0.997 - ETA: 39s - loss: 0.02
09 - accuracy: 0.997 - ETA: 39s - loss: 0.0207 - accuracy: 0.997 - ETA: 39s - loss: 0.0205 - accuracy: 0.997 - ETA: 39s - loss: 0.0204
- accuracy: 0.997 - ETA: 39s - loss: 0.0202 - accuracy: 0.997 - ETA: 38s - loss: 0.0200 - accuracy: 0.997 - ETA: 38s - loss: 0.0198 -
 accuracy: 0.997 - ETA: 38s - loss: 0.0196 - accuracy: 0.997 - ETA: 38s - loss: 0.0195 - accuracy: 0.997 - ETA: 37s - loss: 0.0193 - a
ccuracy: 0.997 - ETA: 37s - loss: 0.0191 - accuracy: 0.997 - ETA: 37s - loss: 0.0190 - accuracy: 0.997 - ETA: 37s - loss: 0.0188 - acc
uracy: 0.997 - ETA: 37s - loss: 0.0186 - accuracy: 0.997 - ETA: 36s - loss: 0.0185 - accuracy: 0.997 - ETA: 36s - loss: 0.0183 - accur
acy: 0.997 - ETA: 36s - loss: 0.0182 - accuracy: 0.997 - ETA: 36s - loss: 0.0180 - accuracy: 0.997 - ETA: 36s - loss: 0.0179 - accurac
y: 0.997 - ETA: 35s - loss: 0.0178 - accuracy: 0.997 - ETA: 35s - loss: 0.0176 - accuracy: 0.997 - ETA: 35s - loss: 0.0195 - accuracy:
0.997 - ETA: 35s - loss: 0.0193 - accuracy: 0.997 - ETA: 35s - loss: 0.0192 - accuracy: 0.997 - ETA: 34s - loss: 0.0190 - accuracy: 0.
997 - ETA: 34s - loss: 0.0208 - accuracy: 0.997 - ETA: 34s - loss: 0.0206 - accuracy: 0.997 - ETA: 34s - loss: 0.0205 - accuracy: 0.99
7 - ETA: 34s - loss: 0.0204 - accuracy: 0.997 - ETA: 34s - loss: 0.0202 - accuracy: 0.997 - ETA: 33s - loss: 0.0201 - accuracy: 0.997
 - ETA: 33s - loss: 0.0199 - accuracy: 0.997 - ETA: 33s - loss: 0.0198 - accuracy: 0.997 - ETA: 33s - loss: 0.0197 - accuracy: 0.997 -
ETA: 33s - loss: 0.0196 - accuracy: 0.997 - ETA: 32s - loss: 0.0194 - accuracy: 0.997 - ETA: 32s - loss: 0.0193 - accuracy: 0.997 - ET
A: 32s - loss: 0.0192 - accuracy: 0.997 - ETA: 32s - loss: 0.0191 - accuracy: 0.997 - ETA: 32s - loss: 0.0189 - accuracy: 0.997 - ETA:
32s - loss: 0.0188 - accuracy: 0.997 - ETA: 31s - loss: 0.0187 - accuracy: 0.997 - ETA: 31s - loss: 0.0186 - accuracy: 0.997 - ETA: 31
s - loss: 0.0185 - accuracy: 0.997 - ETA: 31s - loss: 0.0184 - accuracy: 0.997 - ETA: 30s - loss: 0.0182 - accuracy: 0.997 - ETA: 30s
 - loss: 0.0181 - accuracy: 0.997 - ETA: 30s - loss: 0.0180 - accuracy: 0.997 - ETA: 30s - loss: 0.0179 - accuracy: 0.997 - ETA: 30s -
loss: 0.0178 - accuracy: 0.997 - ETA: 30s - loss: 0.0177 - accuracy: 0.997 - ETA: 29s - loss: 0.0176 - accuracy: 0.997 - ETA: 29s - lo
ss: 0.0175 - accuracy: 0.997 - ETA: 29s - loss: 0.0174 - accuracy: 0.997 - ETA: 29s - loss: 0.0173 - accuracy: 0.997 - ETA: 29s - los
s: 0.0172 - accuracy: 0.997 - ETA: 28s - loss: 0.0171 - accuracy: 0.997 - ETA: 28s - loss: 0.0170 - accuracy: 0.997 - ETA: 28s - loss:
0.0169 - accuracy: 0.997 - ETA: 28s - loss: 0.0168 - accuracy: 0.997 - ETA: 28s - loss: 0.0167 - accuracy: 0.997 - ETA: 27s - loss: 0.
0166 - accuracy: 0.997 - ETA: 27s - loss: 0.0179 - accuracy: 0.997 - ETA: 27s - loss: 0.0192 - accuracy: 0.997 - ETA: 27s - loss: 0.01
91 - accuracy: 0.997 - ETA: 27s - loss: 0.0190 - accuracy: 0.997 - ETA: 27s - loss: 0.0201 - accuracy: 0.997 - ETA: 26s - loss: 0.0200
- accuracy: 0.997 - ETA: 26s - loss: 0.0199 - accuracy: 0.997 - ETA: 26s - loss: 0.0199 - accuracy: 0.997 - ETA: 26s - loss: 0.0198 -
 accuracy: 0.997 - ETA: 26s - loss: 0.0197 - accuracy: 0.997 - ETA: 26s - loss: 0.0196 - accuracy: 0.997 - ETA: 25s - loss: 0.0195 - a
ccuracy: 0.997 - ETA: 25s - loss: 0.0194 - accuracy: 0.997 - ETA: 25s - loss: 0.0204 - accuracy: 0.997 - ETA: 25s - loss: 0.0203 - acc
uracy: 0.997 - ETA: 25s - loss: 0.0203 - accuracy: 0.997 - ETA: 24s - loss: 0.0211 - accuracy: 0.997 - ETA: 24s - loss: 0.0220 - accur
acy: 0.997 - ETA: 24s - loss: 0.0219 - accuracy: 0.997 - ETA: 24s - loss: 0.0218 - accuracy: 0.997 - ETA: 24s - loss: 0.0218 - accurac
y: 0.997 - ETA: 24s - loss: 0.0217 - accuracy: 0.997 - ETA: 23s - loss: 0.0225 - accuracy: 0.997 - ETA: 23s - loss: 0.0224 - accuracy:
0.997 - ETA: 23s - loss: 0.0224 - accuracy: 0.997 - ETA: 23s - loss: 0.0223 - accuracy: 0.997 - ETA: 23s - loss: 0.0223 - accuracy: 0.
997 - ETA: 23s - loss: 0.0222 - accuracy: 0.997 - ETA: 22s - loss: 0.0222 - accuracy: 0.997 - ETA: 22s - loss: 0.0221 - accuracy: 0.99
7 - ETA: 22s - loss: 0.0220 - accuracy: 0.997 - ETA: 22s - loss: 0.0219 - accuracy: 0.997 - ETA: 22s - loss: 0.0219 - accuracy: 0.997
 - ETA: 22s - loss: 0.0227 - accuracy: 0.9970322/322 [==============================] - ETA: 21s - loss: 0.0226 - accuracy: 0.997 - ET
A: 21s - loss: 0.0225 - accuracy: 0.997 - ETA: 21s - loss: 0.0225 - accuracy: 0.997 - ETA: 21s - loss: 0.0224 - accuracy: 0.997 - ETA:
21s - loss: 0.0223 - accuracy: 0.997 - ETA: 21s - loss: 0.0222 - accuracy: 0.997 - ETA: 20s - loss: 0.0221 - accuracy: 0.997 - ETA: 20
s - loss: 0.0220 - accuracy: 0.997 - ETA: 20s - loss: 0.0219 - accuracy: 0.997 - ETA: 20s - loss: 0.0219 - accuracy: 0.997 - ETA: 20s
 - loss: 0.0218 - accuracy: 0.997 - ETA: 20s - loss: 0.0227 - accuracy: 0.997 - ETA: 19s - loss: 0.0226 - accuracy: 0.997 - ETA: 19s -
loss: 0.0225 - accuracy: 0.997 - ETA: 19s - loss: 0.0224 - accuracy: 0.997 - ETA: 19s - loss: 0.0223 - accuracy: 0.997 - ETA: 19s - lo
ss: 0.0222 - accuracy: 0.997 - ETA: 19s - loss: 0.0221 - accuracy: 0.997 - ETA: 18s - loss: 0.0220 - accuracy: 0.997 - ETA: 18s - los
s: 0.0219 - accuracy: 0.997 - ETA: 18s - loss: 0.0218 - accuracy: 0.997 - ETA: 18s - loss: 0.0218 - accuracy: 0.997 - ETA: 18s - loss:
0.0217 - accuracy: 0.997 - ETA: 18s - loss: 0.0216 - accuracy: 0.997 - ETA: 17s - loss: 0.0215 - accuracy: 0.997 - ETA: 17s - loss: 0.
0214 - accuracy: 0.997 - ETA: 17s - loss: 0.0213 - accuracy: 0.997 - ETA: 17s - loss: 0.0212 - accuracy: 0.997 - ETA: 17s - loss: 0.02
11 - accuracy: 0.997 - ETA: 17s - loss: 0.0211 - accuracy: 0.997 - ETA: 16s - loss: 0.0210 - accuracy: 0.997 - ETA: 16s - loss: 0.0209
- accuracy: 0.997 - ETA: 16s - loss: 0.0208 - accuracy: 0.997 - ETA: 16s - loss: 0.0216 - accuracy: 0.997 - ETA: 16s - loss: 0.0215 -
 accuracy: 0.997 - ETA: 16s - loss: 0.0215 - accuracy: 0.997 - ETA: 15s - loss: 0.0214 - accuracy: 0.997 - ETA: 15s - loss: 0.0213 - a
ccuracy: 0.997 - ETA: 15s - loss: 0.0212 - accuracy: 0.997 - ETA: 15s - loss: 0.0219 - accuracy: 0.997 - ETA: 15s - loss: 0.0227 - acc
uracy: 0.997 - ETA: 15s - loss: 0.0226 - accuracy: 0.997 - ETA: 15s - loss: 0.0225 - accuracy: 0.997 - ETA: 14s - loss: 0.0225 - accur
acy: 0.997 - ETA: 14s - loss: 0.0224 - accuracy: 0.997 - ETA: 14s - loss: 0.0223 - accuracy: 0.997 - ETA: 14s - loss: 0.0222 - accurac
y: 0.997 - ETA: 14s - loss: 0.0222 - accuracy: 0.997 - ETA: 13s - loss: 0.0221 - accuracy: 0.997 - ETA: 13s - loss: 0.0220 - accuracy:
0.997 - ETA: 13s - loss: 0.0220 - accuracy: 0.997 - ETA: 13s - loss: 0.0219 - accuracy: 0.997 - ETA: 13s - loss: 0.0218 - accuracy: 0.
997 - ETA: 13s - loss: 0.0218 - accuracy: 0.997 - ETA: 13s - loss: 0.0217 - accuracy: 0.997 - ETA: 12s - loss: 0.0216 - accuracy: 0.99
7 - ETA: 12s - loss: 0.0215 - accuracy: 0.997 - ETA: 12s - loss: 0.0215 - accuracy: 0.997 - ETA: 12s - loss: 0.0221 - accuracy: 0.997
```

```
 - ETA: 12s - loss: 0.0220 - accuracy: 0.997 - ETA: 12s - loss: 0.0220 - accuracy: 0.997 - ETA: 11s - loss: 0.0219 - accuracy: 0.997 -
ETA: 11s - loss: 0.0218 - accuracy: 0.997 - ETA: 11s - loss: 0.0218 - accuracy: 0.997 - ETA: 11s - loss: 0.0217 - accuracy: 0.997 - ET
A: 11s - loss: 0.0216 - accuracy: 0.997 - ETA: 11s - loss: 0.0216 - accuracy: 0.997 - ETA: 10s - loss: 0.0215 - accuracy: 0.997 - ETA:
10s - loss: 0.0214 - accuracy: 0.997 - ETA: 10s - loss: 0.0214 - accuracy: 0.997 - ETA: 10s - loss: 0.0213 - accuracy: 0.997 - ETA: 10
s - loss: 0.0212 - accuracy: 0.997 - ETA: 10s - loss: 0.0212 - accuracy: 0.997 - ETA: 10s - loss: 0.0211 - accuracy: 0.997 - ETA: 9s -
loss: 0.0210 - accuracy: 0.997 - ETA: 9s - loss: 0.0210 - accuracy: 0.99 - ETA: 9s - loss: 0.0209 - accuracy: 0.99 - ETA: 9s - loss:
 0.0208 - accuracy: 0.99 - ETA: 9s - loss: 0.0208 - accuracy: 0.99 - ETA: 9s - loss: 0.0207 - accuracy: 0.99 - ETA: 8s - loss: 0.0206
 - accuracy: 0.99 - ETA: 8s - loss: 0.0206 - accuracy: 0.99 - ETA: 8s - loss: 0.0205 - accuracy: 0.99 - ETA: 8s - loss: 0.0204 - accur
acy: 0.99 - ETA: 8s - loss: 0.0204 - accuracy: 0.99 - ETA: 8s - loss: 0.0203 - accuracy: 0.99 - ETA: 8s - loss: 0.0202 - accuracy: 0.9
9 - ETA: 7s - loss: 0.0202 - accuracy: 0.99 - ETA: 7s - loss: 0.0208 - accuracy: 0.99 - ETA: 7s - loss: 0.0207 - accuracy: 0.99 - ETA:
7s - loss: 0.0207 - accuracy: 0.99 - ETA: 7s - loss: 0.0206 - accuracy: 0.99 - ETA: 7s - loss: 0.0206 - accuracy: 0.99 - ETA: 7s - los
s: 0.0205 - accuracy: 0.99 - ETA: 6s - loss: 0.0204 - accuracy: 0.99 - ETA: 6s - loss: 0.0204 - accuracy: 0.99 - ETA: 6s - loss: 0.020
3 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0208 - accu
racy: 0.99 - ETA: 5s - loss: 0.0208 - accuracy: 0.99 - ETA: 5s - loss: 0.0207 - accuracy: 0.99 - ETA: 5s - loss: 0.0206 - accuracy: 0.
99 - ETA: 5s - loss: 0.0206 - accuracy: 0.99 - ETA: 5s - loss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss: 0.0205 - accuracy: 0.99 - ET
A: 4s - loss: 0.0204 - accuracy: 0.99 - ETA: 4s - loss: 0.0203 - accuracy: 0.99 - ETA: 4s - loss: 0.0203 - accuracy: 0.99 - ETA: 4s -
 loss: 0.0209 - accuracy: 0.99 - ETA: 4s - loss: 0.0208 - accuracy: 0.99 - ETA: 4s - loss: 0.0208 - accuracy: 0.99 - ETA: 3s - loss:
 0.0207 - accuracy: 0.99 - ETA: 3s - loss: 0.0207 - accuracy: 0.99 - ETA: 3s - loss: 0.0206 - accuracy: 0.99 - ETA: 3s - loss: 0.0206
 - accuracy: 0.99 - ETA: 3s - loss: 0.0205 - accuracy: 0.99 - ETA: 3s - loss: 0.0205 - accuracy: 0.99 - ETA: 2s - loss: 0.0204 - accur
acy: 0.99 - ETA: 2s - loss: 0.0204 - accuracy: 0.99 - ETA: 2s - loss: 0.0203 - accuracy: 0.99 - ETA: 2s - loss: 0.0202 - accuracy: 0.9
9 - ETA: 2s - loss: 0.0202 - accuracy: 0.99 - ETA: 2s - loss: 0.0201 - accuracy: 0.99 - ETA: 1s - loss: 0.0201 - accuracy: 0.99 - ETA:
1s - loss: 0.0200 - accuracy: 0.99 - ETA: 1s - loss: 0.0200 - accuracy: 0.99 - ETA: 1s - loss: 0.0199 - accuracy: 0.99 - ETA: 1s - los
s: 0.0199 - accuracy: 0.99 - ETA: 1s - loss: 0.0198 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - ETA: 0s - loss: 0.019
7 - accuracy: 0.99 - ETA: 0s - loss: 0.0197 - accuracy: 0.99 - ETA: 0s - loss: 0.0196 - accuracy: 0.99 - ETA: 0s - loss: 0.0196 - accu
racy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.99 - 66s 206ms/step - loss: 0.0195 - accuracy: 0.9975 - val_loss: 0.0235 - val_accur
acy: 0.9968
Epoch 29/50
186/322 [================>............] - ETA: 0s - loss: 0.0028 - accuracy: 1.00 - ETA: 52s - loss: 0.0027 - accuracy: 1.000 - ETA:
 1:07 - loss: 0.0027 - accuracy: 1.00 - ETA: 1:15 - loss: 0.0027 - accuracy: 1.00 - ETA: 1:30 - loss: 0.0027 - accuracy: 1.00 - ETA:
 1:27 - loss: 0.0027 - accuracy: 1.00 - ETA: 1:27 - loss: 0.0026 - accuracy: 1.00 - ETA: 1:27 - loss: 0.0026 - accuracy: 1.00 - ETA:
 1:34 - loss: 0.0026 - accuracy: 1.00 - ETA: 1:40 - loss: 0.0026 - accuracy: 1.00 - ETA: 1:40 - loss: 0.0025 - accuracy: 1.00 - ETA:
 1:41 - loss: 0.0025 - accuracy: 1.00 - ETA: 1:43 - loss: 0.0025 - accuracy: 1.00 - ETA: 1:55 - loss: 0.0025 - accuracy: 1.00 - ETA:
 1:55 - loss: 0.0025 - accuracy: 1.00 - ETA: 1:52 - loss: 0.0025 - accuracy: 1.00 - ETA: 1:54 - loss: 0.0155 - accuracy: 0.99 - ETA:
 2:05 - loss: 0.0148 - accuracy: 0.99 - ETA: 2:23 - loss: 0.0141 - accuracy: 0.99 - ETA: 2:22 - loss: 0.0136 - accuracy: 0.99 - ETA:
 2:19 - loss: 0.0131 - accuracy: 0.99 - ETA: 2:19 - loss: 0.0126 - accuracy: 0.99 - ETA: 2:20 - loss: 0.0122 - accuracy: 0.99 - ETA:
 2:21 - loss: 0.0118 - accuracy: 0.99 - ETA: 2:18 - loss: 0.0114 - accuracy: 0.99 - ETA: 2:15 - loss: 0.0111 - accuracy: 0.99 - ETA:
 2:14 - loss: 0.0108 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0105 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0102 - accuracy: 0.99 - ETA:
 2:12 - loss: 0.0099 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0097 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0095 - accuracy: 0.99 - ETA:
 2:09 - loss: 0.0093 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0091 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0089 - accuracy: 0.99 - ETA:
 2:05 - loss: 0.0087 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0085 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0084 - accuracy: 0.99 - ETA:
 2:04 - loss: 0.0082 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0081 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0080 - accuracy: 0.99 - ETA:
 2:02 - loss: 0.0078 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0077 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0076 - accuracy: 0.99 - ETA:
 2:00 - loss: 0.0173 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0170 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0167 - accuracy: 0.99 - ETA:
 1:58 - loss: 0.0164 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0162 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0159 - accuracy: 0.99 - ETA:
 1:57 - loss: 0.0157 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0153 - accuracy: 0.99 - ETA:
 1:56 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0149 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0147 - accuracy: 0.99 - ETA:
 1:53 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0173 - accuracy: 0.99 - ETA:
 1:51 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0167 - accuracy: 0.99 - ETA:
 1:49 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0164 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0162 - accuracy: 0.99 - ETA:
 1:47 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0159 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0157 - accuracy: 0.99 - ETA:
 1:45 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0178 - accuracy: 0.99 - ETA:
 1:42 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0173 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0168 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0163 - accuracy: 0.99 - ETA:
 1:34 - loss: 0.0162 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0159 - accuracy: 0.99 - ETA:
 1:31 - loss: 0.0157 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0156 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0154 - accuracy: 0.99 - ETA:
 1:29 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0150 - accuracy: 0.99 - ETA:
 1:26 - loss: 0.0149 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0146 - accuracy: 0.99 - ETA:
 1:24 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0142 - accuracy: 0.99 - ETA:
 1:22 - loss: 0.0141 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0139 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0138 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0135 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0156 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0154 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0173 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0172 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0170 - accuracy: 0.99 - ETA:
 1:14 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0167 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0166 - accuracy: 0.99 - ETA:
 1:12 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0164 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0163 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0159 - accuracy: 0.99 - ETA:
 1:09 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0157 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0156 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0154 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0153 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0152 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0182 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0180 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0179 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0176 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0173 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0172 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0172 - accuracy: 0.99 - ETA: 59s - loss: 0.0184 - accuracy: 0.9977 - ETA:
 58s - loss: 0.0183 - accuracy: 0.997 - ETA: 58s - loss: 0.0182 - accuracy: 0.997 - ETA: 57s - loss: 0.0181 - accuracy: 0.997 - ETA: 5
7s - loss: 0.0180 - accuracy: 0.997 - ETA: 57s - loss: 0.0179 - accuracy: 0.997 - ETA: 56s - loss: 0.0191 - accuracy: 0.997 - ETA: 56s
- loss: 0.0190 - accuracy: 0.997 - ETA: 55s - loss: 0.0189 - accuracy: 0.997 - ETA: 55s - loss: 0.0189 - accuracy: 0.997 - ETA: 54s -
 loss: 0.0188 - accuracy: 0.997 - ETA: 54s - loss: 0.0187 - accuracy: 0.997 - ETA: 54s - loss: 0.0186 - accuracy: 0.997 - ETA: 53s - l
oss: 0.0185 - accuracy: 0.997 - ETA: 53s - loss: 0.0184 - accuracy: 0.997 - ETA: 53s - loss: 0.0183 - accuracy: 0.997 - ETA: 52s - los
s: 0.0183 - accuracy: 0.997 - ETA: 52s - loss: 0.0182 - accuracy: 0.997 - ETA: 52s - loss: 0.0181 - accuracy: 0.997 - ETA: 52s - loss:
0.0180 - accuracy: 0.997 - ETA: 51s - loss: 0.0179 - accuracy: 0.997 - ETA: 51s - loss: 0.0178 - accuracy: 0.997 - ETA: 51s - loss: 0.
0177 - accuracy: 0.997 - ETA: 51s - loss: 0.0176 - accuracy: 0.997 - ETA: 51s - loss: 0.0176 - accuracy: 0.997 - ETA: 51s - loss: 0.01
75 - accuracy: 0.997 - ETA: 51s - loss: 0.0174 - accuracy: 0.997 - ETA: 51s - loss: 0.0173 - accuracy: 0.997 - ETA: 50s - loss: 0.0184
- accuracy: 0.997 - ETA: 50s - loss: 0.0183 - accuracy: 0.997 - ETA: 50s - loss: 0.0182 - accuracy: 0.997 - ETA: 50s - loss: 0.0181 -
 accuracy: 0.997 - ETA: 49s - loss: 0.0193 - accuracy: 0.997 - ETA: 49s - loss: 0.0192 - accuracy: 0.997 - ETA: 49s - loss: 0.0191 - a
ccuracy: 0.997 - ETA: 49s - loss: 0.0190 - accuracy: 0.997 - ETA: 48s - loss: 0.0189 - accuracy: 0.997 - ETA: 48s - loss: 0.0188 - acc
uracy: 0.997 - ETA: 48s - loss: 0.0187 - accuracy: 0.997 - ETA: 48s - loss: 0.0187 - accuracy: 0.997 - ETA: 47s - loss: 0.0186 - accur
acy: 0.997 - ETA: 47s - loss: 0.0185 - accuracy: 0.997 - ETA: 47s - loss: 0.0184 - accuracy: 0.997 - ETA: 47s - loss: 0.0183 - accurac
y: 0.997 - ETA: 46s - loss: 0.0183 - accuracy: 0.997 - ETA: 46s - loss: 0.0182 - accuracy: 0.997 - ETA: 46s - loss: 0.0181 - accuracy:
0.997 - ETA: 45s - loss: 0.0190 - accuracy: 0.997 - ETA: 45s - loss: 0.0189 - accuracy: 0.997 - ETA: 45s - loss: 0.0199 - accuracy: 0.
9975322/322 [==============================] - ETA: 44s - loss: 0.0198 - accuracy: 0.997 - ETA: 44s - loss: 0.0197 - accuracy: 0.997 -
ETA: 44s - loss: 0.0197 - accuracy: 0.997 - ETA: 43s - loss: 0.0196 - accuracy: 0.997 - ETA: 43s - loss: 0.0195 - accuracy: 0.997 - ET
```

```
A: 42s - loss: 0.0195 - accuracy: 0.997 - ETA: 42s - loss: 0.0194 - accuracy: 0.997 - ETA: 41s - loss: 0.0193 - accuracy: 0.997 - ETA:
41s - loss: 0.0192 - accuracy: 0.997 - ETA: 41s - loss: 0.0192 - accuracy: 0.997 - ETA: 40s - loss: 0.0191 - accuracy: 0.997 - ETA: 40
s - loss: 0.0190 - accuracy: 0.997 - ETA: 40s - loss: 0.0190 - accuracy: 0.997 - ETA: 39s - loss: 0.0189 - accuracy: 0.997 - ETA: 39s
 - loss: 0.0188 - accuracy: 0.997 - ETA: 38s - loss: 0.0187 - accuracy: 0.997 - ETA: 38s - loss: 0.0196 - accuracy: 0.997 - ETA: 38s -
loss: 0.0195 - accuracy: 0.997 - ETA: 37s - loss: 0.0195 - accuracy: 0.997 - ETA: 37s - loss: 0.0194 - accuracy: 0.997 - ETA: 37s - lo
ss: 0.0193 - accuracy: 0.997 - ETA: 36s - loss: 0.0192 - accuracy: 0.997 - ETA: 36s - loss: 0.0192 - accuracy: 0.997 - ETA: 35s - los
s: 0.0191 - accuracy: 0.997 - ETA: 35s - loss: 0.0190 - accuracy: 0.997 - ETA: 35s - loss: 0.0190 - accuracy: 0.997 - ETA: 34s - loss:
0.0189 - accuracy: 0.997 - ETA: 34s - loss: 0.0188 - accuracy: 0.997 - ETA: 34s - loss: 0.0187 - accuracy: 0.997 - ETA: 33s - loss: 0.
0187 - accuracy: 0.997 - ETA: 33s - loss: 0.0186 - accuracy: 0.997 - ETA: 32s - loss: 0.0185 - accuracy: 0.997 - ETA: 32s - loss: 0.01
85 - accuracy: 0.997 - ETA: 32s - loss: 0.0193 - accuracy: 0.997 - ETA: 31s - loss: 0.0192 - accuracy: 0.997 - ETA: 31s - loss: 0.0192
- accuracy: 0.997 - ETA: 31s - loss: 0.0191 - accuracy: 0.997 - ETA: 30s - loss: 0.0190 - accuracy: 0.997 - ETA: 30s - loss: 0.0189 -
 accuracy: 0.997 - ETA: 30s - loss: 0.0189 - accuracy: 0.997 - ETA: 29s - loss: 0.0188 - accuracy: 0.997 - ETA: 29s - loss: 0.0187 - a
ccuracy: 0.997 - ETA: 28s - loss: 0.0187 - accuracy: 0.997 - ETA: 28s - loss: 0.0186 - accuracy: 0.997 - ETA: 28s - loss: 0.0185 - acc
uracy: 0.997 - ETA: 27s - loss: 0.0185 - accuracy: 0.997 - ETA: 27s - loss: 0.0184 - accuracy: 0.997 - ETA: 27s - loss: 0.0183 - accur
acy: 0.997 - ETA: 26s - loss: 0.0183 - accuracy: 0.997 - ETA: 26s - loss: 0.0182 - accuracy: 0.997 - ETA: 26s - loss: 0.0182 - accurac
y: 0.997 - ETA: 25s - loss: 0.0181 - accuracy: 0.997 - ETA: 25s - loss: 0.0180 - accuracy: 0.997 - ETA: 25s - loss: 0.0180 - accuracy:
0.997 - ETA: 24s - loss: 0.0179 - accuracy: 0.997 - ETA: 24s - loss: 0.0178 - accuracy: 0.997 - ETA: 24s - loss: 0.0178 - accuracy: 0.
997 - ETA: 23s - loss: 0.0177 - accuracy: 0.997 - ETA: 23s - loss: 0.0176 - accuracy: 0.997 - ETA: 23s - loss: 0.0176 - accuracy: 0.99
7 - ETA: 22s - loss: 0.0184 - accuracy: 0.997 - ETA: 22s - loss: 0.0183 - accuracy: 0.997 - ETA: 22s - loss: 0.0182 - accuracy: 0.997
 - ETA: 21s - loss: 0.0182 - accuracy: 0.997 - ETA: 21s - loss: 0.0189 - accuracy: 0.997 - ETA: 21s - loss: 0.0189 - accuracy: 0.997 -
ETA: 20s - loss: 0.0188 - accuracy: 0.997 - ETA: 20s - loss: 0.0187 - accuracy: 0.997 - ETA: 20s - loss: 0.0187 - accuracy: 0.997 - ET
A: 19s - loss: 0.0186 - accuracy: 0.997 - ETA: 19s - loss: 0.0186 - accuracy: 0.997 - ETA: 19s - loss: 0.0185 - accuracy: 0.997 - ETA:
18s - loss: 0.0185 - accuracy: 0.997 - ETA: 18s - loss: 0.0184 - accuracy: 0.997 - ETA: 18s - loss: 0.0183 - accuracy: 0.997 - ETA: 17
s - loss: 0.0183 - accuracy: 0.997 - ETA: 17s - loss: 0.0182 - accuracy: 0.997 - ETA: 17s - loss: 0.0182 - accuracy: 0.997 - ETA: 17s
 - loss: 0.0181 - accuracy: 0.997 - ETA: 16s - loss: 0.0188 - accuracy: 0.997 - ETA: 16s - loss: 0.0187 - accuracy: 0.997 - ETA: 16s -
loss: 0.0187 - accuracy: 0.997 - ETA: 15s - loss: 0.0186 - accuracy: 0.997 - ETA: 15s - loss: 0.0186 - accuracy: 0.997 - ETA: 15s - lo
ss: 0.0185 - accuracy: 0.997 - ETA: 14s - loss: 0.0185 - accuracy: 0.997 - ETA: 14s - loss: 0.0184 - accuracy: 0.997 - ETA: 14s - los
s: 0.0184 - accuracy: 0.997 - ETA: 13s - loss: 0.0183 - accuracy: 0.997 - ETA: 13s - loss: 0.0183 - accuracy: 0.997 - ETA: 13s - loss:
0.0182 - accuracy: 0.997 - ETA: 13s - loss: 0.0188 - accuracy: 0.997 - ETA: 12s - loss: 0.0188 - accuracy: 0.997 - ETA: 12s - loss: 0.
0187 - accuracy: 0.997 - ETA: 12s - loss: 0.0187 - accuracy: 0.997 - ETA: 11s - loss: 0.0186 - accuracy: 0.997 - ETA: 11s - loss: 0.01
92 - accuracy: 0.997 - ETA: 11s - loss: 0.0192 - accuracy: 0.997 - ETA: 11s - loss: 0.0191 - accuracy: 0.997 - ETA: 10s - loss: 0.0191
- accuracy: 0.997 - ETA: 10s - loss: 0.0190 - accuracy: 0.997 - ETA: 10s - loss: 0.0190 - accuracy: 0.997 - ETA: 9s - loss: 0.0189 - a
ccuracy: 0.997 - ETA: 9s - loss: 0.0189 - accuracy: 0.99 - ETA: 9s - loss: 0.0188 - accuracy: 0.99 - ETA: 9s - loss: 0.0188 - accurac
y: 0.99 - ETA: 8s - loss: 0.0187 - accuracy: 0.99 - ETA: 8s - loss: 0.0187 - accuracy: 0.99 - ETA: 8s - loss: 0.0186 - accuracy: 0.99
 - ETA: 7s - loss: 0.0186 - accuracy: 0.99 - ETA: 7s - loss: 0.0185 - accuracy: 0.99 - ETA: 7s - loss: 0.0185 - accuracy: 0.99 - ETA:
 6s - loss: 0.0185 - accuracy: 0.99 - ETA: 6s - loss: 0.0184 - accuracy: 0.99 - ETA: 6s - loss: 0.0196 - accuracy: 0.99 - ETA: 5s - lo
ss: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0194 - accuracy: 0.99 - ETA: 5s - loss: 0.01
94 - accuracy: 0.99 - ETA: 4s - loss: 0.0193 - accuracy: 0.99 - ETA: 4s - loss: 0.0193 - accuracy: 0.99 - ETA: 4s - loss: 0.0193 - acc
uracy: 0.99 - ETA: 3s - loss: 0.0192 - accuracy: 0.99 - ETA: 3s - loss: 0.0192 - accuracy: 0.99 - ETA: 3s - loss: 0.0197 - accuracy:
 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 -
 ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 1s - loss: 0.0195 - accuracy: 0.99 - ETA: 1s - loss: 0.0194 - accuracy: 0.99 - ETA: 1s
- loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - ETA: 0s - loss:
 0.0198 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - 98s 305ms/step - loss: 0.0198 - accuracy: 0.9975 - val_loss: 0.02
30 - val_accuracy: 0.9968
Epoch 30/50
186/322 [================>............] - ETA: 0s - loss: 0.0060 - accuracy: 1.00 - ETA: 35s - loss: 0.0061 - accuracy: 1.000 - ETA:
 46s - loss: 0.0663 - accuracy: 0.989 - ETA: 52s - loss: 0.0512 - accuracy: 0.992 - ETA: 52s - loss: 0.0423 - accuracy: 0.993 - ETA: 5
4s - loss: 0.0363 - accuracy: 0.994 - ETA: 1:00 - loss: 0.0320 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0288 - accuracy: 0.99 - ETA: 1:0
2 - loss: 0.0263 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0243 - accuracy: 0.99 - ETA: 59s - loss: 0.0226 - accuracy: 0.9972 - ETA: 59s
 - loss: 0.0212 - accuracy: 0.997 - ETA: 1:00 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:04
 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0163 - accuracy: 0.99 - ETA: 1:01 -
loss: 0.0156 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0150 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:03 - lo
ss: 0.0139 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0134 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0130 - accuracy: 0.99 - ETA: 1:01 - los
s: 0.0126 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0122 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0118 - accuracy: 0.99 - ETA: 1:02 - loss:
0.0115 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0112 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0109 - accuracy: 0.99 - ETA: 1:02 - loss: 0.
0106 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0103 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0101 - accuracy: 0.99 - ETA: 1:00 - loss: 0.00
98 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0096 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0094 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0153
- accuracy: 0.99 - ETA: 1:01 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0200 -
 accuracy: 0.99 - ETA: 1:00 - loss: 0.0196 - accuracy: 0.99 - ETA: 59s - loss: 0.0192 - accuracy: 0.9977 - ETA: 1:00 - loss: 0.0188 -
 accuracy: 0.99 - ETA: 1:00 - loss: 0.0185 - accuracy: 0.99 - ETA: 59s - loss: 0.0181 - accuracy: 0.9979 - ETA: 59s - loss: 0.0178 - a
ccuracy: 0.997 - ETA: 58s - loss: 0.0175 - accuracy: 0.998 - ETA: 58s - loss: 0.0172 - accuracy: 0.998 - ETA: 57s - loss: 0.0169 - acc
uracy: 0.998 - ETA: 58s - loss: 0.0166 - accuracy: 0.998 - ETA: 58s - loss: 0.0164 - accuracy: 0.998 - ETA: 57s - loss: 0.0161 - accur
acy: 0.998 - ETA: 57s - loss: 0.0159 - accuracy: 0.998 - ETA: 57s - loss: 0.0229 - accuracy: 0.997 - ETA: 56s - loss: 0.0225 - accurac
y: 0.997 - ETA: 56s - loss: 0.0222 - accuracy: 0.997 - ETA: 56s - loss: 0.0219 - accuracy: 0.997 - ETA: 56s - loss: 0.0216 - accuracy:
0.997 - ETA: 55s - loss: 0.0214 - accuracy: 0.997 - ETA: 55s - loss: 0.0211 - accuracy: 0.997 - ETA: 55s - loss: 0.0209 - accuracy: 0.
997 - ETA: 54s - loss: 0.0206 - accuracy: 0.997 - ETA: 54s - loss: 0.0204 - accuracy: 0.997 - ETA: 54s - loss: 0.0202 - accuracy: 0.99
7 - ETA: 54s - loss: 0.0200 - accuracy: 0.997 - ETA: 54s - loss: 0.0197 - accuracy: 0.997 - ETA: 53s - loss: 0.0195 - accuracy: 0.997
 - ETA: 53s - loss: 0.0193 - accuracy: 0.997 - ETA: 53s - loss: 0.0191 - accuracy: 0.997 - ETA: 53s - loss: 0.0189 - accuracy: 0.997 -
ETA: 53s - loss: 0.0187 - accuracy: 0.997 - ETA: 52s - loss: 0.0185 - accuracy: 0.997 - ETA: 52s - loss: 0.0183 - accuracy: 0.997 - ET
A: 52s - loss: 0.0181 - accuracy: 0.997 - ETA: 51s - loss: 0.0179 - accuracy: 0.997 - ETA: 51s - loss: 0.0177 - accuracy: 0.997 - ETA:
51s - loss: 0.0175 - accuracy: 0.997 - ETA: 51s - loss: 0.0173 - accuracy: 0.998 - ETA: 51s - loss: 0.0172 - accuracy: 0.998 - ETA: 50
s - loss: 0.0170 - accuracy: 0.998 - ETA: 50s - loss: 0.0168 - accuracy: 0.998 - ETA: 50s - loss: 0.0166 - accuracy: 0.998 - ETA: 49s
 - loss: 0.0165 - accuracy: 0.998 - ETA: 50s - loss: 0.0163 - accuracy: 0.998 - ETA: 49s - loss: 0.0161 - accuracy: 0.998 - ETA: 49s -
loss: 0.0160 - accuracy: 0.998 - ETA: 49s - loss: 0.0158 - accuracy: 0.998 - ETA: 48s - loss: 0.0157 - accuracy: 0.998 - ETA: 48s - lo
ss: 0.0155 - accuracy: 0.998 - ETA: 48s - loss: 0.0154 - accuracy: 0.998 - ETA: 48s - loss: 0.0152 - accuracy: 0.998 - ETA: 48s - los
s: 0.0151 - accuracy: 0.998 - ETA: 47s - loss: 0.0149 - accuracy: 0.998 - ETA: 47s - loss: 0.0148 - accuracy: 0.998 - ETA: 47s - loss:
0.0147 - accuracy: 0.998 - ETA: 46s - loss: 0.0145 - accuracy: 0.998 - ETA: 46s - loss: 0.0144 - accuracy: 0.998 - ETA: 46s - loss: 0.
0165 - accuracy: 0.998 - ETA: 46s - loss: 0.0164 - accuracy: 0.998 - ETA: 46s - loss: 0.0162 - accuracy: 0.998 - ETA: 45s - loss: 0.01
61 - accuracy: 0.998 - ETA: 45s - loss: 0.0160 - accuracy: 0.998 - ETA: 45s - loss: 0.0158 - accuracy: 0.998 - ETA: 45s - loss: 0.0157
- accuracy: 0.998 - ETA: 45s - loss: 0.0156 - accuracy: 0.998 - ETA: 45s - loss: 0.0154 - accuracy: 0.998 - ETA: 45s - loss: 0.0153 -
 accuracy: 0.998 - ETA: 44s - loss: 0.0152 - accuracy: 0.998 - ETA: 44s - loss: 0.0151 - accuracy: 0.998 - ETA: 44s - loss: 0.0150 - a
ccuracy: 0.998 - ETA: 44s - loss: 0.0149 - accuracy: 0.998 - ETA: 44s - loss: 0.0147 - accuracy: 0.998 - ETA: 44s - loss: 0.0146 - acc
uracy: 0.998 - ETA: 43s - loss: 0.0145 - accuracy: 0.998 - ETA: 43s - loss: 0.0144 - accuracy: 0.998 - ETA: 43s - loss: 0.0143 - accur
acy: 0.998 - ETA: 43s - loss: 0.0142 - accuracy: 0.998 - ETA: 43s - loss: 0.0141 - accuracy: 0.998 - ETA: 43s - loss: 0.0140 - accurac
y: 0.998 - ETA: 43s - loss: 0.0139 - accuracy: 0.998 - ETA: 42s - loss: 0.0156 - accuracy: 0.998 - ETA: 42s - loss: 0.0172 - accuracy:
0.997 - ETA: 42s - loss: 0.0187 - accuracy: 0.997 - ETA: 42s - loss: 0.0186 - accuracy: 0.997 - ETA: 42s - loss: 0.0185 - accuracy: 0.
997 - ETA: 42s - loss: 0.0184 - accuracy: 0.997 - ETA: 41s - loss: 0.0183 - accuracy: 0.997 - ETA: 42s - loss: 0.0182 - accuracy: 0.99
7 - ETA: 41s - loss: 0.0181 - accuracy: 0.997 - ETA: 41s - loss: 0.0180 - accuracy: 0.997 - ETA: 41s - loss: 0.0179 - accuracy: 0.997
 - ETA: 41s - loss: 0.0178 - accuracy: 0.997 - ETA: 40s - loss: 0.0177 - accuracy: 0.997 - ETA: 40s - loss: 0.0176 - accuracy: 0.997 -
ETA: 40s - loss: 0.0176 - accuracy: 0.997 - ETA: 40s - loss: 0.0175 - accuracy: 0.997 - ETA: 40s - loss: 0.0174 - accuracy: 0.997 - ET
A: 40s - loss: 0.0173 - accuracy: 0.997 - ETA: 39s - loss: 0.0172 - accuracy: 0.998 - ETA: 39s - loss: 0.0171 - accuracy: 0.998 - ETA:
```

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39s - loss: 0.0170 - accuracy: 0.998 - ETA: 39s - loss: 0.0170 - accuracy: 0.998 - ETA: 39s - loss: 0.0169 - accuracy: 0.998 - ETA: 39
s - loss: 0.0168 - accuracy: 0.998 - ETA: 39s - loss: 0.0167 - accuracy: 0.998 - ETA: 40s - loss: 0.0166 - accuracy: 0.998 - ETA: 40s
 - loss: 0.0165 - accuracy: 0.998 - ETA: 40s - loss: 0.0177 - accuracy: 0.997 - ETA: 40s - loss: 0.0176 - accuracy: 0.997 - ETA: 40s -
loss: 0.0175 - accuracy: 0.997 - ETA: 40s - loss: 0.0187 - accuracy: 0.997 - ETA: 40s - loss: 0.0186 - accuracy: 0.997 - ETA: 40s - lo
ss: 0.0185 - accuracy: 0.997 - ETA: 40s - loss: 0.0184 - accuracy: 0.997 - ETA: 40s - loss: 0.0183 - accuracy: 0.997 - ETA: 40s - los
s: 0.0193 - accuracy: 0.997 - ETA: 40s - loss: 0.0192 - accuracy: 0.997 - ETA: 40s - loss: 0.0192 - accuracy: 0.997 - ETA: 40s - loss:
0.0191 - accuracy: 0.997 - ETA: 40s - loss: 0.0190 - accuracy: 0.997 - ETA: 40s - loss: 0.0200 - accuracy: 0.997 - ETA: 40s - loss: 0.
0199 - accuracy: 0.997 - ETA: 40s - loss: 0.0198 - accuracy: 0.997 - ETA: 40s - loss: 0.0207 - accuracy: 0.997 - ETA: 39s - loss: 0.02
06 - accuracy: 0.997 - ETA: 39s - loss: 0.0205 - accuracy: 0.997 - ETA: 39s - loss: 0.0205 - accuracy: 0.997 - ETA: 39s - loss: 0.0204
- accuracy: 0.997 - ETA: 39s - loss: 0.0203 - accuracy: 0.997 - ETA: 39s - loss: 0.0203 - accuracy: 0.997 - ETA: 39s - loss: 0.0211 -
 accuracy: 0.997 - ETA: 39s - loss: 0.0210 - accuracy: 0.997 - ETA: 39s - loss: 0.0209 - accuracy: 0.997 - ETA: 39s - loss: 0.0209 - a
ccuracy: 0.997 - ETA: 38s - loss: 0.0208 - accuracy: 0.997 - ETA: 38s - loss: 0.0207 - accuracy: 0.997 - ETA: 38s - loss: 0.0206 - acc
uracy: 0.997 - ETA: 38s - loss: 0.0206 - accuracy: 0.997 - ETA: 38s - loss: 0.0205 - accuracy: 0.997 - ETA: 38s - loss: 0.0204 - accur
acy: 0.997 - ETA: 37s - loss: 0.0203 - accuracy: 0.997 - ETA: 37s - loss: 0.0202 - accuracy: 0.997 - ETA: 37s - loss: 0.0202 - accurac
y: 0.997 - ETA: 37s - loss: 0.0201 - accuracy: 0.997 - ETA: 37s - loss: 0.0200 - accuracy: 0.997 - ETA: 37s - loss: 0.0199 - accuracy:
0.997 - ETA: 36s - loss: 0.0198 - accuracy: 0.9975322/322 [==============================] - ETA: 36s - loss: 0.0197 - accuracy: 0.997
- ETA: 36s - loss: 0.0196 - accuracy: 0.997 - ETA: 36s - loss: 0.0195 - accuracy: 0.997 - ETA: 35s - loss: 0.0195 - accuracy: 0.997 -
 ETA: 35s - loss: 0.0194 - accuracy: 0.997 - ETA: 35s - loss: 0.0193 - accuracy: 0.997 - ETA: 35s - loss: 0.0192 - accuracy: 0.997 - E
TA: 34s - loss: 0.0191 - accuracy: 0.997 - ETA: 34s - loss: 0.0190 - accuracy: 0.997 - ETA: 34s - loss: 0.0189 - accuracy: 0.997 - ET
A: 34s - loss: 0.0189 - accuracy: 0.997 - ETA: 34s - loss: 0.0188 - accuracy: 0.997 - ETA: 34s - loss: 0.0187 - accuracy: 0.997 - ETA:
33s - loss: 0.0186 - accuracy: 0.997 - ETA: 33s - loss: 0.0185 - accuracy: 0.997 - ETA: 33s - loss: 0.0185 - accuracy: 0.997 - ETA: 33
s - loss: 0.0184 - accuracy: 0.997 - ETA: 33s - loss: 0.0183 - accuracy: 0.997 - ETA: 32s - loss: 0.0182 - accuracy: 0.997 - ETA: 32s
 - loss: 0.0181 - accuracy: 0.997 - ETA: 32s - loss: 0.0181 - accuracy: 0.997 - ETA: 32s - loss: 0.0180 - accuracy: 0.997 - ETA: 31s -
loss: 0.0179 - accuracy: 0.997 - ETA: 31s - loss: 0.0189 - accuracy: 0.997 - ETA: 31s - loss: 0.0188 - accuracy: 0.997 - ETA: 31s - lo
ss: 0.0187 - accuracy: 0.997 - ETA: 30s - loss: 0.0187 - accuracy: 0.997 - ETA: 30s - loss: 0.0186 - accuracy: 0.997 - ETA: 30s - los
s: 0.0185 - accuracy: 0.997 - ETA: 29s - loss: 0.0184 - accuracy: 0.997 - ETA: 29s - loss: 0.0184 - accuracy: 0.997 - ETA: 29s - loss:
0.0183 - accuracy: 0.997 - ETA: 29s - loss: 0.0182 - accuracy: 0.997 - ETA: 29s - loss: 0.0181 - accuracy: 0.997 - ETA: 28s - loss: 0.
0181 - accuracy: 0.997 - ETA: 28s - loss: 0.0180 - accuracy: 0.997 - ETA: 28s - loss: 0.0179 - accuracy: 0.997 - ETA: 28s - loss: 0.01
88 - accuracy: 0.997 - ETA: 27s - loss: 0.0187 - accuracy: 0.997 - ETA: 27s - loss: 0.0186 - accuracy: 0.997 - ETA: 27s - loss: 0.0186
- accuracy: 0.997 - ETA: 26s - loss: 0.0185 - accuracy: 0.997 - ETA: 26s - loss: 0.0184 - accuracy: 0.997 - ETA: 26s - loss: 0.0184 -
 accuracy: 0.997 - ETA: 26s - loss: 0.0183 - accuracy: 0.997 - ETA: 25s - loss: 0.0182 - accuracy: 0.997 - ETA: 25s - loss: 0.0182 - a
ccuracy: 0.997 - ETA: 25s - loss: 0.0181 - accuracy: 0.997 - ETA: 24s - loss: 0.0181 - accuracy: 0.997 - ETA: 24s - loss: 0.0180 - acc
uracy: 0.997 - ETA: 24s - loss: 0.0179 - accuracy: 0.997 - ETA: 23s - loss: 0.0179 - accuracy: 0.997 - ETA: 23s - loss: 0.0178 - accur
acy: 0.997 - ETA: 23s - loss: 0.0177 - accuracy: 0.997 - ETA: 22s - loss: 0.0177 - accuracy: 0.997 - ETA: 22s - loss: 0.0176 - accurac
y: 0.997 - ETA: 22s - loss: 0.0176 - accuracy: 0.997 - ETA: 22s - loss: 0.0175 - accuracy: 0.997 - ETA: 21s - loss: 0.0174 - accuracy:
0.997 - ETA: 21s - loss: 0.0174 - accuracy: 0.997 - ETA: 21s - loss: 0.0173 - accuracy: 0.997 - ETA: 20s - loss: 0.0173 - accuracy: 0.
997 - ETA: 20s - loss: 0.0172 - accuracy: 0.997 - ETA: 20s - loss: 0.0171 - accuracy: 0.997 - ETA: 19s - loss: 0.0171 - accuracy: 0.99
7 - ETA: 19s - loss: 0.0170 - accuracy: 0.997 - ETA: 19s - loss: 0.0170 - accuracy: 0.997 - ETA: 19s - loss: 0.0178 - accuracy: 0.997
 - ETA: 18s - loss: 0.0177 - accuracy: 0.997 - ETA: 18s - loss: 0.0177 - accuracy: 0.997 - ETA: 18s - loss: 0.0176 - accuracy: 0.997 -
ETA: 17s - loss: 0.0175 - accuracy: 0.997 - ETA: 17s - loss: 0.0175 - accuracy: 0.997 - ETA: 17s - loss: 0.0182 - accuracy: 0.997 - ET
A: 16s - loss: 0.0189 - accuracy: 0.997 - ETA: 16s - loss: 0.0189 - accuracy: 0.997 - ETA: 16s - loss: 0.0188 - accuracy: 0.997 - ETA:
16s - loss: 0.0188 - accuracy: 0.997 - ETA: 15s - loss: 0.0187 - accuracy: 0.997 - ETA: 15s - loss: 0.0187 - accuracy: 0.997 - ETA: 15
s - loss: 0.0186 - accuracy: 0.997 - ETA: 14s - loss: 0.0186 - accuracy: 0.997 - ETA: 14s - loss: 0.0185 - accuracy: 0.997 - ETA: 14s
 - loss: 0.0185 - accuracy: 0.997 - ETA: 14s - loss: 0.0184 - accuracy: 0.997 - ETA: 13s - loss: 0.0184 - accuracy: 0.997 - ETA: 13s -
loss: 0.0190 - accuracy: 0.997 - ETA: 13s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - lo
ss: 0.0194 - accuracy: 0.997 - ETA: 12s - loss: 0.0194 - accuracy: 0.997 - ETA: 12s - loss: 0.0194 - accuracy: 0.997 - ETA: 11s - los
s: 0.0193 - accuracy: 0.997 - ETA: 11s - loss: 0.0193 - accuracy: 0.997 - ETA: 11s - loss: 0.0192 - accuracy: 0.997 - ETA: 11s - loss:
0.0192 - accuracy: 0.997 - ETA: 10s - loss: 0.0192 - accuracy: 0.997 - ETA: 10s - loss: 0.0197 - accuracy: 0.997 - ETA: 10s - loss: 0.
0196 - accuracy: 0.997 - ETA: 9s - loss: 0.0196 - accuracy: 0.997 - ETA: 9s - loss: 0.0196 - accuracy: 0.99 - ETA: 9s - loss: 0.0195 -
accuracy: 0.99 - ETA: 9s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0194 - accuracy: 0.99 - ETA: 8s - loss: 0.0194 - accurac
y: 0.99 - ETA: 8s - loss: 0.0193 - accuracy: 0.99 - ETA: 7s - loss: 0.0193 - accuracy: 0.99 - ETA: 7s - loss: 0.0192 - accuracy: 0.99
 - ETA: 7s - loss: 0.0192 - accuracy: 0.99 - ETA: 7s - loss: 0.0191 - accuracy: 0.99 - ETA: 6s - loss: 0.0191 - accuracy: 0.99 - ETA:
 6s - loss: 0.0190 - accuracy: 0.99 - ETA: 6s - loss: 0.0190 - accuracy: 0.99 - ETA: 5s - loss: 0.0189 - accuracy: 0.99 - ETA: 5s - lo
ss: 0.0189 - accuracy: 0.99 - ETA: 5s - loss: 0.0188 - accuracy: 0.99 - ETA: 5s - loss: 0.0188 - accuracy: 0.99 - ETA: 4s - loss: 0.01
87 - accuracy: 0.99 - ETA: 4s - loss: 0.0187 - accuracy: 0.99 - ETA: 4s - loss: 0.0186 - accuracy: 0.99 - ETA: 4s - loss: 0.0186 - acc
uracy: 0.99 - ETA: 3s - loss: 0.0185 - accuracy: 0.99 - ETA: 3s - loss: 0.0185 - accuracy: 0.99 - ETA: 3s - loss: 0.0184 - accuracy:
 0.99 - ETA: 2s - loss: 0.0184 - accuracy: 0.99 - ETA: 2s - loss: 0.0183 - accuracy: 0.99 - ETA: 2s - loss: 0.0183 - accuracy: 0.99 -
 ETA: 2s - loss: 0.0182 - accuracy: 0.99 - ETA: 1s - loss: 0.0189 - accuracy: 0.99 - ETA: 1s - loss: 0.0188 - accuracy: 0.99 - ETA: 1s
- loss: 0.0194 - accuracy: 0.99 - ETA: 1s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss:
 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - 89s 278ms/step - loss:
 0.0199 - accuracy: 0.9975 - val_loss: 0.0238 - val_accuracy: 0.9968
Epoch 31/50
186/322 [================>.............] - ETA: 0s - loss: 0.0052 - accuracy: 1.00 - ETA: 50s - loss: 0.0051 - accuracy: 1.000 - ETA:
 59s - loss: 0.0052 - accuracy: 1.000 - ETA: 59s - loss: 0.0053 - accuracy: 1.000 - ETA: 58s - loss: 0.0054 - accuracy: 1.000 - ETA: 5
7s - loss: 0.0054 - accuracy: 1.000 - ETA: 56s - loss: 0.0055 - accuracy: 1.000 - ETA: 56s - loss: 0.0055 - accuracy: 1.000 - ETA: 1:0
0 - loss: 0.0055 - accuracy: 1.00 - ETA: 1:00 - loss: 0.0055 - accuracy: 1.00 - ETA: 59s - loss: 0.0054 - accuracy: 1.0000 - ETA: 59s
 - loss: 0.0054 - accuracy: 1.000 - ETA: 59s - loss: 0.0054 - accuracy: 1.000 - ETA: 58s - loss: 0.0053 - accuracy: 1.000 - ETA: 59s -
loss: 0.0052 - accuracy: 1.000 - ETA: 1:03 - loss: 0.0052 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0051 - accuracy: 1.00 - ETA: 1:01 - l
oss: 0.0051 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0050 - accuracy: 1.00 - ETA: 1:00 - loss: 0.0049 - accuracy: 1.00 - ETA: 59s - los
s: 0.0048 - accuracy: 1.0000 - ETA: 1:00 - loss: 0.0048 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0047 - accuracy: 1.00 - ETA: 1:01 - los
s: 0.0046 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0046 - accuracy: 1.00 - ETA: 1:00 - loss: 0.0045 - accuracy: 1.00 - ETA: 1:00 - loss:
0.0045 - accuracy: 1.00 - ETA: 59s - loss: 0.0044 - accuracy: 1.0000 - ETA: 1:00 - loss: 0.0043 - accuracy: 1.00 - ETA: 1:00 - loss:
 0.0043 - accuracy: 1.00 - ETA: 59s - loss: 0.0042 - accuracy: 1.0000 - ETA: 59s - loss: 0.0042 - accuracy: 1.000 - ETA: 59s - loss:
 0.0041 - accuracy: 1.000 - ETA: 58s - loss: 0.0041 - accuracy: 1.000 - ETA: 58s - loss: 0.0040 - accuracy: 1.000 - ETA: 58s - loss:
 0.0040 - accuracy: 1.000 - ETA: 59s - loss: 0.0039 - accuracy: 1.000 - ETA: 58s - loss: 0.0039 - accuracy: 1.000 - ETA: 58s - loss:
 0.0039 - accuracy: 1.000 - ETA: 58s - loss: 0.0038 - accuracy: 1.000 - ETA: 58s - loss: 0.0038 - accuracy: 1.000 - ETA: 59s - loss:
 0.0038 - accuracy: 1.000 - ETA: 59s - loss: 0.0037 - accuracy: 1.000 - ETA: 58s - loss: 0.0037 - accuracy: 1.000 - ETA: 58s - loss:
 0.0037 - accuracy: 1.000 - ETA: 57s - loss: 0.0036 - accuracy: 1.000 - ETA: 57s - loss: 0.0036 - accuracy: 1.000 - ETA: 57s - loss:
 0.0036 - accuracy: 1.000 - ETA: 57s - loss: 0.0081 - accuracy: 0.999 - ETA: 57s - loss: 0.0080 - accuracy: 0.999 - ETA: 57s - loss:
 0.0079 - accuracy: 0.999 - ETA: 56s - loss: 0.0078 - accuracy: 0.999 - ETA: 56s - loss: 0.0077 - accuracy: 0.999 - ETA: 56s - loss:
 0.0076 - accuracy: 0.999 - ETA: 55s - loss: 0.0075 - accuracy: 0.999 - ETA: 56s - loss: 0.0074 - accuracy: 0.999 - ETA: 57s - loss:
 0.0074 - accuracy: 0.999 - ETA: 59s - loss: 0.0073 - accuracy: 0.999 - ETA: 1:00 - loss: 0.0072 - accuracy: 0.99 - ETA: 1:01 - loss:
 0.0071 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0070 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0070 - accuracy: 0.99 - ETA: 1:01 - loss:
 0.0069 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0068 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0068 - accuracy: 0.99 - ETA: 1:00 - loss:
 0.0067 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0066 - accuracy: 0.99 - ETA: 59s - loss: 0.0066 - accuracy: 0.9995 - ETA: 59s - loss:
 0.0065 - accuracy: 0.999 - ETA: 59s - loss: 0.0065 - accuracy: 0.999 - ETA: 58s - loss: 0.0064 - accuracy: 0.999 - ETA: 58s - loss:
 0.0063 - accuracy: 0.999 - ETA: 59s - loss: 0.0063 - accuracy: 0.999 - ETA: 59s - loss: 0.0062 - accuracy: 0.999 - ETA: 59s - loss:
 0.0062 - accuracy: 0.999 - ETA: 59s - loss: 0.0061 - accuracy: 0.999 - ETA: 59s - loss: 0.0061 - accuracy: 0.999 - ETA: 58s - loss:
 0.0060 - accuracy: 0.999 - ETA: 58s - loss: 0.0060 - accuracy: 0.999 - ETA: 58s - loss: 0.0059 - accuracy: 0.999 - ETA: 58s - loss:
 0.0059 - accuracy: 0.999 - ETA: 57s - loss: 0.0059 - accuracy: 0.999 - ETA: 57s - loss: 0.0058 - accuracy: 0.999 - ETA: 57s - loss:
 0.0058 - accuracy: 0.999 - ETA: 56s - loss: 0.0057 - accuracy: 0.999 - ETA: 56s - loss: 0.0057 - accuracy: 0.999 - ETA: 56s - loss:
```

```
 0.0057 - accuracy: 0.999 - ETA: 55s - loss: 0.0056 - accuracy: 0.999 - ETA: 55s - loss: 0.0056 - accuracy: 0.999 - ETA: 54s - loss:
 0.0055 - accuracy: 0.999 - ETA: 54s - loss: 0.0055 - accuracy: 0.999 - ETA: 54s - loss: 0.0055 - accuracy: 0.999 - ETA: 53s - loss:
 0.0054 - accuracy: 0.999 - ETA: 53s - loss: 0.0054 - accuracy: 0.999 - ETA: 53s - loss: 0.0077 - accuracy: 0.999 - ETA: 53s - loss:
 0.0077 - accuracy: 0.999 - ETA: 52s - loss: 0.0076 - accuracy: 0.999 - ETA: 52s - loss: 0.0076 - accuracy: 0.999 - ETA: 51s - loss:
 0.0096 - accuracy: 0.999 - ETA: 51s - loss: 0.0117 - accuracy: 0.998 - ETA: 51s - loss: 0.0117 - accuracy: 0.998 - ETA: 51s - loss:
 0.0116 - accuracy: 0.998 - ETA: 50s - loss: 0.0116 - accuracy: 0.998 - ETA: 50s - loss: 0.0116 - accuracy: 0.998 - ETA: 50s - loss:
 0.0115 - accuracy: 0.998 - ETA: 49s - loss: 0.0114 - accuracy: 0.998 - ETA: 49s - loss: 0.0114 - accuracy: 0.998 - ETA: 49s - loss:
 0.0113 - accuracy: 0.998 - ETA: 49s - loss: 0.0129 - accuracy: 0.998 - ETA: 48s - loss: 0.0129 - accuracy: 0.998 - ETA: 48s - loss:
 0.0128 - accuracy: 0.998 - ETA: 48s - loss: 0.0128 - accuracy: 0.998 - ETA: 47s - loss: 0.0127 - accuracy: 0.998 - ETA: 47s - loss:
 0.0127 - accuracy: 0.998 - ETA: 47s - loss: 0.0154 - accuracy: 0.998 - ETA: 47s - loss: 0.0154 - accuracy: 0.998 - ETA: 47s - loss:
 0.0153 - accuracy: 0.998 - ETA: 46s - loss: 0.0166 - accuracy: 0.997 - ETA: 46s - loss: 0.0166 - accuracy: 0.997 - ETA: 46s - loss:
 0.0166 - accuracy: 0.997 - ETA: 46s - loss: 0.0165 - accuracy: 0.997 - ETA: 46s - loss: 0.0176 - accuracy: 0.997 - ETA: 46s - loss:
 0.0176 - accuracy: 0.997 - ETA: 45s - loss: 0.0188 - accuracy: 0.997 - ETA: 45s - loss: 0.0188 - accuracy: 0.997 - ETA: 45s - loss:
 0.0188 - accuracy: 0.997 - ETA: 45s - loss: 0.0188 - accuracy: 0.997 - ETA: 45s - loss: 0.0187 - accuracy: 0.997 - ETA: 45s - loss:
 0.0187 - accuracy: 0.997 - ETA: 44s - loss: 0.0187 - accuracy: 0.997 - ETA: 44s - loss: 0.0186 - accuracy: 0.997 - ETA: 44s - loss:
 0.0185 - accuracy: 0.997 - ETA: 44s - loss: 0.0185 - accuracy: 0.997 - ETA: 43s - loss: 0.0184 - accuracy: 0.997 - ETA: 43s - loss:
 0.0183 - accuracy: 0.997 - ETA: 43s - loss: 0.0182 - accuracy: 0.997 - ETA: 43s - loss: 0.0181 - accuracy: 0.997 - ETA: 42s - loss:
 0.0180 - accuracy: 0.997 - ETA: 42s - loss: 0.0179 - accuracy: 0.997 - ETA: 42s - loss: 0.0178 - accuracy: 0.997 - ETA: 42s - loss:
 0.0177 - accuracy: 0.997 - ETA: 41s - loss: 0.0189 - accuracy: 0.997 - ETA: 41s - loss: 0.0188 - accuracy: 0.997 - ETA: 41s - loss:
 0.0187 - accuracy: 0.997 - ETA: 40s - loss: 0.0186 - accuracy: 0.997 - ETA: 40s - loss: 0.0185 - accuracy: 0.997 - ETA: 40s - loss:
 0.0184 - accuracy: 0.997 - ETA: 40s - loss: 0.0183 - accuracy: 0.997 - ETA: 39s - loss: 0.0182 - accuracy: 0.997 - ETA: 39s - loss:
 0.0181 - accuracy: 0.997 - ETA: 39s - loss: 0.0180 - accuracy: 0.997 - ETA: 38s - loss: 0.0179 - accuracy: 0.997 - ETA: 38s - loss:
 0.0178 - accuracy: 0.997 - ETA: 38s - loss: 0.0177 - accuracy: 0.997 - ETA: 38s - loss: 0.0176 - accuracy: 0.997 - ETA: 38s - loss:
 0.0175 - accuracy: 0.997 - ETA: 37s - loss: 0.0187 - accuracy: 0.997 - ETA: 37s - loss: 0.0186 - accuracy: 0.997 - ETA: 37s - loss:
 0.0185 - accuracy: 0.997 - ETA: 36s - loss: 0.0184 - accuracy: 0.997 - ETA: 36s - loss: 0.0183 - accuracy: 0.997 - ETA: 36s - loss:
 0.0182 - accuracy: 0.997 - ETA: 36s - loss: 0.0182 - accuracy: 0.997 - ETA: 35s - loss: 0.0181 - accuracy: 0.997 - ETA: 35s - loss:
 0.0180 - accuracy: 0.997 - ETA: 35s - loss: 0.0179 - accuracy: 0.997 - ETA: 35s - loss: 0.0178 - accuracy: 0.997 - ETA: 34s - loss:
 0.0177 - accuracy: 0.997 - ETA: 34s - loss: 0.0176 - accuracy: 0.997 - ETA: 34s - loss: 0.0175 - accuracy: 0.997 - ETA: 34s - loss:
 0.0175 - accuracy: 0.997 - ETA: 33s - loss: 0.0174 - accuracy: 0.997 - ETA: 33s - loss: 0.0173 - accuracy: 0.997 - ETA: 33s - loss:
 0.0172 - accuracy: 0.997 - ETA: 33s - loss: 0.0171 - accuracy: 0.997 - ETA: 32s - loss: 0.0170 - accuracy: 0.997 - ETA: 32s - loss:
 0.0170 - accuracy: 0.997 - ETA: 32s - loss: 0.0180 - accuracy: 0.997 - ETA: 32s - loss: 0.0179 - accuracy: 0.997 - ETA: 31s - loss:
 0.0189 - accuracy: 0.997 - ETA: 31s - loss: 0.0188 - accuracy: 0.997 - ETA: 31s - loss: 0.0197 - accuracy: 0.997 - ETA: 31s - loss:
 0.0206 - accuracy: 0.997 - ETA: 30s - loss: 0.0206 - accuracy: 0.997 - ETA: 30s - loss: 0.0206 - accuracy: 0.997 - ETA: 30s - loss:
 0.0206 - accuracy: 0.9973322/322 [==============================] - ETA: 30s - loss: 0.0205 - accuracy: 0.997 - ETA: 30s - loss: 0.02
05 - accuracy: 0.997 - ETA: 29s - loss: 0.0204 - accuracy: 0.997 - ETA: 29s - loss: 0.0212 - accuracy: 0.997 - ETA: 29s - loss: 0.0212
- accuracy: 0.997 - ETA: 29s - loss: 0.0212 - accuracy: 0.997 - ETA: 28s - loss: 0.0211 - accuracy: 0.997 - ETA: 28s - loss: 0.0211 -
 accuracy: 0.997 - ETA: 28s - loss: 0.0210 - accuracy: 0.997 - ETA: 28s - loss: 0.0210 - accuracy: 0.997 - ETA: 28s - loss: 0.0209 - a
ccuracy: 0.997 - ETA: 27s - loss: 0.0209 - accuracy: 0.997 - ETA: 27s - loss: 0.0208 - accuracy: 0.997 - ETA: 27s - loss: 0.0208 - acc
uracy: 0.997 - ETA: 27s - loss: 0.0207 - accuracy: 0.997 - ETA: 27s - loss: 0.0206 - accuracy: 0.997 - ETA: 26s - loss: 0.0206 - accur
acy: 0.997 - ETA: 26s - loss: 0.0214 - accuracy: 0.997 - ETA: 26s - loss: 0.0213 - accuracy: 0.997 - ETA: 26s - loss: 0.0213 - accurac
y: 0.997 - ETA: 26s - loss: 0.0220 - accuracy: 0.997 - ETA: 25s - loss: 0.0220 - accuracy: 0.997 - ETA: 25s - loss: 0.0219 - accuracy:
0.997 - ETA: 25s - loss: 0.0218 - accuracy: 0.997 - ETA: 25s - loss: 0.0218 - accuracy: 0.997 - ETA: 24s - loss: 0.0217 - accuracy: 0.
997 - ETA: 24s - loss: 0.0216 - accuracy: 0.997 - ETA: 24s - loss: 0.0216 - accuracy: 0.997 - ETA: 24s - loss: 0.0215 - accuracy: 0.99
7 - ETA: 23s - loss: 0.0214 - accuracy: 0.997 - ETA: 23s - loss: 0.0214 - accuracy: 0.997 - ETA: 23s - loss: 0.0213 - accuracy: 0.997
 - ETA: 23s - loss: 0.0212 - accuracy: 0.997 - ETA: 23s - loss: 0.0211 - accuracy: 0.997 - ETA: 22s - loss: 0.0211 - accuracy: 0.997 -
ETA: 22s - loss: 0.0210 - accuracy: 0.997 - ETA: 22s - loss: 0.0209 - accuracy: 0.997 - ETA: 22s - loss: 0.0208 - accuracy: 0.997 - ET
A: 21s - loss: 0.0208 - accuracy: 0.997 - ETA: 21s - loss: 0.0207 - accuracy: 0.997 - ETA: 21s - loss: 0.0206 - accuracy: 0.997 - ETA:
21s - loss: 0.0205 - accuracy: 0.997 - ETA: 20s - loss: 0.0205 - accuracy: 0.997 - ETA: 20s - loss: 0.0212 - accuracy: 0.997 - ETA: 20
s - loss: 0.0211 - accuracy: 0.997 - ETA: 20s - loss: 0.0220 - accuracy: 0.997 - ETA: 20s - loss: 0.0219 - accuracy: 0.997 - ETA: 19s
 - loss: 0.0218 - accuracy: 0.997 - ETA: 19s - loss: 0.0217 - accuracy: 0.997 - ETA: 19s - loss: 0.0217 - accuracy: 0.997 - ETA: 19s -
loss: 0.0216 - accuracy: 0.997 - ETA: 18s - loss: 0.0215 - accuracy: 0.997 - ETA: 18s - loss: 0.0215 - accuracy: 0.997 - ETA: 18s - lo
ss: 0.0214 - accuracy: 0.997 - ETA: 18s - loss: 0.0213 - accuracy: 0.997 - ETA: 17s - loss: 0.0212 - accuracy: 0.997 - ETA: 17s - los
s: 0.0212 - accuracy: 0.997 - ETA: 17s - loss: 0.0211 - accuracy: 0.997 - ETA: 17s - loss: 0.0210 - accuracy: 0.997 - ETA: 17s - loss:
0.0210 - accuracy: 0.997 - ETA: 16s - loss: 0.0209 - accuracy: 0.997 - ETA: 16s - loss: 0.0208 - accuracy: 0.997 - ETA: 16s - loss: 0.
0208 - accuracy: 0.997 - ETA: 16s - loss: 0.0207 - accuracy: 0.997 - ETA: 15s - loss: 0.0206 - accuracy: 0.997 - ETA: 15s - loss: 0.02
06 - accuracy: 0.997 - ETA: 15s - loss: 0.0205 - accuracy: 0.997 - ETA: 15s - loss: 0.0204 - accuracy: 0.997 - ETA: 14s - loss: 0.0204
- accuracy: 0.997 - ETA: 14s - loss: 0.0203 - accuracy: 0.997 - ETA: 14s - loss: 0.0202 - accuracy: 0.997 - ETA: 14s - loss: 0.0202 -
 accuracy: 0.997 - ETA: 14s - loss: 0.0201 - accuracy: 0.997 - ETA: 13s - loss: 0.0200 - accuracy: 0.997 - ETA: 13s - loss: 0.0200 - a
ccuracy: 0.997 - ETA: 13s - loss: 0.0199 - accuracy: 0.997 - ETA: 13s - loss: 0.0198 - accuracy: 0.997 - ETA: 12s - loss: 0.0206 - acc
uracy: 0.997 - ETA: 12s - loss: 0.0205 - accuracy: 0.997 - ETA: 12s - loss: 0.0204 - accuracy: 0.997 - ETA: 12s - loss: 0.0204 - accur
acy: 0.997 - ETA: 11s - loss: 0.0203 - accuracy: 0.997 - ETA: 11s - loss: 0.0203 - accuracy: 0.997 - ETA: 11s - loss: 0.0202 - accurac
y: 0.997 - ETA: 11s - loss: 0.0201 - accuracy: 0.997 - ETA: 11s - loss: 0.0201 - accuracy: 0.997 - ETA: 10s - loss: 0.0200 - accuracy:
0.997 - ETA: 10s - loss: 0.0199 - accuracy: 0.997 - ETA: 10s - loss: 0.0199 - accuracy: 0.997 - ETA: 10s - loss: 0.0198 - accuracy: 0.
997 - ETA: 10s - loss: 0.0198 - accuracy: 0.997 - ETA: 9s - loss: 0.0197 - accuracy: 0.997 - ETA: 9s - loss: 0.0196 - accuracy: 0.99 -
ETA: 9s - loss: 0.0196 - accuracy: 0.99 - ETA: 9s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s
 - loss: 0.0194 - accuracy: 0.99 - ETA: 8s - loss: 0.0193 - accuracy: 0.99 - ETA: 8s - loss: 0.0200 - accuracy: 0.99 - ETA: 7s - loss:
0.0199 - accuracy: 0.99 - ETA: 7s - loss: 0.0199 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 -
accuracy: 0.99 - ETA: 7s - loss: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0196 - accuracy: 0.99 - ETA: 6s - loss: 0.0196 - accurac
y: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0194 - accuracy: 0.99
 - ETA: 5s - loss: 0.0194 - accuracy: 0.99 - ETA: 5s - loss: 0.0193 - accuracy: 0.99 - ETA: 5s - loss: 0.0193 - accuracy: 0.99 - ETA:
 5s - loss: 0.0199 - accuracy: 0.99 - ETA: 4s - loss: 0.0198 - accuracy: 0.99 - ETA: 4s - loss: 0.0197 - accuracy: 0.99 - ETA: 4s - lo
ss: 0.0197 - accuracy: 0.99 - ETA: 4s - loss: 0.0196 - accuracy: 0.99 - ETA: 3s - loss: 0.0196 - accuracy: 0.99 - ETA: 3s - loss: 0.01
95 - accuracy: 0.99 - ETA: 3s - loss: 0.0201 - accuracy: 0.99 - ETA: 3s - loss: 0.0201 - accuracy: 0.99 - ETA: 3s - loss: 0.0200 - acc
uracy: 0.99 - ETA: 2s - loss: 0.0200 - accuracy: 0.99 - ETA: 2s - loss: 0.0199 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy:
 0.99 - ETA: 2s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0203 - accuracy: 0.99 -
 ETA: 1s - loss: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s
- loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss:
 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - 73s 228ms/step - loss: 0.0200 - accuracy: 0.9975 - val_loss: 0.02
29 - val_accuracy: 0.9968
Epoch 32/50
186/322 [================>............] - ETA: 0s - loss: 0.0053 - accuracy: 1.00 - ETA: 51s - loss: 0.0052 - accuracy: 1.000 - ETA:
 55s - loss: 0.0052 - accuracy: 1.000 - ETA: 53s - loss: 0.0050 - accuracy: 1.000 - ETA: 54s - loss: 0.0049 - accuracy: 1.000 - ETA: 5
6s - loss: 0.0048 - accuracy: 1.000 - ETA: 56s - loss: 0.0047 - accuracy: 1.000 - ETA: 59s - loss: 0.0046 - accuracy: 1.000 - ETA: 1:0
2 - loss: 0.0045 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0044 - accuracy: 1.00 - ETA: 1:00 - loss: 0.0043 - accuracy: 1.00 - ETA: 59s -
loss: 0.0042 - accuracy: 1.0000 - ETA: 59s - loss: 0.0041 - accuracy: 1.000 - ETA: 59s - loss: 0.0040 - accuracy: 1.000 - ETA: 1:02 -
 loss: 0.0039 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0039 - accuracy: 1.000 - ETA: 1:00 - loss: 0.0038 - accuracy: 1.00 - ETA: 1:00 - l
oss: 0.0037 - accuracy: 1.00 - ETA: 59s - loss: 0.0037 - accuracy: 1.0000 - ETA: 58s - loss: 0.0036 - accuracy: 1.000 - ETA: 59s - los
s: 0.0130 - accuracy: 0.998 - ETA: 1:00 - loss: 0.0126 - accuracy: 0.99 - ETA: 59s - loss: 0.0122 - accuracy: 0.9986 - ETA: 58s - los
s: 0.0118 - accuracy: 0.998 - ETA: 58s - loss: 0.0114 - accuracy: 0.998 - ETA: 58s - loss: 0.0111 - accuracy: 0.998 - ETA: 57s - loss:
0.0108 - accuracy: 0.998 - ETA: 57s - loss: 0.0106 - accuracy: 0.998 - ETA: 58s - loss: 0.0103 - accuracy: 0.998 - ETA: 58s - loss: 0.
0170 - accuracy: 0.997 - ETA: 57s - loss: 0.0165 - accuracy: 0.998 - ETA: 57s - loss: 0.0161 - accuracy: 0.998 - ETA: 56s - loss: 0.01
```

```
57 - accuracy: 0.998 - ETA: 56s - loss: 0.0154 - accuracy: 0.998 - ETA: 57s - loss: 0.0204 - accuracy: 0.997 - ETA: 57s - loss: 0.0200
- accuracy: 0.997 - ETA: 56s - loss: 0.0196 - accuracy: 0.997 - ETA: 56s - loss: 0.0192 - accuracy: 0.997 - ETA: 56s - loss: 0.0188 -
 accuracy: 0.997 - ETA: 55s - loss: 0.0185 - accuracy: 0.997 - ETA: 56s - loss: 0.0182 - accuracy: 0.997 - ETA: 56s - loss: 0.0178 - a
ccuracy: 0.997 - ETA: 56s - loss: 0.0175 - accuracy: 0.997 - ETA: 55s - loss: 0.0172 - accuracy: 0.997 - ETA: 55s - loss: 0.0170 - acc
uracy: 0.997 - ETA: 54s - loss: 0.0167 - accuracy: 0.998 - ETA: 54s - loss: 0.0164 - accuracy: 0.998 - ETA: 55s - loss: 0.0162 - accur
acy: 0.998 - ETA: 55s - loss: 0.0160 - accuracy: 0.998 - ETA: 54s - loss: 0.0157 - accuracy: 0.998 - ETA: 54s - loss: 0.0191 - accurac
y: 0.997 - ETA: 54s - loss: 0.0188 - accuracy: 0.997 - ETA: 53s - loss: 0.0186 - accuracy: 0.997 - ETA: 53s - loss: 0.0183 - accuracy:
0.997 - ETA: 53s - loss: 0.0181 - accuracy: 0.997 - ETA: 53s - loss: 0.0179 - accuracy: 0.997 - ETA: 53s - loss: 0.0177 - accuracy: 0.
997 - ETA: 52s - loss: 0.0174 - accuracy: 0.997 - ETA: 52s - loss: 0.0172 - accuracy: 0.997 - ETA: 52s - loss: 0.0170 - accuracy: 0.99
7 - ETA: 51s - loss: 0.0168 - accuracy: 0.998 - ETA: 52s - loss: 0.0166 - accuracy: 0.998 - ETA: 52s - loss: 0.0196 - accuracy: 0.997
 - ETA: 51s - loss: 0.0194 - accuracy: 0.997 - ETA: 51s - loss: 0.0219 - accuracy: 0.997 - ETA: 51s - loss: 0.0216 - accuracy: 0.997 -
ETA: 50s - loss: 0.0214 - accuracy: 0.997 - ETA: 51s - loss: 0.0212 - accuracy: 0.997 - ETA: 50s - loss: 0.0210 - accuracy: 0.997 - ET
A: 50s - loss: 0.0208 - accuracy: 0.997 - ETA: 50s - loss: 0.0206 - accuracy: 0.997 - ETA: 49s - loss: 0.0227 - accuracy: 0.997 - ETA:
49s - loss: 0.0224 - accuracy: 0.997 - ETA: 49s - loss: 0.0222 - accuracy: 0.997 - ETA: 49s - loss: 0.0220 - accuracy: 0.997 - ETA: 49
s - loss: 0.0218 - accuracy: 0.997 - ETA: 48s - loss: 0.0216 - accuracy: 0.997 - ETA: 48s - loss: 0.0214 - accuracy: 0.997 - ETA: 48s
 - loss: 0.0213 - accuracy: 0.997 - ETA: 48s - loss: 0.0211 - accuracy: 0.997 - ETA: 48s - loss: 0.0209 - accuracy: 0.997 - ETA: 48s -
loss: 0.0207 - accuracy: 0.997 - ETA: 47s - loss: 0.0205 - accuracy: 0.997 - ETA: 47s - loss: 0.0204 - accuracy: 0.997 - ETA: 47s - lo
ss: 0.0202 - accuracy: 0.997 - ETA: 47s - loss: 0.0200 - accuracy: 0.997 - ETA: 47s - loss: 0.0198 - accuracy: 0.997 - ETA: 47s - los
s: 0.0196 - accuracy: 0.997 - ETA: 46s - loss: 0.0195 - accuracy: 0.997 - ETA: 46s - loss: 0.0193 - accuracy: 0.997 - ETA: 46s - loss:
0.0191 - accuracy: 0.997 - ETA: 46s - loss: 0.0189 - accuracy: 0.997 - ETA: 45s - loss: 0.0188 - accuracy: 0.997 - ETA: 45s - loss: 0.
0186 - accuracy: 0.997 - ETA: 45s - loss: 0.0184 - accuracy: 0.997 - ETA: 45s - loss: 0.0183 - accuracy: 0.997 - ETA: 45s - loss: 0.02
02 - accuracy: 0.997 - ETA: 45s - loss: 0.0201 - accuracy: 0.997 - ETA: 44s - loss: 0.0199 - accuracy: 0.997 - ETA: 44s - loss: 0.0216
- accuracy: 0.997 - ETA: 44s - loss: 0.0214 - accuracy: 0.997 - ETA: 44s - loss: 0.0212 - accuracy: 0.997 - ETA: 44s - loss: 0.0211 -
 accuracy: 0.997 - ETA: 44s - loss: 0.0209 - accuracy: 0.997 - ETA: 44s - loss: 0.0208 - accuracy: 0.997 - ETA: 44s - loss: 0.0206 - a
ccuracy: 0.997 - ETA: 44s - loss: 0.0205 - accuracy: 0.997 - ETA: 43s - loss: 0.0203 - accuracy: 0.997 - ETA: 43s - loss: 0.0202 - acc
uracy: 0.997 - ETA: 43s - loss: 0.0200 - accuracy: 0.997 - ETA: 43s - loss: 0.0199 - accuracy: 0.997 - ETA: 43s - loss: 0.0197 - accur
acy: 0.997 - ETA: 43s - loss: 0.0196 - accuracy: 0.997 - ETA: 43s - loss: 0.0195 - accuracy: 0.997 - ETA: 43s - loss: 0.0210 - accurac
y: 0.997 - ETA: 42s - loss: 0.0225 - accuracy: 0.997 - ETA: 42s - loss: 0.0223 - accuracy: 0.997 - ETA: 42s - loss: 0.0222 - accuracy:
0.997 - ETA: 42s - loss: 0.0221 - accuracy: 0.997 - ETA: 42s - loss: 0.0220 - accuracy: 0.997 - ETA: 41s - loss: 0.0218 - accuracy: 0.
997 - ETA: 41s - loss: 0.0217 - accuracy: 0.997 - ETA: 41s - loss: 0.0216 - accuracy: 0.997 - ETA: 41s - loss: 0.0215 - accuracy: 0.99
7 - ETA: 41s - loss: 0.0214 - accuracy: 0.997 - ETA: 41s - loss: 0.0212 - accuracy: 0.997 - ETA: 41s - loss: 0.0224 - accuracy: 0.997
 - ETA: 40s - loss: 0.0223 - accuracy: 0.997 - ETA: 40s - loss: 0.0222 - accuracy: 0.997 - ETA: 40s - loss: 0.0220 - accuracy: 0.997 -
ETA: 40s - loss: 0.0219 - accuracy: 0.997 - ETA: 40s - loss: 0.0218 - accuracy: 0.997 - ETA: 40s - loss: 0.0217 - accuracy: 0.997 - ET
A: 40s - loss: 0.0216 - accuracy: 0.997 - ETA: 39s - loss: 0.0214 - accuracy: 0.997 - ETA: 39s - loss: 0.0213 - accuracy: 0.997 - ETA:
39s - loss: 0.0212 - accuracy: 0.997 - ETA: 39s - loss: 0.0211 - accuracy: 0.997 - ETA: 38s - loss: 0.0210 - accuracy: 0.997 - ETA: 38
s - loss: 0.0209 - accuracy: 0.997 - ETA: 38s - loss: 0.0207 - accuracy: 0.997 - ETA: 38s - loss: 0.0206 - accuracy: 0.997 - ETA: 38s
 - loss: 0.0205 - accuracy: 0.997 - ETA: 37s - loss: 0.0204 - accuracy: 0.997 - ETA: 37s - loss: 0.0203 - accuracy: 0.997 - ETA: 37s -
loss: 0.0202 - accuracy: 0.997 - ETA: 37s - loss: 0.0201 - accuracy: 0.997 - ETA: 37s - loss: 0.0199 - accuracy: 0.997 - ETA: 36s - lo
ss: 0.0198 - accuracy: 0.997 - ETA: 36s - loss: 0.0197 - accuracy: 0.997 - ETA: 36s - loss: 0.0196 - accuracy: 0.997 - ETA: 36s - los
s: 0.0208 - accuracy: 0.997 - ETA: 35s - loss: 0.0207 - accuracy: 0.997 - ETA: 35s - loss: 0.0206 - accuracy: 0.997 - ETA: 35s - loss:
0.0205 - accuracy: 0.997 - ETA: 35s - loss: 0.0204 - accuracy: 0.997 - ETA: 34s - loss: 0.0203 - accuracy: 0.997 - ETA: 34s - loss: 0.
0202 - accuracy: 0.997 - ETA: 34s - loss: 0.0201 - accuracy: 0.997 - ETA: 34s - loss: 0.0199 - accuracy: 0.997 - ETA: 34s - loss: 0.02
10 - accuracy: 0.997 - ETA: 33s - loss: 0.0209 - accuracy: 0.997 - ETA: 33s - loss: 0.0208 - accuracy: 0.997 - ETA: 33s - loss: 0.0207
- accuracy: 0.997 - ETA: 33s - loss: 0.0206 - accuracy: 0.997 - ETA: 32s - loss: 0.0205 - accuracy: 0.997 - ETA: 32s - loss: 0.0204 -
 accuracy: 0.997 - ETA: 32s - loss: 0.0214 - accuracy: 0.997 - ETA: 32s - loss: 0.0213 - accuracy: 0.997 - ETA: 32s - loss: 0.0212 - a
ccuracy: 0.997 - ETA: 31s - loss: 0.0211 - accuracy: 0.997 - ETA: 31s - loss: 0.0210 - accuracy: 0.997 - ETA: 31s - loss: 0.0209 - acc
uracy: 0.997 - ETA: 31s - loss: 0.0208 - accuracy: 0.997 - ETA: 30s - loss: 0.0208 - accuracy: 0.997 - ETA: 30s - loss: 0.0207 - accur
acy: 0.997 - ETA: 30s - loss: 0.0206 - accuracy: 0.997 - ETA: 30s - loss: 0.0205 - accuracy: 0.997 - ETA: 29s - loss: 0.0204 - accurac
y: 0.997 - ETA: 29s - loss: 0.0203 - accuracy: 0.997 - ETA: 29s - loss: 0.0202 - accuracy: 0.997 - ETA: 29s - loss: 0.0201 - accuracy:
0.997 - ETA: 29s - loss: 0.0200 - accuracy: 0.997 - ETA: 28s - loss: 0.0199 - accuracy: 0.997 - ETA: 28s - loss: 0.0199 - accuracy: 0.
997 - ETA: 28s - loss: 0.0198 - accuracy: 0.9975322/322 [==============================] - ETA: 28s - loss: 0.0197 - accuracy: 0.997 -
ETA: 28s - loss: 0.0196 - accuracy: 0.997 - ETA: 27s - loss: 0.0195 - accuracy: 0.997 - ETA: 27s - loss: 0.0194 - accuracy: 0.997 - ET
A: 27s - loss: 0.0193 - accuracy: 0.997 - ETA: 27s - loss: 0.0193 - accuracy: 0.997 - ETA: 26s - loss: 0.0192 - accuracy: 0.997 - ETA:
26s - loss: 0.0191 - accuracy: 0.997 - ETA: 26s - loss: 0.0190 - accuracy: 0.997 - ETA: 26s - loss: 0.0189 - accuracy: 0.997 - ETA: 26
s - loss: 0.0188 - accuracy: 0.997 - ETA: 25s - loss: 0.0188 - accuracy: 0.997 - ETA: 25s - loss: 0.0187 - accuracy: 0.997 - ETA: 25s
 - loss: 0.0186 - accuracy: 0.997 - ETA: 25s - loss: 0.0185 - accuracy: 0.997 - ETA: 25s - loss: 0.0184 - accuracy: 0.997 - ETA: 24s -
loss: 0.0184 - accuracy: 0.997 - ETA: 24s - loss: 0.0183 - accuracy: 0.997 - ETA: 24s - loss: 0.0182 - accuracy: 0.997 - ETA: 24s - lo
ss: 0.0181 - accuracy: 0.997 - ETA: 24s - loss: 0.0181 - accuracy: 0.997 - ETA: 23s - loss: 0.0180 - accuracy: 0.997 - ETA: 23s - los
s: 0.0179 - accuracy: 0.997 - ETA: 23s - loss: 0.0178 - accuracy: 0.997 - ETA: 23s - loss: 0.0178 - accuracy: 0.997 - ETA: 22s - loss:
0.0187 - accuracy: 0.997 - ETA: 22s - loss: 0.0186 - accuracy: 0.997 - ETA: 22s - loss: 0.0185 - accuracy: 0.997 - ETA: 22s - loss: 0.
0185 - accuracy: 0.997 - ETA: 22s - loss: 0.0184 - accuracy: 0.997 - ETA: 21s - loss: 0.0183 - accuracy: 0.997 - ETA: 21s - loss: 0.01
82 - accuracy: 0.997 - ETA: 21s - loss: 0.0182 - accuracy: 0.997 - ETA: 21s - loss: 0.0181 - accuracy: 0.997 - ETA: 21s - loss: 0.0180
- accuracy: 0.997 - ETA: 20s - loss: 0.0180 - accuracy: 0.997 - ETA: 20s - loss: 0.0179 - accuracy: 0.997 - ETA: 20s - loss: 0.0178 -
 accuracy: 0.997 - ETA: 20s - loss: 0.0178 - accuracy: 0.997 - ETA: 20s - loss: 0.0177 - accuracy: 0.997 - ETA: 19s - loss: 0.0176 - a
ccuracy: 0.997 - ETA: 19s - loss: 0.0176 - accuracy: 0.997 - ETA: 19s - loss: 0.0175 - accuracy: 0.997 - ETA: 19s - loss: 0.0184 - acc
uracy: 0.997 - ETA: 18s - loss: 0.0183 - accuracy: 0.997 - ETA: 18s - loss: 0.0182 - accuracy: 0.997 - ETA: 18s - loss: 0.0182 - accur
acy: 0.997 - ETA: 18s - loss: 0.0181 - accuracy: 0.997 - ETA: 18s - loss: 0.0181 - accuracy: 0.997 - ETA: 17s - loss: 0.0180 - accurac
y: 0.997 - ETA: 17s - loss: 0.0188 - accuracy: 0.997 - ETA: 17s - loss: 0.0195 - accuracy: 0.997 - ETA: 17s - loss: 0.0194 - accuracy:
0.997 - ETA: 17s - loss: 0.0193 - accuracy: 0.997 - ETA: 16s - loss: 0.0193 - accuracy: 0.997 - ETA: 16s - loss: 0.0200 - accuracy: 0.
997 - ETA: 16s - loss: 0.0199 - accuracy: 0.997 - ETA: 16s - loss: 0.0199 - accuracy: 0.997 - ETA: 16s - loss: 0.0198 - accuracy: 0.99
7 - ETA: 15s - loss: 0.0198 - accuracy: 0.997 - ETA: 15s - loss: 0.0197 - accuracy: 0.997 - ETA: 15s - loss: 0.0197 - accuracy: 0.997
 - ETA: 15s - loss: 0.0196 - accuracy: 0.997 - ETA: 14s - loss: 0.0196 - accuracy: 0.997 - ETA: 14s - loss: 0.0196 - accuracy: 0.997 -
ETA: 14s - loss: 0.0195 - accuracy: 0.997 - ETA: 14s - loss: 0.0195 - accuracy: 0.997 - ETA: 14s - loss: 0.0201 - accuracy: 0.997 - ET
A: 13s - loss: 0.0200 - accuracy: 0.997 - ETA: 13s - loss: 0.0200 - accuracy: 0.997 - ETA: 13s - loss: 0.0200 - accuracy: 0.997 - ETA:
13s - loss: 0.0199 - accuracy: 0.997 - ETA: 13s - loss: 0.0199 - accuracy: 0.997 - ETA: 12s - loss: 0.0198 - accuracy: 0.997 - ETA: 12
s - loss: 0.0198 - accuracy: 0.997 - ETA: 12s - loss: 0.0197 - accuracy: 0.997 - ETA: 12s - loss: 0.0197 - accuracy: 0.997 - ETA: 12s
 - loss: 0.0196 - accuracy: 0.997 - ETA: 11s - loss: 0.0195 - accuracy: 0.997 - ETA: 11s - loss: 0.0195 - accuracy: 0.997 - ETA: 11s -
loss: 0.0201 - accuracy: 0.997 - ETA: 11s - loss: 0.0201 - accuracy: 0.997 - ETA: 11s - loss: 0.0200 - accuracy: 0.997 - ETA: 10s - lo
ss: 0.0200 - accuracy: 0.997 - ETA: 10s - loss: 0.0199 - accuracy: 0.997 - ETA: 10s - loss: 0.0205 - accuracy: 0.997 - ETA: 10s - los
s: 0.0204 - accuracy: 0.997 - ETA: 9s - loss: 0.0204 - accuracy: 0.997 - ETA: 9s - loss: 0.0203 - accuracy: 0.99 - ETA: 9s - loss: 0.0
203 - accuracy: 0.99 - ETA: 9s - loss: 0.0202 - accuracy: 0.99 - ETA: 9s - loss: 0.0202 - accuracy: 0.99 - ETA: 8s - loss: 0.0201 - ac
curacy: 0.99 - ETA: 8s - loss: 0.0201 - accuracy: 0.99 - ETA: 8s - loss: 0.0200 - accuracy: 0.99 - ETA: 8s - loss: 0.0200 - accuracy:
 0.99 - ETA: 8s - loss: 0.0199 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 - accuracy: 0.99 -
 ETA: 7s - loss: 0.0197 - accuracy: 0.99 - ETA: 7s - loss: 0.0197 - accuracy: 0.99 - ETA: 7s - loss: 0.0196 - accuracy: 0.99 - ETA: 6s
- loss: 0.0196 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 6s - loss:
 0.0194 - accuracy: 0.99 - ETA: 6s - loss: 0.0194 - accuracy: 0.99 - ETA: 5s - loss: 0.0193 - accuracy: 0.99 - ETA: 5s - loss: 0.0192
 - accuracy: 0.99 - ETA: 5s - loss: 0.0192 - accuracy: 0.99 - ETA: 5s - loss: 0.0191 - accuracy: 0.99 - ETA: 4s - loss: 0.0191 - accur
acy: 0.99 - ETA: 4s - loss: 0.0197 - accuracy: 0.99 - ETA: 4s - loss: 0.0196 - accuracy: 0.99 - ETA: 4s - loss: 0.0196 - accuracy: 0.9
9 - ETA: 4s - loss: 0.0195 - accuracy: 0.99 - ETA: 3s - loss: 0.0195 - accuracy: 0.99 - ETA: 3s - loss: 0.0194 - accuracy: 0.99 - ETA:
3s - loss: 0.0194 - accuracy: 0.99 - ETA: 3s - loss: 0.0193 - accuracy: 0.99 - ETA: 3s - loss: 0.0193 - accuracy: 0.99 - ETA: 2s - los
s: 0.0192 - accuracy: 0.99 - ETA: 2s - loss: 0.0192 - accuracy: 0.99 - ETA: 2s - loss: 0.0191 - accuracy: 0.99 - ETA: 2s - loss: 0.019
```

```
0 - accuracy: 0.99 - ETA: 2s - loss: 0.0190 - accuracy: 0.99 - ETA: 1s - loss: 0.0189 - accuracy: 0.99 - ETA: 1s - loss: 0.0195 - accu
racy: 0.99 - ETA: 1s - loss: 0.0195 - accuracy: 0.99 - ETA: 1s - loss: 0.0194 - accuracy: 0.99 - ETA: 1s - loss: 0.0200 - accuracy: 0.
99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ET
A: 0s - loss: 0.0198 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - 70s 216ms/step - loss: 0.0198 - accuracy: 0.9975 - v
al_loss: 0.0230 - val_accuracy: 0.9968
Epoch 33/50
186/322 [================>............] - ETA: 0s - loss: 0.0047 - accuracy: 1.00 - ETA: 24s - loss: 0.0047 - accuracy: 1.000 - ETA:
 33s - loss: 0.0048 - accuracy: 1.000 - ETA: 38s - loss: 0.0048 - accuracy: 1.000 - ETA: 49s - loss: 0.0049 - accuracy: 1.000 - ETA: 5
3s - loss: 0.0048 - accuracy: 1.000 - ETA: 53s - loss: 0.0048 - accuracy: 1.000 - ETA: 52s - loss: 0.0049 - accuracy: 1.000 - ETA: 52s
- loss: 0.0048 - accuracy: 1.000 - ETA: 52s - loss: 0.0048 - accuracy: 1.000 - ETA: 51s - loss: 0.0047 - accuracy: 1.000 - ETA: 56s -
 loss: 0.0047 - accuracy: 1.000 - ETA: 56s - loss: 0.0046 - accuracy: 1.000 - ETA: 56s - loss: 0.0046 - accuracy: 1.000 - ETA: 56s - l
oss: 0.0045 - accuracy: 1.000 - ETA: 56s - loss: 0.0044 - accuracy: 1.000 - ETA: 55s - loss: 0.0044 - accuracy: 1.000 - ETA: 55s - los
s: 0.0043 - accuracy: 1.000 - ETA: 58s - loss: 0.0042 - accuracy: 1.000 - ETA: 57s - loss: 0.0147 - accuracy: 0.998 - ETA: 57s - loss:
0.0142 - accuracy: 0.998 - ETA: 56s - loss: 0.0137 - accuracy: 0.998 - ETA: 56s - loss: 0.0133 - accuracy: 0.998 - ETA: 55s - loss: 0.
0129 - accuracy: 0.998 - ETA: 55s - loss: 0.0125 - accuracy: 0.998 - ETA: 57s - loss: 0.0122 - accuracy: 0.998 - ETA: 57s - loss: 0.01
19 - accuracy: 0.998 - ETA: 56s - loss: 0.0116 - accuracy: 0.998 - ETA: 57s - loss: 0.0113 - accuracy: 0.998 - ETA: 56s - loss: 0.0110
- accuracy: 0.999 - ETA: 56s - loss: 0.0108 - accuracy: 0.999 - ETA: 57s - loss: 0.0106 - accuracy: 0.999 - ETA: 57s - loss: 0.0103 -
 accuracy: 0.999 - ETA: 56s - loss: 0.0163 - accuracy: 0.998 - ETA: 56s - loss: 0.0159 - accuracy: 0.998 - ETA: 56s - loss: 0.0210 - a
ccuracy: 0.997 - ETA: 55s - loss: 0.0206 - accuracy: 0.997 - ETA: 57s - loss: 0.0202 - accuracy: 0.997 - ETA: 58s - loss: 0.0198 - acc
uracy: 0.997 - ETA: 58s - loss: 0.0194 - accuracy: 0.997 - ETA: 58s - loss: 0.0191 - accuracy: 0.997 - ETA: 58s - loss: 0.0188 - accur
acy: 0.997 - ETA: 59s - loss: 0.0185 - accuracy: 0.997 - ETA: 1:05 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0179 - accura
cy: 0.99 - ETA: 1:06 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0208 - accurac
y: 0.99 - ETA: 1:06 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0199 - accuracy:
0.99 - ETA: 1:05 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0191 - accuracy: 0.
99 - ETA: 1:04 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0184 - accuracy: 0.99
- ETA: 1:02 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0177 - accuracy: 0.99 -
 ETA: 1:01 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0171 - accuracy: 0.99 - E
TA: 1:00 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0166 - accuracy: 0.99 - ETA: 59s - loss: 0.0164 - accuracy: 0.9981 - ET
A: 59s - loss: 0.0162 - accuracy: 0.998 - ETA: 59s - loss: 0.0161 - accuracy: 0.998 - ETA: 58s - loss: 0.0159 - accuracy: 0.998 - ETA:
58s - loss: 0.0157 - accuracy: 0.998 - ETA: 57s - loss: 0.0155 - accuracy: 0.998 - ETA: 57s - loss: 0.0153 - accuracy: 0.998 - ETA: 57
s - loss: 0.0152 - accuracy: 0.998 - ETA: 56s - loss: 0.0150 - accuracy: 0.998 - ETA: 56s - loss: 0.0148 - accuracy: 0.998 - ETA: 56s
 - loss: 0.0147 - accuracy: 0.998 - ETA: 55s - loss: 0.0145 - accuracy: 0.998 - ETA: 55s - loss: 0.0143 - accuracy: 0.998 - ETA: 55s -
loss: 0.0142 - accuracy: 0.998 - ETA: 54s - loss: 0.0167 - accuracy: 0.998 - ETA: 54s - loss: 0.0165 - accuracy: 0.998 - ETA: 54s - lo
ss: 0.0164 - accuracy: 0.998 - ETA: 54s - loss: 0.0162 - accuracy: 0.998 - ETA: 53s - loss: 0.0160 - accuracy: 0.998 - ETA: 53s - los
s: 0.0159 - accuracy: 0.998 - ETA: 53s - loss: 0.0157 - accuracy: 0.998 - ETA: 52s - loss: 0.0156 - accuracy: 0.998 - ETA: 52s - loss:
0.0154 - accuracy: 0.998 - ETA: 52s - loss: 0.0153 - accuracy: 0.998 - ETA: 52s - loss: 0.0152 - accuracy: 0.998 - ETA: 51s - loss: 0.
0150 - accuracy: 0.998 - ETA: 51s - loss: 0.0149 - accuracy: 0.998 - ETA: 51s - loss: 0.0148 - accuracy: 0.998 - ETA: 50s - loss: 0.01
46 - accuracy: 0.998 - ETA: 50s - loss: 0.0145 - accuracy: 0.998 - ETA: 50s - loss: 0.0144 - accuracy: 0.998 - ETA: 50s - loss: 0.0143
- accuracy: 0.998 - ETA: 49s - loss: 0.0142 - accuracy: 0.998 - ETA: 49s - loss: 0.0140 - accuracy: 0.998 - ETA: 49s - loss: 0.0139 -
 accuracy: 0.998 - ETA: 48s - loss: 0.0138 - accuracy: 0.998 - ETA: 48s - loss: 0.0137 - accuracy: 0.998 - ETA: 48s - loss: 0.0136 - a
ccuracy: 0.998 - ETA: 48s - loss: 0.0135 - accuracy: 0.998 - ETA: 47s - loss: 0.0134 - accuracy: 0.998 - ETA: 47s - loss: 0.0133 - acc
uracy: 0.998 - ETA: 47s - loss: 0.0132 - accuracy: 0.998 - ETA: 46s - loss: 0.0131 - accuracy: 0.998 - ETA: 46s - loss: 0.0130 - accur
acy: 0.998 - ETA: 46s - loss: 0.0129 - accuracy: 0.998 - ETA: 46s - loss: 0.0128 - accuracy: 0.998 - ETA: 45s - loss: 0.0127 - accurac
y: 0.998 - ETA: 45s - loss: 0.0126 - accuracy: 0.998 - ETA: 45s - loss: 0.0125 - accuracy: 0.998 - ETA: 45s - loss: 0.0124 - accuracy:
0.998 - ETA: 45s - loss: 0.0123 - accuracy: 0.998 - ETA: 45s - loss: 0.0122 - accuracy: 0.998 - ETA: 45s - loss: 0.0122 - accuracy: 0.
998 - ETA: 45s - loss: 0.0121 - accuracy: 0.998 - ETA: 44s - loss: 0.0120 - accuracy: 0.998 - ETA: 44s - loss: 0.0119 - accuracy: 0.99
8 - ETA: 44s - loss: 0.0118 - accuracy: 0.998 - ETA: 44s - loss: 0.0118 - accuracy: 0.998 - ETA: 44s - loss: 0.0117 - accuracy: 0.998
 - ETA: 43s - loss: 0.0116 - accuracy: 0.998 - ETA: 43s - loss: 0.0115 - accuracy: 0.998 - ETA: 43s - loss: 0.0115 - accuracy: 0.998 -
ETA: 43s - loss: 0.0114 - accuracy: 0.998 - ETA: 43s - loss: 0.0113 - accuracy: 0.998 - ETA: 43s - loss: 0.0112 - accuracy: 0.998 - ET
A: 42s - loss: 0.0112 - accuracy: 0.998 - ETA: 42s - loss: 0.0111 - accuracy: 0.998 - ETA: 42s - loss: 0.0110 - accuracy: 0.998 - ETA:
42s - loss: 0.0110 - accuracy: 0.998 - ETA: 42s - loss: 0.0109 - accuracy: 0.998 - ETA: 41s - loss: 0.0108 - accuracy: 0.998 - ETA: 41
s - loss: 0.0108 - accuracy: 0.998 - ETA: 41s - loss: 0.0107 - accuracy: 0.998 - ETA: 41s - loss: 0.0106 - accuracy: 0.998 - ETA: 41s
 - loss: 0.0106 - accuracy: 0.998 - ETA: 41s - loss: 0.0105 - accuracy: 0.998 - ETA: 41s - loss: 0.0105 - accuracy: 0.998 - ETA: 40s -
loss: 0.0104 - accuracy: 0.998 - ETA: 40s - loss: 0.0103 - accuracy: 0.998 - ETA: 40s - loss: 0.0103 - accuracy: 0.998 - ETA: 40s - lo
ss: 0.0102 - accuracy: 0.998 - ETA: 40s - loss: 0.0102 - accuracy: 0.998 - ETA: 40s - loss: 0.0101 - accuracy: 0.998 - ETA: 40s - los
s: 0.0101 - accuracy: 0.999 - ETA: 40s - loss: 0.0116 - accuracy: 0.998 - ETA: 40s - loss: 0.0115 - accuracy: 0.998 - ETA: 40s - loss:
0.0115 - accuracy: 0.998 - ETA: 40s - loss: 0.0114 - accuracy: 0.998 - ETA: 40s - loss: 0.0128 - accuracy: 0.998 - ETA: 40s - loss: 0.
0127 - accuracy: 0.998 - ETA: 39s - loss: 0.0127 - accuracy: 0.998 - ETA: 39s - loss: 0.0126 - accuracy: 0.998 - ETA: 39s - loss: 0.01
26 - accuracy: 0.998 - ETA: 39s - loss: 0.0125 - accuracy: 0.998 - ETA: 39s - loss: 0.0125 - accuracy: 0.998 - ETA: 38s - loss: 0.0124
- accuracy: 0.998 - ETA: 38s - loss: 0.0124 - accuracy: 0.998 - ETA: 38s - loss: 0.0123 - accuracy: 0.998 - ETA: 38s - loss: 0.0122 -
 accuracy: 0.998 - ETA: 38s - loss: 0.0122 - accuracy: 0.998 - ETA: 37s - loss: 0.0121 - accuracy: 0.998 - ETA: 37s - loss: 0.0121 - a
ccuracy: 0.998 - ETA: 37s - loss: 0.0120 - accuracy: 0.998 - ETA: 36s - loss: 0.0120 - accuracy: 0.998 - ETA: 36s - loss: 0.0119 - acc
uracy: 0.998 - ETA: 36s - loss: 0.0130 - accuracy: 0.998 - ETA: 36s - loss: 0.0130 - accuracy: 0.998 - ETA: 35s - loss: 0.0129 - accur
acy: 0.998 - ETA: 35s - loss: 0.0129 - accuracy: 0.998 - ETA: 35s - loss: 0.0128 - accuracy: 0.998 - ETA: 35s - loss: 0.0128 - accurac
y: 0.998 - ETA: 34s - loss: 0.0127 - accuracy: 0.998 - ETA: 34s - loss: 0.0127 - accuracy: 0.998 - ETA: 34s - loss: 0.0126 - accuracy:
0.998 - ETA: 34s - loss: 0.0126 - accuracy: 0.998 - ETA: 33s - loss: 0.0125 - accuracy: 0.998 - ETA: 33s - loss: 0.0135 - accuracy: 0.
998 - ETA: 33s - loss: 0.0135 - accuracy: 0.998 - ETA: 33s - loss: 0.0134 - accuracy: 0.998 - ETA: 32s - loss: 0.0134 - accuracy: 0.99
8 - ETA: 32s - loss: 0.0133 - accuracy: 0.9985322/322 [==============================] - ETA: 32s - loss: 0.0133 - accuracy: 0.998 - E
TA: 31s - loss: 0.0132 - accuracy: 0.998 - ETA: 31s - loss: 0.0132 - accuracy: 0.998 - ETA: 31s - loss: 0.0131 - accuracy: 0.998 - ET
A: 31s - loss: 0.0140 - accuracy: 0.998 - ETA: 30s - loss: 0.0140 - accuracy: 0.998 - ETA: 30s - loss: 0.0148 - accuracy: 0.998 - ETA:
30s - loss: 0.0148 - accuracy: 0.998 - ETA: 30s - loss: 0.0147 - accuracy: 0.998 - ETA: 29s - loss: 0.0147 - accuracy: 0.998 - ETA: 29
s - loss: 0.0147 - accuracy: 0.998 - ETA: 29s - loss: 0.0146 - accuracy: 0.998 - ETA: 29s - loss: 0.0154 - accuracy: 0.998 - ETA: 28s
 - loss: 0.0153 - accuracy: 0.998 - ETA: 28s - loss: 0.0153 - accuracy: 0.998 - ETA: 28s - loss: 0.0160 - accuracy: 0.998 - ETA: 27s -
loss: 0.0160 - accuracy: 0.998 - ETA: 27s - loss: 0.0160 - accuracy: 0.998 - ETA: 27s - loss: 0.0159 - accuracy: 0.998 - ETA: 27s - lo
ss: 0.0159 - accuracy: 0.998 - ETA: 27s - loss: 0.0159 - accuracy: 0.998 - ETA: 26s - loss: 0.0166 - accuracy: 0.997 - ETA: 26s - los
s: 0.0172 - accuracy: 0.997 - ETA: 26s - loss: 0.0172 - accuracy: 0.997 - ETA: 26s - loss: 0.0172 - accuracy: 0.997 - ETA: 26s - loss:
0.0172 - accuracy: 0.997 - ETA: 25s - loss: 0.0178 - accuracy: 0.997 - ETA: 25s - loss: 0.0185 - accuracy: 0.997 - ETA: 25s - loss: 0.
0184 - accuracy: 0.997 - ETA: 25s - loss: 0.0184 - accuracy: 0.997 - ETA: 24s - loss: 0.0184 - accuracy: 0.997 - ETA: 24s - loss: 0.01
84 - accuracy: 0.997 - ETA: 24s - loss: 0.0184 - accuracy: 0.997 - ETA: 24s - loss: 0.0183 - accuracy: 0.997 - ETA: 24s - loss: 0.0183
- accuracy: 0.997 - ETA: 23s - loss: 0.0189 - accuracy: 0.997 - ETA: 23s - loss: 0.0189 - accuracy: 0.997 - ETA: 23s - loss: 0.0189 -
 accuracy: 0.997 - ETA: 23s - loss: 0.0188 - accuracy: 0.997 - ETA: 22s - loss: 0.0194 - accuracy: 0.997 - ETA: 22s - loss: 0.0193 - a
ccuracy: 0.997 - ETA: 22s - loss: 0.0193 - accuracy: 0.997 - ETA: 22s - loss: 0.0192 - accuracy: 0.997 - ETA: 21s - loss: 0.0192 - acc
uracy: 0.997 - ETA: 21s - loss: 0.0206 - accuracy: 0.997 - ETA: 21s - loss: 0.0206 - accuracy: 0.997 - ETA: 21s - loss: 0.0205 - accur
acy: 0.997 - ETA: 21s - loss: 0.0205 - accuracy: 0.997 - ETA: 20s - loss: 0.0204 - accuracy: 0.997 - ETA: 20s - loss: 0.0204 - accurac
y: 0.997 - ETA: 20s - loss: 0.0210 - accuracy: 0.997 - ETA: 20s - loss: 0.0209 - accuracy: 0.997 - ETA: 19s - loss: 0.0209 - accuracy:
0.997 - ETA: 19s - loss: 0.0208 - accuracy: 0.997 - ETA: 19s - loss: 0.0208 - accuracy: 0.997 - ETA: 19s - loss: 0.0207 - accuracy: 0.
997 - ETA: 19s - loss: 0.0207 - accuracy: 0.997 - ETA: 18s - loss: 0.0206 - accuracy: 0.997 - ETA: 18s - loss: 0.0206 - accuracy: 0.99
7 - ETA: 18s - loss: 0.0205 - accuracy: 0.997 - ETA: 18s - loss: 0.0205 - accuracy: 0.997 - ETA: 18s - loss: 0.0204 - accuracy: 0.997
 - ETA: 17s - loss: 0.0203 - accuracy: 0.997 - ETA: 17s - loss: 0.0203 - accuracy: 0.997 - ETA: 17s - loss: 0.0202 - accuracy: 0.997 -
ETA: 17s - loss: 0.0202 - accuracy: 0.997 - ETA: 16s - loss: 0.0201 - accuracy: 0.997 - ETA: 16s - loss: 0.0200 - accuracy: 0.997 - ET
A: 16s - loss: 0.0200 - accuracy: 0.997 - ETA: 16s - loss: 0.0199 - accuracy: 0.997 - ETA: 15s - loss: 0.0198 - accuracy: 0.997 - ETA:
```

```
15s - loss: 0.0198 - accuracy: 0.997 - ETA: 15s - loss: 0.0197 - accuracy: 0.997 - ETA: 15s - loss: 0.0196 - accuracy: 0.997 - ETA: 14
s - loss: 0.0196 - accuracy: 0.997 - ETA: 14s - loss: 0.0195 - accuracy: 0.997 - ETA: 14s - loss: 0.0195 - accuracy: 0.997 - ETA: 14s
 - loss: 0.0194 - accuracy: 0.997 - ETA: 13s - loss: 0.0193 - accuracy: 0.997 - ETA: 13s - loss: 0.0193 - accuracy: 0.997 - ETA: 13s -
loss: 0.0192 - accuracy: 0.997 - ETA: 13s - loss: 0.0191 - accuracy: 0.997 - ETA: 12s - loss: 0.0191 - accuracy: 0.997 - ETA: 12s - lo
ss: 0.0190 - accuracy: 0.997 - ETA: 12s - loss: 0.0190 - accuracy: 0.997 - ETA: 12s - loss: 0.0189 - accuracy: 0.997 - ETA: 11s - los
s: 0.0188 - accuracy: 0.997 - ETA: 11s - loss: 0.0196 - accuracy: 0.997 - ETA: 11s - loss: 0.0195 - accuracy: 0.997 - ETA: 11s - loss:
0.0195 - accuracy: 0.997 - ETA: 10s - loss: 0.0194 - accuracy: 0.997 - ETA: 10s - loss: 0.0194 - accuracy: 0.997 - ETA: 10s - loss: 0.
0193 - accuracy: 0.997 - ETA: 10s - loss: 0.0192 - accuracy: 0.997 - ETA: 9s - loss: 0.0192 - accuracy: 0.997 - ETA: 9s - loss: 0.0191
- accuracy: 0.99 - ETA: 9s - loss: 0.0191 - accuracy: 0.99 - ETA: 9s - loss: 0.0190 - accuracy: 0.99 - ETA: 8s - loss: 0.0190 - accura
cy: 0.99 - ETA: 8s - loss: 0.0189 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.99
- ETA: 7s - loss: 0.0194 - accuracy: 0.99 - ETA: 7s - loss: 0.0194 - accuracy: 0.99 - ETA: 7s - loss: 0.0199 - accuracy: 0.99 - ETA: 7
s - loss: 0.0199 - accuracy: 0.99 - ETA: 6s - loss: 0.0198 - accuracy: 0.99 - ETA: 6s - loss: 0.0198 - accuracy: 0.99 - ETA: 6s - los
s: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0197 - accuracy: 0.99 - ETA: 5s - loss: 0.0196 - accuracy: 0.99 - ETA: 5s - loss: 0.019
6 - accuracy: 0.99 - ETA: 5s - loss: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0194 - accu
racy: 0.99 - ETA: 4s - loss: 0.0194 - accuracy: 0.99 - ETA: 4s - loss: 0.0193 - accuracy: 0.99 - ETA: 4s - loss: 0.0193 - accuracy: 0.
99 - ETA: 4s - loss: 0.0192 - accuracy: 0.99 - ETA: 3s - loss: 0.0192 - accuracy: 0.99 - ETA: 3s - loss: 0.0191 - accuracy: 0.99 - ET
A: 3s - loss: 0.0191 - accuracy: 0.99 - ETA: 3s - loss: 0.0190 - accuracy: 0.99 - ETA: 2s - loss: 0.0190 - accuracy: 0.99 - ETA: 2s -
 loss: 0.0189 - accuracy: 0.99 - ETA: 2s - loss: 0.0189 - accuracy: 0.99 - ETA: 2s - loss: 0.0188 - accuracy: 0.99 - ETA: 1s - loss:
 0.0188 - accuracy: 0.99 - ETA: 1s - loss: 0.0187 - accuracy: 0.99 - ETA: 1s - loss: 0.0193 - accuracy: 0.99 - ETA: 1s - loss: 0.0193
 - accuracy: 0.99 - ETA: 0s - loss: 0.0192 - accuracy: 0.99 - ETA: 0s - loss: 0.0192 - accuracy: 0.99 - ETA: 0s - loss: 0.0191 - accur
acy: 0.99 - ETA: 0s - loss: 0.0191 - accuracy: 0.99 - ETA: 0s - loss: 0.0191 - accuracy: 0.99 - 82s 255ms/step - loss: 0.0191 - accura
cy: 0.9975 - val_loss: 0.0230 - val_accuracy: 0.9968
Epoch 34/50
126/322 [==========>...................] - ETA: 0s - loss: 0.0037 - accuracy: 1.00 - ETA: 29s - loss: 0.0036 - accuracy: 1.000 - ETA:
 39s - loss: 0.0036 - accuracy: 1.000 - ETA: 47s - loss: 0.0035 - accuracy: 1.000 - ETA: 49s - loss: 0.0035 - accuracy: 1.000 - ETA: 5
8s - loss: 0.0034 - accuracy: 1.000 - ETA: 1:02 - loss: 0.0034 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0033 - accuracy: 1.00 - ETA: 1:0
2 - loss: 0.0033 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0033 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0033 - accuracy: 1.00 - ETA: 1:06
 - loss: 0.0032 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0032 - accuracy: 1.00 - ETA: 1:07 - loss: 0.0032 - accuracy: 1.00 - ETA: 1:06 -
loss: 0.0032 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0031 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0031 - accuracy: 1.00 - ETA: 1:08 - lo
ss: 0.0031 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0030 - accuracy: 1.00 - ETA: 1:07 - loss: 0.0030 - accuracy: 1.00 - ETA: 1:06 - los
s: 0.0030 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0121 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0117 - accuracy: 0.99 - ETA: 1:06 - loss:
0.0194 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0263 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0255 - accuracy: 0.99 - ETA: 1:06 - loss: 0.
0248 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:04 - loss: 0.02
31 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0337 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0329 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0322
- accuracy: 0.99 - ETA: 1:06 - loss: 0.0364 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0357 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0352 -
 accuracy: 0.99 - ETA: 1:08 - loss: 0.0346 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0341 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0336 - a
ccuracy: 0.99 - ETA: 1:09 - loss: 0.0332 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0327 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0323 - acc
uracy: 0.99 - ETA: 1:06 - loss: 0.0318 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0313 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0309 - accur
acy: 0.99 - ETA: 1:04 - loss: 0.0304 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0299 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0294 - accurac
y: 0.99 - ETA: 1:02 - loss: 0.0290 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0285 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0281 - accuracy:
0.99 - ETA: 1:02 - loss: 0.0311 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0306 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0301 - accuracy: 0.
99 - ETA: 1:00 - loss: 0.0297 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0292 - accuracy: 0.99 - ETA: 59s - loss: 0.0288 - accuracy: 0.996
2 - ETA: 1:00 - loss: 0.0284 - accuracy: 0.99 - ETA: 59s - loss: 0.0280 - accuracy: 0.9963 - ETA: 1:00 - loss: 0.0276 - accuracy: 0.99
- ETA: 1:00 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0269 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0265 - accuracy: 0.99 -
 ETA: 1:00 - loss: 0.0262 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0258 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0255 - accuracy: 0.99 - E
TA: 1:02 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0245 - accuracy: 0.99 - ET
A: 1:02 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0236 - accuracy: 0.99 - ETA:
1:01 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:
00 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0222 - accuracy: 0.99 - ETA: 59s - loss: 0.0220 - accuracy: 0.9972 - ETA: 59s
- loss: 0.0217 - accuracy: 0.997 - ETA: 58s - loss: 0.0215 - accuracy: 0.997 - ETA: 58s - loss: 0.0213 - accuracy: 0.997 - ETA: 57s -
 loss: 0.0210 - accuracy: 0.997 - ETA: 56s - loss: 0.0208 - accuracy: 0.997 - ETA: 56s - loss: 0.0206 - accuracy: 0.997 - ETA: 55s - l
oss: 0.0204 - accuracy: 0.997 - ETA: 55s - loss: 0.0202 - accuracy: 0.997 - ETA: 55s - loss: 0.0225 - accuracy: 0.997 - ETA: 54s - los
s: 0.0222 - accuracy: 0.997 - ETA: 54s - loss: 0.0220 - accuracy: 0.997 - ETA: 53s - loss: 0.0218 - accuracy: 0.997 - ETA: 53s - loss:
0.0216 - accuracy: 0.997 - ETA: 53s - loss: 0.0214 - accuracy: 0.997 - ETA: 53s - loss: 0.0212 - accuracy: 0.997 - ETA: 53s - loss: 0.
0210 - accuracy: 0.997 - ETA: 52s - loss: 0.0208 - accuracy: 0.997 - ETA: 52s - loss: 0.0206 - accuracy: 0.997 - ETA: 52s - loss: 0.02
05 - accuracy: 0.997 - ETA: 52s - loss: 0.0225 - accuracy: 0.997 - ETA: 52s - loss: 0.0223 - accuracy: 0.997 - ETA: 52s - loss: 0.0221
- accuracy: 0.997 - ETA: 52s - loss: 0.0219 - accuracy: 0.997 - ETA: 52s - loss: 0.0217 - accuracy: 0.997 - ETA: 52s - loss: 0.0216 -
 accuracy: 0.997 - ETA: 53s - loss: 0.0233 - accuracy: 0.997 - ETA: 55s - loss: 0.0232 - accuracy: 0.997 - ETA: 57s - loss: 0.0230 - a
ccuracy: 0.997 - ETA: 57s - loss: 0.0228 - accuracy: 0.997 - ETA: 57s - loss: 0.0227 - accuracy: 0.997 - ETA: 57s - loss: 0.0225 - acc
uracy: 0.997 - ETA: 57s - loss: 0.0240 - accuracy: 0.996 - ETA: 57s - loss: 0.0238 - accuracy: 0.996 - ETA: 57s - loss: 0.0236 - accur
acy: 0.996 - ETA: 57s - loss: 0.0235 - accuracy: 0.997 - ETA: 57s - loss: 0.0233 - accuracy: 0.997 - ETA: 56s - loss: 0.0248 - accurac
y: 0.996 - ETA: 56s - loss: 0.0246 - accuracy: 0.996 - ETA: 58s - loss: 0.0245 - accuracy: 0.996 - ETA: 59s - loss: 0.0244 - accuracy:
0.996 - ETA: 1:01 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0239 - accuracy:
 0.99 - ETA: 1:03 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0236 - accuracy:
 0.99 - ETA: 1:04 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0233 - accuracy: 0.9970WARNING:tensorflow:Method (on_train_bat
ch_end) is slow compared to the batch update (0.324080). Check your callbacks.
127/322 [==========>...................] - ETA: 1:03 - loss: 0.0232 - accuracy: 0.9970WARNING:tensorflow:Method (on_train_batch_end) i
s slow compared to the batch update (0.301560). Check your callbacks.
160/322 [=============>................] - ETA: 1:03 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0229 - accuracy: 0.99 - ET
A: 1:03 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0225 - accuracy: 0.99 - ETA:
1:03 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:
03 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:03
- loss: 0.0215 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:04 -
 loss: 0.0211 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:03 - l
oss: 0.0207 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:04 - los
s: 0.0218 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:04 - loss:
0.0215 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:05 - loss: 0.
0224 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:04 - loss: 0.02
21 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0218
- accuracy: 0.9973WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.211054). Check your callback
s.
294/322 [==========================>...] - ETA: 1:03 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0227 - accuracy: 0.99 - ET
A: 1:02 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0224 - accuracy: 0.99 - ETA:
1:01 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:
00 - loss: 0.0220 - accuracy: 0.99 - ETA: 59s - loss: 0.0219 - accuracy: 0.9972 - ETA: 59s - loss: 0.0218 - accuracy: 0.997 - ETA: 58s
- loss: 0.0217 - accuracy: 0.997 - ETA: 58s - loss: 0.0216 - accuracy: 0.997 - ETA: 57s - loss: 0.0215 - accuracy: 0.997 - ETA: 57s -
 loss: 0.0214 - accuracy: 0.997 - ETA: 56s - loss: 0.0213 - accuracy: 0.997 - ETA: 56s - loss: 0.0212 - accuracy: 0.997 - ETA: 56s - l
oss: 0.0211 - accuracy: 0.997 - ETA: 55s - loss: 0.0210 - accuracy: 0.997 - ETA: 55s - loss: 0.0209 - accuracy: 0.997 - ETA: 54s - los
s: 0.0208 - accuracy: 0.997 - ETA: 54s - loss: 0.0207 - accuracy: 0.997 - ETA: 54s - loss: 0.0206 - accuracy: 0.997 - ETA: 53s - loss:
0.0205 - accuracy: 0.997 - ETA: 53s - loss: 0.0204 - accuracy: 0.997 - ETA: 53s - loss: 0.0203 - accuracy: 0.997 - ETA: 52s - loss: 0.
0202 - accuracy: 0.997 - ETA: 52s - loss: 0.0201 - accuracy: 0.997 - ETA: 51s - loss: 0.0201 - accuracy: 0.997 - ETA: 51s - loss: 0.02
```

```
00 - accuracy: 0.997 - ETA: 51s - loss: 0.0199 - accuracy: 0.997 - ETA: 50s - loss: 0.0198 - accuracy: 0.997 - ETA: 50s - loss: 0.0208
- accuracy: 0.997 - ETA: 50s - loss: 0.0207 - accuracy: 0.997 - ETA: 49s - loss: 0.0206 - accuracy: 0.997 - ETA: 49s - loss: 0.0205 -
 accuracy: 0.997 - ETA: 49s - loss: 0.0204 - accuracy: 0.997 - ETA: 48s - loss: 0.0204 - accuracy: 0.997 - ETA: 48s - loss: 0.0203 - a
ccuracy: 0.997 - ETA: 47s - loss: 0.0202 - accuracy: 0.997 - ETA: 47s - loss: 0.0201 - accuracy: 0.997 - ETA: 47s - loss: 0.0200 - acc
uracy: 0.997 - ETA: 47s - loss: 0.0199 - accuracy: 0.997 - ETA: 46s - loss: 0.0198 - accuracy: 0.997 - ETA: 46s - loss: 0.0198 - accur
acy: 0.997 - ETA: 45s - loss: 0.0197 - accuracy: 0.997 - ETA: 45s - loss: 0.0196 - accuracy: 0.997 - ETA: 44s - loss: 0.0195 - accurac
y: 0.997 - ETA: 44s - loss: 0.0194 - accuracy: 0.997 - ETA: 44s - loss: 0.0194 - accuracy: 0.997 - ETA: 43s - loss: 0.0193 - accuracy:
0.997 - ETA: 43s - loss: 0.0192 - accuracy: 0.997 - ETA: 42s - loss: 0.0191 - accuracy: 0.997 - ETA: 42s - loss: 0.0200 - accuracy: 0.
997 - ETA: 41s - loss: 0.0200 - accuracy: 0.997 - ETA: 41s - loss: 0.0199 - accuracy: 0.997 - ETA: 41s - loss: 0.0198 - accuracy: 0.99
7 - ETA: 40s - loss: 0.0197 - accuracy: 0.997 - ETA: 40s - loss: 0.0197 - accuracy: 0.997 - ETA: 39s - loss: 0.0196 - accuracy: 0.997
 - ETA: 39s - loss: 0.0195 - accuracy: 0.997 - ETA: 38s - loss: 0.0203 - accuracy: 0.997 - ETA: 38s - loss: 0.0202 - accuracy: 0.997 -
ETA: 38s - loss: 0.0201 - accuracy: 0.997 - ETA: 37s - loss: 0.0201 - accuracy: 0.997 - ETA: 37s - loss: 0.0200 - accuracy: 0.997 - ET
A: 36s - loss: 0.0199 - accuracy: 0.997 - ETA: 36s - loss: 0.0199 - accuracy: 0.997 - ETA: 36s - loss: 0.0198 - accuracy: 0.997 - ETA:
35s - loss: 0.0197 - accuracy: 0.997 - ETA: 35s - loss: 0.0197 - accuracy: 0.997 - ETA: 34s - loss: 0.0196 - accuracy: 0.997 - ETA: 34
s - loss: 0.0195 - accuracy: 0.997 - ETA: 33s - loss: 0.0195 - accuracy: 0.997 - ETA: 33s - loss: 0.0194 - accuracy: 0.997 - ETA: 33s
 - loss: 0.0193 - accuracy: 0.997 - ETA: 32s - loss: 0.0193 - accuracy: 0.997 - ETA: 32s - loss: 0.0200 - accuracy: 0.997 - ETA: 32s -
loss: 0.0200 - accuracy: 0.997 - ETA: 32s - loss: 0.0199 - accuracy: 0.997 - ETA: 31s - loss: 0.0198 - accuracy: 0.997 - ETA: 31s - lo
ss: 0.0198 - accuracy: 0.997 - ETA: 31s - loss: 0.0197 - accuracy: 0.997 - ETA: 30s - loss: 0.0197 - accuracy: 0.997 - ETA: 30s - los
s: 0.0196 - accuracy: 0.997 - ETA: 29s - loss: 0.0195 - accuracy: 0.997 - ETA: 29s - loss: 0.0195 - accuracy: 0.997 - ETA: 29s - loss:
0.0194 - accuracy: 0.997 - ETA: 28s - loss: 0.0193 - accuracy: 0.997 - ETA: 28s - loss: 0.0200 - accuracy: 0.997 - ETA: 27s - loss: 0.
0199 - accuracy: 0.997 - ETA: 27s - loss: 0.0199 - accuracy: 0.997 - ETA: 27s - loss: 0.0198 - accuracy: 0.997 - ETA: 26s - loss: 0.01
98 - accuracy: 0.997 - ETA: 26s - loss: 0.0197 - accuracy: 0.997 - ETA: 25s - loss: 0.0196 - accuracy: 0.997 - ETA: 25s - loss: 0.0196
- accuracy: 0.997 - ETA: 25s - loss: 0.0203 - accuracy: 0.997 - ETA: 24s - loss: 0.0209 - accuracy: 0.997 - ETA: 24s - loss: 0.0208 -
 accuracy: 0.997 - ETA: 23s - loss: 0.0208 - accuracy: 0.997 - ETA: 23s - loss: 0.0207 - accuracy: 0.997 - ETA: 22s - loss: 0.0213 - a
ccuracy: 0.997 - ETA: 22s - loss: 0.0212 - accuracy: 0.997 - ETA: 22s - loss: 0.0212 - accuracy: 0.997 - ETA: 21s - loss: 0.0211 - acc
uracy: 0.997 - ETA: 21s - loss: 0.0211 - accuracy: 0.997 - ETA: 21s - loss: 0.0210 - accuracy: 0.997 - ETA: 20s - loss: 0.0210 - accur
acy: 0.997 - ETA: 20s - loss: 0.0210 - accuracy: 0.997 - ETA: 19s - loss: 0.0209 - accuracy: 0.997 - ETA: 19s - loss: 0.0209 - accurac
y: 0.997 - ETA: 19s - loss: 0.0208 - accuracy: 0.997 - ETA: 18s - loss: 0.0214 - accuracy: 0.997 - ETA: 18s - loss: 0.0213 - accuracy:
0.997 - ETA: 18s - loss: 0.0213 - accuracy: 0.997 - ETA: 17s - loss: 0.0212 - accuracy: 0.997 - ETA: 17s - loss: 0.0212 - accuracy: 0.
997 - ETA: 16s - loss: 0.0211 - accuracy: 0.997 - ETA: 16s - loss: 0.0211 - accuracy: 0.997 - ETA: 15s - loss: 0.0210 - accuracy: 0.99
7 - ETA: 15s - loss: 0.0210 - accuracy: 0.997 - ETA: 15s - loss: 0.0209 - accuracy: 0.997 - ETA: 14s - loss: 0.0209 - accuracy: 0.997
 - ETA: 14s - loss: 0.0208 - accuracy: 0.997 - ETA: 14s - loss: 0.0207 - accuracy: 0.997 - ETA: 13s - loss: 0.0207 - accuracy: 0.997 -
ETA: 13s - loss: 0.0206 - accuracy: 0.997 - ETA: 13s - loss: 0.0206 - accuracy: 0.997 - ETA: 12s - loss: 0.0205 - accuracy: 0.997 - ET
A: 12s - loss: 0.0205 - accuracy: 0.997 - ETA: 11s - loss: 0.0204 - accuracy: 0.997 - ETA: 11s - loss: 0.0203 - accuracy: 0.997 - ETA:
11s - loss: 0.0203 - accuracy: 0.9974WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.175544). C
heck your callbacks.
322/322 [==============================] - ETA: 10s - loss: 0.0202 - accuracy: 0.997 - ETA: 10s - loss: 0.0202 - accuracy: 0.997 - ET
A: 9s - loss: 0.0201 - accuracy: 0.997 - ETA: 9s - loss: 0.0200 - accuracy: 0.99 - ETA: 9s - loss: 0.0200 - accuracy: 0.99 - ETA: 8s -
loss: 0.0199 - accuracy: 0.99 - ETA: 8s - loss: 0.0206 - accuracy: 0.99 - ETA: 7s - loss: 0.0205 - accuracy: 0.99 - ETA: 7s - loss: 0.
0205 - accuracy: 0.99 - ETA: 7s - loss: 0.0204 - accuracy: 0.99 - ETA: 6s - loss: 0.0203 - accuracy: 0.99 - ETA: 6s - loss: 0.0203 - a
ccuracy: 0.99 - ETA: 5s - loss: 0.0202 - accuracy: 0.99 - ETA: 5s - loss: 0.0202 - accuracy: 0.99 - ETA: 5s - loss: 0.0201 - accuracy:
0.99 - ETA: 4s - loss: 0.0201 - accuracy: 0.99 - ETA: 4s - loss: 0.0207 - accuracy: 0.99 - ETA: 3s - loss: 0.0206 - accuracy: 0.99 - E
TA: 3s - loss: 0.0206 - accuracy: 0.99 - ETA: 3s - loss: 0.0205 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99 - ETA: 2s -
loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.0203 - accuracy: 0.99 - ETA: 1s - loss: 0.
0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - a
ccuracy: 0.99 - 130s 405ms/step - loss: 0.0201 - accuracy: 0.9975 - val_loss: 0.0230 - val_accuracy: 0.9968
Epoch 35/50
186/322 [================>.............] - ETA: 0s - loss: 0.0034 - accuracy: 1.00 - ETA: 28s - loss: 0.0033 - accuracy: 1.000 - ETA:
 35s - loss: 0.0034 - accuracy: 1.000 - ETA: 38s - loss: 0.0033 - accuracy: 1.000 - ETA: 49s - loss: 0.0033 - accuracy: 1.000 - ETA: 5
3s - loss: 0.0033 - accuracy: 1.000 - ETA: 1:00 - loss: 0.0297 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0264 - accuracy: 0.99 - ETA: 58s
- loss: 0.0239 - accuracy: 0.9965 - ETA: 57s - loss: 0.0219 - accuracy: 0.996 - ETA: 1:01 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:05
 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:06 -
loss: 0.0160 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0152 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:04 - lo
ss: 0.0139 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0133 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0129 - accuracy: 0.99 - ETA: 1:04 - los
s: 0.0124 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0120 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0116 - accuracy: 0.99 - ETA: 1:00 - loss:
0.0113 - accuracy: 0.99 - ETA: 59s - loss: 0.0109 - accuracy: 0.9987 - ETA: 59s - loss: 0.0106 - accuracy: 0.998 - ETA: 59s - loss: 0.
0177 - accuracy: 0.997 - ETA: 59s - loss: 0.0172 - accuracy: 0.997 - ETA: 58s - loss: 0.0167 - accuracy: 0.997 - ETA: 57s - loss: 0.01
63 - accuracy: 0.997 - ETA: 57s - loss: 0.0227 - accuracy: 0.997 - ETA: 57s - loss: 0.0221 - accuracy: 0.997 - ETA: 59s - loss: 0.0216
- accuracy: 0.997 - ETA: 1:03 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0202 -
accuracy: 0.99 - ETA: 1:02 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0191 - ac
curacy: 0.99 - ETA: 1:03 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0180 - accu
racy: 0.99 - ETA: 1:01 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0174 - accuracy: 0.99 - ETA: 59s - loss: 0.0171 - accurac
y: 0.9979 - ETA: 1:00 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0163 - accurac
y: 0.99 - ETA: 1:00 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0156 - accuracy:
0.99 - ETA: 1:01 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0187 - accuracy: 0.
99 - ETA: 1:00 - loss: 0.0184 - accuracy: 0.99 - ETA: 59s - loss: 0.0182 - accuracy: 0.9978 - ETA: 59s - loss: 0.0179 - accuracy: 0.99
7 - ETA: 1:00 - loss: 0.0177 - accuracy: 0.99 - ETA: 59s - loss: 0.0175 - accuracy: 0.9979 - ETA: 59s - loss: 0.0172 - accuracy: 0.997
- ETA: 58s - loss: 0.0170 - accuracy: 0.998 - ETA: 58s - loss: 0.0198 - accuracy: 0.997 - ETA: 57s - loss: 0.0195 - accuracy: 0.997 -
 ETA: 58s - loss: 0.0193 - accuracy: 0.997 - ETA: 58s - loss: 0.0191 - accuracy: 0.997 - ETA: 58s - loss: 0.0189 - accuracy: 0.997 - E
TA: 57s - loss: 0.0186 - accuracy: 0.997 - ETA: 56s - loss: 0.0184 - accuracy: 0.997 - ETA: 56s - loss: 0.0182 - accuracy: 0.997 - ET
A: 56s - loss: 0.0180 - accuracy: 0.997 - ETA: 56s - loss: 0.0178 - accuracy: 0.997 - ETA: 55s - loss: 0.0176 - accuracy: 0.997 - ETA:
55s - loss: 0.0175 - accuracy: 0.997 - ETA: 54s - loss: 0.0173 - accuracy: 0.997 - ETA: 54s - loss: 0.0197 - accuracy: 0.997 - ETA: 54
s - loss: 0.0195 - accuracy: 0.997 - ETA: 53s - loss: 0.0193 - accuracy: 0.997 - ETA: 53s - loss: 0.0191 - accuracy: 0.997 - ETA: 53s
 - loss: 0.0190 - accuracy: 0.997 - ETA: 53s - loss: 0.0188 - accuracy: 0.997 - ETA: 52s - loss: 0.0186 - accuracy: 0.997 - ETA: 52s -
loss: 0.0206 - accuracy: 0.997 - ETA: 51s - loss: 0.0204 - accuracy: 0.997 - ETA: 51s - loss: 0.0202 - accuracy: 0.997 - ETA: 50s - lo
ss: 0.0200 - accuracy: 0.997 - ETA: 50s - loss: 0.0198 - accuracy: 0.997 - ETA: 50s - loss: 0.0197 - accuracy: 0.997 - ETA: 50s - los
s: 0.0195 - accuracy: 0.997 - ETA: 49s - loss: 0.0194 - accuracy: 0.997 - ETA: 49s - loss: 0.0211 - accuracy: 0.997 - ETA: 49s - loss:
0.0209 - accuracy: 0.997 - ETA: 48s - loss: 0.0207 - accuracy: 0.997 - ETA: 48s - loss: 0.0206 - accuracy: 0.997 - ETA: 48s - loss: 0.
0204 - accuracy: 0.997 - ETA: 48s - loss: 0.0203 - accuracy: 0.997 - ETA: 47s - loss: 0.0201 - accuracy: 0.997 - ETA: 47s - loss: 0.02
00 - accuracy: 0.997 - ETA: 47s - loss: 0.0198 - accuracy: 0.997 - ETA: 46s - loss: 0.0197 - accuracy: 0.997 - ETA: 46s - loss: 0.0195
- accuracy: 0.997 - ETA: 46s - loss: 0.0194 - accuracy: 0.997 - ETA: 46s - loss: 0.0192 - accuracy: 0.997 - ETA: 45s - loss: 0.0191 -
 accuracy: 0.997 - ETA: 45s - loss: 0.0189 - accuracy: 0.997 - ETA: 45s - loss: 0.0188 - accuracy: 0.997 - ETA: 44s - loss: 0.0186 - a
ccuracy: 0.997 - ETA: 44s - loss: 0.0185 - accuracy: 0.997 - ETA: 44s - loss: 0.0184 - accuracy: 0.997 - ETA: 44s - loss: 0.0182 - acc
uracy: 0.997 - ETA: 45s - loss: 0.0181 - accuracy: 0.997 - ETA: 45s - loss: 0.0180 - accuracy: 0.997 - ETA: 44s - loss: 0.0178 - accur
acy: 0.997 - ETA: 45s - loss: 0.0177 - accuracy: 0.997 - ETA: 45s - loss: 0.0176 - accuracy: 0.997 - ETA: 45s - loss: 0.0174 - accurac
y: 0.997 - ETA: 45s - loss: 0.0173 - accuracy: 0.997 - ETA: 45s - loss: 0.0172 - accuracy: 0.997 - ETA: 45s - loss: 0.0171 - accuracy:
0.997 - ETA: 45s - loss: 0.0169 - accuracy: 0.997 - ETA: 45s - loss: 0.0168 - accuracy: 0.997 - ETA: 46s - loss: 0.0167 - accuracy: 0.
997 - ETA: 46s - loss: 0.0166 - accuracy: 0.998 - ETA: 46s - loss: 0.0165 - accuracy: 0.998 - ETA: 47s - loss: 0.0164 - accuracy: 0.99
8 - ETA: 48s - loss: 0.0162 - accuracy: 0.998 - ETA: 49s - loss: 0.0161 - accuracy: 0.998 - ETA: 49s - loss: 0.0160 - accuracy: 0.998
 - ETA: 50s - loss: 0.0159 - accuracy: 0.998 - ETA: 51s - loss: 0.0158 - accuracy: 0.998 - ETA: 51s - loss: 0.0157 - accuracy: 0.998 -
ETA: 51s - loss: 0.0156 - accuracy: 0.998 - ETA: 52s - loss: 0.0171 - accuracy: 0.997 - ETA: 52s - loss: 0.0169 - accuracy: 0.997 - ET
```

```
A: 52s - loss: 0.0168 - accuracy: 0.997 - ETA: 51s - loss: 0.0167 - accuracy: 0.997 - ETA: 51s - loss: 0.0166 - accuracy: 0.997 - ETA:
51s - loss: 0.0165 - accuracy: 0.997 - ETA: 50s - loss: 0.0164 - accuracy: 0.998 - ETA: 50s - loss: 0.0163 - accuracy: 0.998 - ETA: 50
s - loss: 0.0162 - accuracy: 0.998 - ETA: 50s - loss: 0.0161 - accuracy: 0.998 - ETA: 49s - loss: 0.0160 - accuracy: 0.998 - ETA: 49s
 - loss: 0.0159 - accuracy: 0.998 - ETA: 49s - loss: 0.0159 - accuracy: 0.998 - ETA: 49s - loss: 0.0158 - accuracy: 0.998 - ETA: 48s -
loss: 0.0157 - accuracy: 0.998 - ETA: 48s - loss: 0.0156 - accuracy: 0.998 - ETA: 48s - loss: 0.0155 - accuracy: 0.998 - ETA: 47s - lo
ss: 0.0154 - accuracy: 0.998 - ETA: 47s - loss: 0.0153 - accuracy: 0.998 - ETA: 47s - loss: 0.0152 - accuracy: 0.998 - ETA: 46s - los
s: 0.0151 - accuracy: 0.998 - ETA: 46s - loss: 0.0151 - accuracy: 0.998 - ETA: 46s - loss: 0.0150 - accuracy: 0.998 - ETA: 46s - loss:
0.0163 - accuracy: 0.998 - ETA: 45s - loss: 0.0162 - accuracy: 0.998 - ETA: 45s - loss: 0.0161 - accuracy: 0.998 - ETA: 45s - loss: 0.
0160 - accuracy: 0.998 - ETA: 44s - loss: 0.0159 - accuracy: 0.998 - ETA: 44s - loss: 0.0159 - accuracy: 0.998 - ETA: 44s - loss: 0.01
58 - accuracy: 0.998 - ETA: 43s - loss: 0.0157 - accuracy: 0.998 - ETA: 43s - loss: 0.0156 - accuracy: 0.998 - ETA: 43s - loss: 0.0156
- accuracy: 0.998 - ETA: 43s - loss: 0.0155 - accuracy: 0.998 - ETA: 43s - loss: 0.0154 - accuracy: 0.998 - ETA: 42s - loss: 0.0166 -
 accuracy: 0.997 - ETA: 42s - loss: 0.0165 - accuracy: 0.998 - ETA: 42s - loss: 0.0164 - accuracy: 0.998 - ETA: 41s - loss: 0.0163 - a
ccuracy: 0.998 - ETA: 41s - loss: 0.0163 - accuracy: 0.998 - ETA: 41s - loss: 0.0172 - accuracy: 0.997 - ETA: 41s - loss: 0.0172 - acc
uracy: 0.997 - ETA: 40s - loss: 0.0171 - accuracy: 0.997 - ETA: 40s - loss: 0.0170 - accuracy: 0.997 - ETA: 40s - loss: 0.0180 - accur
acy: 0.997 - ETA: 39s - loss: 0.0179 - accuracy: 0.997 - ETA: 39s - loss: 0.0179 - accuracy: 0.997 - ETA: 39s - loss: 0.0178 - accurac
y: 0.997 - ETA: 38s - loss: 0.0177 - accuracy: 0.997 - ETA: 38s - loss: 0.0177 - accuracy: 0.997 - ETA: 38s - loss: 0.0176 - accuracy:
0.997 - ETA: 38s - loss: 0.0176 - accuracy: 0.997 - ETA: 38s - loss: 0.0175 - accuracy: 0.997 - ETA: 37s - loss: 0.0175 - accuracy: 0.
997 - ETA: 37s - loss: 0.0174 - accuracy: 0.9978322/322 [==============================] - ETA: 37s - loss: 0.0173 - accuracy: 0.997 -
ETA: 37s - loss: 0.0173 - accuracy: 0.997 - ETA: 36s - loss: 0.0172 - accuracy: 0.997 - ETA: 36s - loss: 0.0171 - accuracy: 0.997 - ET
A: 36s - loss: 0.0171 - accuracy: 0.997 - ETA: 35s - loss: 0.0170 - accuracy: 0.997 - ETA: 35s - loss: 0.0170 - accuracy: 0.997 - ETA:
35s - loss: 0.0169 - accuracy: 0.997 - ETA: 35s - loss: 0.0168 - accuracy: 0.997 - ETA: 34s - loss: 0.0168 - accuracy: 0.997 - ETA: 34
s - loss: 0.0167 - accuracy: 0.997 - ETA: 34s - loss: 0.0166 - accuracy: 0.997 - ETA: 34s - loss: 0.0166 - accuracy: 0.998 - ETA: 33s
 - loss: 0.0165 - accuracy: 0.998 - ETA: 33s - loss: 0.0164 - accuracy: 0.998 - ETA: 33s - loss: 0.0164 - accuracy: 0.998 - ETA: 33s -
loss: 0.0163 - accuracy: 0.998 - ETA: 32s - loss: 0.0162 - accuracy: 0.998 - ETA: 32s - loss: 0.0161 - accuracy: 0.998 - ETA: 32s - lo
ss: 0.0161 - accuracy: 0.998 - ETA: 32s - loss: 0.0160 - accuracy: 0.998 - ETA: 32s - loss: 0.0160 - accuracy: 0.998 - ETA: 31s - los
s: 0.0159 - accuracy: 0.998 - ETA: 31s - loss: 0.0158 - accuracy: 0.998 - ETA: 31s - loss: 0.0158 - accuracy: 0.998 - ETA: 31s - loss:
0.0157 - accuracy: 0.998 - ETA: 30s - loss: 0.0156 - accuracy: 0.998 - ETA: 30s - loss: 0.0156 - accuracy: 0.998 - ETA: 30s - loss: 0.
0155 - accuracy: 0.998 - ETA: 29s - loss: 0.0154 - accuracy: 0.998 - ETA: 29s - loss: 0.0154 - accuracy: 0.998 - ETA: 29s - loss: 0.01
53 - accuracy: 0.998 - ETA: 29s - loss: 0.0153 - accuracy: 0.998 - ETA: 28s - loss: 0.0162 - accuracy: 0.998 - ETA: 28s - loss: 0.0161
- accuracy: 0.998 - ETA: 28s - loss: 0.0161 - accuracy: 0.998 - ETA: 28s - loss: 0.0160 - accuracy: 0.998 - ETA: 27s - loss: 0.0159 -
 accuracy: 0.998 - ETA: 27s - loss: 0.0159 - accuracy: 0.998 - ETA: 27s - loss: 0.0158 - accuracy: 0.998 - ETA: 27s - loss: 0.0158 - a
ccuracy: 0.998 - ETA: 26s - loss: 0.0157 - accuracy: 0.998 - ETA: 26s - loss: 0.0157 - accuracy: 0.998 - ETA: 26s - loss: 0.0156 - acc
uracy: 0.998 - ETA: 25s - loss: 0.0155 - accuracy: 0.998 - ETA: 25s - loss: 0.0155 - accuracy: 0.998 - ETA: 25s - loss: 0.0154 - accur
acy: 0.998 - ETA: 25s - loss: 0.0154 - accuracy: 0.998 - ETA: 24s - loss: 0.0153 - accuracy: 0.998 - ETA: 24s - loss: 0.0153 - accurac
y: 0.998 - ETA: 24s - loss: 0.0152 - accuracy: 0.998 - ETA: 24s - loss: 0.0152 - accuracy: 0.998 - ETA: 23s - loss: 0.0151 - accuracy:
0.998 - ETA: 23s - loss: 0.0159 - accuracy: 0.998 - ETA: 23s - loss: 0.0159 - accuracy: 0.998 - ETA: 22s - loss: 0.0158 - accuracy: 0.
998 - ETA: 22s - loss: 0.0158 - accuracy: 0.998 - ETA: 22s - loss: 0.0157 - accuracy: 0.998 - ETA: 22s - loss: 0.0157 - accuracy: 0.99
8 - ETA: 21s - loss: 0.0164 - accuracy: 0.998 - ETA: 21s - loss: 0.0164 - accuracy: 0.998 - ETA: 21s - loss: 0.0163 - accuracy: 0.998
 - ETA: 20s - loss: 0.0163 - accuracy: 0.998 - ETA: 20s - loss: 0.0162 - accuracy: 0.998 - ETA: 20s - loss: 0.0162 - accuracy: 0.998 -
ETA: 20s - loss: 0.0161 - accuracy: 0.998 - ETA: 19s - loss: 0.0161 - accuracy: 0.998 - ETA: 19s - loss: 0.0160 - accuracy: 0.998 - ET
A: 19s - loss: 0.0167 - accuracy: 0.997 - ETA: 18s - loss: 0.0167 - accuracy: 0.997 - ETA: 18s - loss: 0.0166 - accuracy: 0.997 - ETA:
18s - loss: 0.0166 - accuracy: 0.997 - ETA: 18s - loss: 0.0165 - accuracy: 0.997 - ETA: 17s - loss: 0.0165 - accuracy: 0.998 - ETA: 17
s - loss: 0.0164 - accuracy: 0.998 - ETA: 17s - loss: 0.0164 - accuracy: 0.998 - ETA: 16s - loss: 0.0164 - accuracy: 0.998 - ETA: 16s
 - loss: 0.0170 - accuracy: 0.997 - ETA: 16s - loss: 0.0176 - accuracy: 0.997 - ETA: 15s - loss: 0.0175 - accuracy: 0.997 - ETA: 15s -
loss: 0.0175 - accuracy: 0.997 - ETA: 15s - loss: 0.0175 - accuracy: 0.997 - ETA: 15s - loss: 0.0174 - accuracy: 0.997 - ETA: 14s - lo
ss: 0.0180 - accuracy: 0.997 - ETA: 14s - loss: 0.0180 - accuracy: 0.997 - ETA: 14s - loss: 0.0180 - accuracy: 0.997 - ETA: 13s - los
s: 0.0179 - accuracy: 0.997 - ETA: 13s - loss: 0.0179 - accuracy: 0.997 - ETA: 13s - loss: 0.0179 - accuracy: 0.997 - ETA: 12s - loss:
0.0178 - accuracy: 0.997 - ETA: 12s - loss: 0.0178 - accuracy: 0.997 - ETA: 12s - loss: 0.0183 - accuracy: 0.997 - ETA: 12s - loss: 0.
0183 - accuracy: 0.997 - ETA: 11s - loss: 0.0188 - accuracy: 0.997 - ETA: 11s - loss: 0.0188 - accuracy: 0.997 - ETA: 11s - loss: 0.01
87 - accuracy: 0.997 - ETA: 11s - loss: 0.0193 - accuracy: 0.997 - ETA: 10s - loss: 0.0193 - accuracy: 0.997 - ETA: 10s - loss: 0.0192
- accuracy: 0.997 - ETA: 10s - loss: 0.0192 - accuracy: 0.997 - ETA: 10s - loss: 0.0192 - accuracy: 0.997 - ETA: 10s - loss: 0.0197 -
 accuracy: 0.997 - ETA: 9s - loss: 0.0196 - accuracy: 0.997 - ETA: 9s - loss: 0.0196 - accuracy: 0.99 - ETA: 9s - loss: 0.0196 - accur
acy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.99 - ETA: 8s - loss: 0.0195 - accuracy: 0.9
9 - ETA: 8s - loss: 0.0194 - accuracy: 0.99 - ETA: 7s - loss: 0.0199 - accuracy: 0.99 - ETA: 7s - loss: 0.0199 - accuracy: 0.99 - ETA:
7s - loss: 0.0198 - accuracy: 0.99 - ETA: 6s - loss: 0.0198 - accuracy: 0.99 - ETA: 6s - loss: 0.0197 - accuracy: 0.99 - ETA: 6s - los
s: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0197 - accuracy: 0.99 - ETA: 5s - loss: 0.0196 - accuracy: 0.99 - ETA: 5s - loss: 0.019
6 - accuracy: 0.99 - ETA: 5s - loss: 0.0195 - accuracy: 0.99 - ETA: 4s - loss: 0.0195 - accuracy: 0.99 - ETA: 4s - loss: 0.0194 - accu
racy: 0.99 - ETA: 4s - loss: 0.0194 - accuracy: 0.99 - ETA: 3s - loss: 0.0193 - accuracy: 0.99 - ETA: 3s - loss: 0.0193 - accuracy: 0.
99 - ETA: 3s - loss: 0.0198 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accuracy: 0.99 - ETA: 2s - loss: 0.0197 - accuracy: 0.99 - ET
A: 2s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 1s - loss: 0.0196 - accuracy: 0.99 - ETA: 1s -
 loss: 0.0195 - accuracy: 0.99 - ETA: 1s - loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss: 0.0194 - accuracy: 0.99 - ETA: 0s - loss:
 0.0194 - accuracy: 0.99 - ETA: 0s - loss: 0.0193 - accuracy: 0.99 - ETA: 0s - loss: 0.0193 - accuracy: 0.99 - 108s 336ms/step - loss:
0.0193 - accuracy: 0.9975 - val_loss: 0.0233 - val_accuracy: 0.9968
Epoch 36/50
171/322 [==============>...............] - ETA: 0s - loss: 0.0032 - accuracy: 1.00 - ETA: 26s - loss: 0.0031 - accuracy: 1.000 - ETA:
 34s - loss: 0.0031 - accuracy: 1.000 - ETA: 41s - loss: 0.0030 - accuracy: 1.000 - ETA: 1:00 - loss: 0.0030 - accuracy: 1.00 - ETA:
 1:04 - loss: 0.0030 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0030 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0029 - accuracy: 1.00 - ETA:
 1:06 - loss: 0.0029 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0029 - accuracy: 1.00 - ETA: 1:15 - loss: 0.0029 - accuracy: 1.00 - ETA:
 1:14 - loss: 0.0028 - accuracy: 1.00 - ETA: 1:12 - loss: 0.0028 - accuracy: 1.00 - ETA: 1:10 - loss: 0.0179 - accuracy: 0.99 - ETA:
 1:09 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0153 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0146 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0141 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0135 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0130 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0126 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0122 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0118 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0114 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0111 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0108 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0105 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0102 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0100 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0098 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0095 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0093 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0091 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0090 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0088 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0086 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0142 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0139 - accuracy: 0.99 - ETA: 59s - loss: 0.0136 - accuracy: 0.9984 - ETA: 59s - loss: 0.0182 - accuracy: 0.997 - ETA:
 58s - loss: 0.0179 - accuracy: 0.997 - ETA: 57s - loss: 0.0176 - accuracy: 0.997 - ETA: 58s - loss: 0.0173 - accuracy: 0.997 - ETA: 5
8s - loss: 0.0170 - accuracy: 0.997 - ETA: 59s - loss: 0.0167 - accuracy: 0.998 - ETA: 59s - loss: 0.0165 - accuracy: 0.998 - ETA: 58s
- loss: 0.0162 - accuracy: 0.998 - ETA: 58s - loss: 0.0160 - accuracy: 0.998 - ETA: 57s - loss: 0.0158 - accuracy: 0.998 - ETA: 57s -
 loss: 0.0155 - accuracy: 0.998 - ETA: 58s - loss: 0.0153 - accuracy: 0.998 - ETA: 57s - loss: 0.0151 - accuracy: 0.998 - ETA: 57s - l
oss: 0.0149 - accuracy: 0.998 - ETA: 57s - loss: 0.0147 - accuracy: 0.998 - ETA: 56s - loss: 0.0145 - accuracy: 0.998 - ETA: 56s - los
s: 0.0143 - accuracy: 0.998 - ETA: 57s - loss: 0.0142 - accuracy: 0.998 - ETA: 57s - loss: 0.0140 - accuracy: 0.998 - ETA: 58s - loss:
0.0138 - accuracy: 0.998 - ETA: 58s - loss: 0.0136 - accuracy: 0.998 - ETA: 59s - loss: 0.0135 - accuracy: 0.998 - ETA: 59s - loss: 0.
0133 - accuracy: 0.998 - ETA: 59s - loss: 0.0132 - accuracy: 0.998 - ETA: 58s - loss: 0.0130 - accuracy: 0.998 - ETA: 58s - loss: 0.01
29 - accuracy: 0.998 - ETA: 57s - loss: 0.0157 - accuracy: 0.998 - ETA: 58s - loss: 0.0155 - accuracy: 0.998 - ETA: 57s - loss: 0.0153
- accuracy: 0.998 - ETA: 57s - loss: 0.0177 - accuracy: 0.997 - ETA: 56s - loss: 0.0175 - accuracy: 0.997 - ETA: 56s - loss: 0.0173 -
 accuracy: 0.997 - ETA: 56s - loss: 0.0172 - accuracy: 0.997 - ETA: 55s - loss: 0.0170 - accuracy: 0.997 - ETA: 55s - loss: 0.0168 - a
ccuracy: 0.997 - ETA: 55s - loss: 0.0167 - accuracy: 0.997 - ETA: 55s - loss: 0.0165 - accuracy: 0.998 - ETA: 55s - loss: 0.0164 - acc
uracy: 0.998 - ETA: 55s - loss: 0.0162 - accuracy: 0.998 - ETA: 56s - loss: 0.0161 - accuracy: 0.998 - ETA: 59s - loss: 0.0159 - accur
```

```
acy: 0.998 - ETA: 59s - loss: 0.0158 - accuracy: 0.998 - ETA: 58s - loss: 0.0156 - accuracy: 0.998 - ETA: 58s - loss: 0.0155 - accurac
y: 0.998 - ETA: 58s - loss: 0.0154 - accuracy: 0.998 - ETA: 58s - loss: 0.0152 - accuracy: 0.998 - ETA: 58s - loss: 0.0151 - accuracy:
0.998 - ETA: 58s - loss: 0.0150 - accuracy: 0.998 - ETA: 57s - loss: 0.0148 - accuracy: 0.998 - ETA: 57s - loss: 0.0147 - accuracy: 0.
998 - ETA: 57s - loss: 0.0146 - accuracy: 0.998 - ETA: 57s - loss: 0.0145 - accuracy: 0.998 - ETA: 57s - loss: 0.0143 - accuracy: 0.99
8 - ETA: 57s - loss: 0.0142 - accuracy: 0.998 - ETA: 56s - loss: 0.0163 - accuracy: 0.998 - ETA: 56s - loss: 0.0162 - accuracy: 0.998
 - ETA: 56s - loss: 0.0160 - accuracy: 0.998 - ETA: 56s - loss: 0.0159 - accuracy: 0.998 - ETA: 55s - loss: 0.0158 - accuracy: 0.998 -
ETA: 55s - loss: 0.0156 - accuracy: 0.998 - ETA: 55s - loss: 0.0155 - accuracy: 0.998 - ETA: 54s - loss: 0.0154 - accuracy: 0.998 - ET
A: 54s - loss: 0.0153 - accuracy: 0.998 - ETA: 54s - loss: 0.0152 - accuracy: 0.998 - ETA: 53s - loss: 0.0151 - accuracy: 0.998 - ETA:
53s - loss: 0.0150 - accuracy: 0.998 - ETA: 52s - loss: 0.0148 - accuracy: 0.998 - ETA: 52s - loss: 0.0147 - accuracy: 0.998 - ETA: 52
s - loss: 0.0146 - accuracy: 0.998 - ETA: 51s - loss: 0.0145 - accuracy: 0.998 - ETA: 51s - loss: 0.0144 - accuracy: 0.998 - ETA: 51s
 - loss: 0.0143 - accuracy: 0.998 - ETA: 51s - loss: 0.0142 - accuracy: 0.998 - ETA: 51s - loss: 0.0141 - accuracy: 0.998 - ETA: 51s -
loss: 0.0140 - accuracy: 0.998 - ETA: 50s - loss: 0.0139 - accuracy: 0.998 - ETA: 50s - loss: 0.0138 - accuracy: 0.998 - ETA: 50s - lo
ss: 0.0137 - accuracy: 0.998 - ETA: 50s - loss: 0.0136 - accuracy: 0.998 - ETA: 50s - loss: 0.0135 - accuracy: 0.998 - ETA: 50s - los
s: 0.0151 - accuracy: 0.998 - ETA: 50s - loss: 0.0150 - accuracy: 0.998 - ETA: 50s - loss: 0.0149 - accuracy: 0.998 - ETA: 50s - loss:
0.0148 - accuracy: 0.998 - ETA: 49s - loss: 0.0148 - accuracy: 0.998 - ETA: 49s - loss: 0.0147 - accuracy: 0.998 - ETA: 49s - loss: 0.
0146 - accuracy: 0.998 - ETA: 49s - loss: 0.0145 - accuracy: 0.998 - ETA: 49s - loss: 0.0144 - accuracy: 0.998 - ETA: 48s - loss: 0.01
43 - accuracy: 0.998 - ETA: 48s - loss: 0.0158 - accuracy: 0.998 - ETA: 48s - loss: 0.0157 - accuracy: 0.998 - ETA: 47s - loss: 0.0156
- accuracy: 0.998 - ETA: 47s - loss: 0.0155 - accuracy: 0.998 - ETA: 47s - loss: 0.0154 - accuracy: 0.998 - ETA: 46s - loss: 0.0154 -
 accuracy: 0.998 - ETA: 46s - loss: 0.0153 - accuracy: 0.998 - ETA: 46s - loss: 0.0152 - accuracy: 0.998 - ETA: 46s - loss: 0.0151 - a
ccuracy: 0.998 - ETA: 46s - loss: 0.0150 - accuracy: 0.998 - ETA: 46s - loss: 0.0150 - accuracy: 0.998 - ETA: 45s - loss: 0.0162 - acc
uracy: 0.998 - ETA: 45s - loss: 0.0161 - accuracy: 0.998 - ETA: 45s - loss: 0.0160 - accuracy: 0.998 - ETA: 45s - loss: 0.0160 - accur
acy: 0.998 - ETA: 44s - loss: 0.0159 - accuracy: 0.998 - ETA: 44s - loss: 0.0158 - accuracy: 0.998 - ETA: 44s - loss: 0.0157 - accurac
y: 0.998 - ETA: 44s - loss: 0.0157 - accuracy: 0.998 - ETA: 43s - loss: 0.0156 - accuracy: 0.998 - ETA: 43s - loss: 0.0155 - accuracy:
0.998 - ETA: 43s - loss: 0.0154 - accuracy: 0.998 - ETA: 43s - loss: 0.0154 - accuracy: 0.998 - ETA: 42s - loss: 0.0153 - accuracy: 0.
998 - ETA: 42s - loss: 0.0152 - accuracy: 0.998 - ETA: 42s - loss: 0.0151 - accuracy: 0.998 - ETA: 42s - loss: 0.0151 - accuracy: 0.99
8 - ETA: 42s - loss: 0.0150 - accuracy: 0.998 - ETA: 42s - loss: 0.0149 - accuracy: 0.998 - ETA: 41s - loss: 0.0160 - accuracy: 0.998
 - ETA: 41s - loss: 0.0160 - accuracy: 0.998 - ETA: 41s - loss: 0.0159 - accuracy: 0.998 - ETA: 41s - loss: 0.0158 - accuracy: 0.998 -
ETA: 42s - loss: 0.0157 - accuracy: 0.998 - ETA: 42s - loss: 0.0157 - accuracy: 0.998 - ETA: 42s - loss: 0.0167 - accuracy: 0.997 - ET
A: 43s - loss: 0.0178 - accuracy: 0.997 - ETA: 44s - loss: 0.0177 - accuracy: 0.997 - ETA: 45s - loss: 0.0186 - accuracy: 0.997 - ETA:
46s - loss: 0.0186 - accuracy: 0.997 - ETA: 45s - loss: 0.0186 - accuracy: 0.9976WARNING:tensorflow:Method (on_train_batch_end) is slo
w compared to the batch update (0.314580). Check your callbacks.
174/322 [===============>..............] - ETA: 45s - loss: 0.0185 - accuracy: 0.997 - ETA: 45s - loss: 0.0185 - accuracy: 0.997 - ET
A: 45s - loss: 0.0184 - accuracy: 0.9977WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.24856
9). Check your callbacks.
322/322 [==============================] - ETA: 45s - loss: 0.0184 - accuracy: 0.997 - ETA: 44s - loss: 0.0193 - accuracy: 0.997 - ET
A: 44s - loss: 0.0192 - accuracy: 0.997 - ETA: 44s - loss: 0.0192 - accuracy: 0.997 - ETA: 44s - loss: 0.0191 - accuracy: 0.997 - ETA:
44s - loss: 0.0191 - accuracy: 0.997 - ETA: 43s - loss: 0.0190 - accuracy: 0.997 - ETA: 43s - loss: 0.0190 - accuracy: 0.997 - ETA: 43
s - loss: 0.0198 - accuracy: 0.997 - ETA: 42s - loss: 0.0198 - accuracy: 0.997 - ETA: 42s - loss: 0.0205 - accuracy: 0.997 - ETA: 42s
 - loss: 0.0205 - accuracy: 0.997 - ETA: 41s - loss: 0.0204 - accuracy: 0.997 - ETA: 41s - loss: 0.0204 - accuracy: 0.997 - ETA: 41s -
loss: 0.0203 - accuracy: 0.997 - ETA: 40s - loss: 0.0203 - accuracy: 0.997 - ETA: 40s - loss: 0.0202 - accuracy: 0.997 - ETA: 39s - lo
ss: 0.0202 - accuracy: 0.997 - ETA: 39s - loss: 0.0201 - accuracy: 0.997 - ETA: 39s - loss: 0.0200 - accuracy: 0.997 - ETA: 38s - los
s: 0.0217 - accuracy: 0.997 - ETA: 38s - loss: 0.0216 - accuracy: 0.997 - ETA: 38s - loss: 0.0216 - accuracy: 0.997 - ETA: 37s - loss:
0.0215 - accuracy: 0.997 - ETA: 37s - loss: 0.0214 - accuracy: 0.997 - ETA: 37s - loss: 0.0214 - accuracy: 0.997 - ETA: 36s - loss: 0.
0213 - accuracy: 0.997 - ETA: 36s - loss: 0.0212 - accuracy: 0.997 - ETA: 36s - loss: 0.0212 - accuracy: 0.997 - ETA: 35s - loss: 0.02
11 - accuracy: 0.997 - ETA: 35s - loss: 0.0210 - accuracy: 0.997 - ETA: 35s - loss: 0.0209 - accuracy: 0.997 - ETA: 35s - loss: 0.0209
- accuracy: 0.997 - ETA: 34s - loss: 0.0208 - accuracy: 0.997 - ETA: 34s - loss: 0.0207 - accuracy: 0.997 - ETA: 34s - loss: 0.0206 -
 accuracy: 0.997 - ETA: 33s - loss: 0.0205 - accuracy: 0.997 - ETA: 33s - loss: 0.0205 - accuracy: 0.997 - ETA: 32s - loss: 0.0204 - a
ccuracy: 0.997 - ETA: 32s - loss: 0.0203 - accuracy: 0.997 - ETA: 32s - loss: 0.0202 - accuracy: 0.997 - ETA: 31s - loss: 0.0202 - acc
uracy: 0.997 - ETA: 31s - loss: 0.0201 - accuracy: 0.997 - ETA: 31s - loss: 0.0209 - accuracy: 0.997 - ETA: 30s - loss: 0.0209 - accur
acy: 0.997 - ETA: 30s - loss: 0.0208 - accuracy: 0.997 - ETA: 30s - loss: 0.0207 - accuracy: 0.997 - ETA: 29s - loss: 0.0206 - accurac
y: 0.997 - ETA: 29s - loss: 0.0206 - accuracy: 0.997 - ETA: 29s - loss: 0.0205 - accuracy: 0.997 - ETA: 28s - loss: 0.0204 - accuracy:
0.997 - ETA: 28s - loss: 0.0203 - accuracy: 0.997 - ETA: 28s - loss: 0.0203 - accuracy: 0.997 - ETA: 27s - loss: 0.0202 - accuracy: 0.
997 - ETA: 27s - loss: 0.0210 - accuracy: 0.997 - ETA: 27s - loss: 0.0217 - accuracy: 0.997 - ETA: 26s - loss: 0.0217 - accuracy: 0.99
7 - ETA: 26s - loss: 0.0216 - accuracy: 0.997 - ETA: 25s - loss: 0.0215 - accuracy: 0.997 - ETA: 25s - loss: 0.0215 - accuracy: 0.997
 - ETA: 25s - loss: 0.0214 - accuracy: 0.997 - ETA: 24s - loss: 0.0213 - accuracy: 0.997 - ETA: 24s - loss: 0.0219 - accuracy: 0.997 -
ETA: 24s - loss: 0.0219 - accuracy: 0.997 - ETA: 23s - loss: 0.0218 - accuracy: 0.997 - ETA: 23s - loss: 0.0217 - accuracy: 0.997 - ET
A: 23s - loss: 0.0217 - accuracy: 0.997 - ETA: 23s - loss: 0.0216 - accuracy: 0.997 - ETA: 22s - loss: 0.0216 - accuracy: 0.997 - ETA:
22s - loss: 0.0215 - accuracy: 0.997 - ETA: 22s - loss: 0.0214 - accuracy: 0.997 - ETA: 21s - loss: 0.0214 - accuracy: 0.997 - ETA: 21
s - loss: 0.0213 - accuracy: 0.997 - ETA: 21s - loss: 0.0212 - accuracy: 0.997 - ETA: 20s - loss: 0.0212 - accuracy: 0.997 - ETA: 20s
 - loss: 0.0211 - accuracy: 0.997 - ETA: 20s - loss: 0.0211 - accuracy: 0.997 - ETA: 19s - loss: 0.0210 - accuracy: 0.997 - ETA: 19s -
loss: 0.0209 - accuracy: 0.997 - ETA: 19s - loss: 0.0209 - accuracy: 0.997 - ETA: 18s - loss: 0.0208 - accuracy: 0.997 - ETA: 18s - lo
ss: 0.0207 - accuracy: 0.997 - ETA: 18s - loss: 0.0207 - accuracy: 0.997 - ETA: 18s - loss: 0.0206 - accuracy: 0.997 - ETA: 17s - los
s: 0.0205 - accuracy: 0.997 - ETA: 17s - loss: 0.0205 - accuracy: 0.997 - ETA: 17s - loss: 0.0204 - accuracy: 0.997 - ETA: 16s - loss:
0.0203 - accuracy: 0.997 - ETA: 16s - loss: 0.0203 - accuracy: 0.997 - ETA: 16s - loss: 0.0202 - accuracy: 0.997 - ETA: 16s - loss: 0.
0201 - accuracy: 0.997 - ETA: 15s - loss: 0.0201 - accuracy: 0.997 - ETA: 15s - loss: 0.0200 - accuracy: 0.997 - ETA: 15s - loss: 0.01
99 - accuracy: 0.997 - ETA: 14s - loss: 0.0199 - accuracy: 0.997 - ETA: 14s - loss: 0.0198 - accuracy: 0.997 - ETA: 14s - loss: 0.0197
- accuracy: 0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss: 0.0196 - accuracy: 0.997 - ETA: 13s - loss: 0.0195 -
 accuracy: 0.997 - ETA: 13s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - loss: 0.0194 - accuracy: 0.997 - ETA: 12s - loss: 0.0194 - a
ccuracy: 0.997 - ETA: 12s - loss: 0.0201 - accuracy: 0.997 - ETA: 11s - loss: 0.0201 - accuracy: 0.997 - ETA: 11s - loss: 0.0200 - acc
uracy: 0.997 - ETA: 11s - loss: 0.0199 - accuracy: 0.997 - ETA: 11s - loss: 0.0199 - accuracy: 0.997 - ETA: 10s - loss: 0.0198 - accur
acy: 0.997 - ETA: 10s - loss: 0.0198 - accuracy: 0.997 - ETA: 10s - loss: 0.0197 - accuracy: 0.997 - ETA: 9s - loss: 0.0197 - accurac
y: 0.997 - ETA: 9s - loss: 0.0196 - accuracy: 0.99 - ETA: 9s - loss: 0.0195 - accuracy: 0.99 - ETA: 9s - loss: 0.0195 - accuracy: 0.99
- ETA: 8s - loss: 0.0194 - accuracy: 0.99 - ETA: 8s - loss: 0.0194 - accuracy: 0.99 - ETA: 8s - loss: 0.0193 - accuracy: 0.99 - ETA: 8
s - loss: 0.0199 - accuracy: 0.99 - ETA: 7s - loss: 0.0199 - accuracy: 0.99 - ETA: 7s - loss: 0.0198 - accuracy: 0.99 - ETA: 7s - los
s: 0.0198 - accuracy: 0.99 - ETA: 6s - loss: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0196 - accuracy: 0.99 - ETA: 6s - loss: 0.019
6 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0194 - accu
racy: 0.99 - ETA: 5s - loss: 0.0194 - accuracy: 0.99 - ETA: 4s - loss: 0.0193 - accuracy: 0.99 - ETA: 4s - loss: 0.0193 - accuracy: 0.
99 - ETA: 4s - loss: 0.0192 - accuracy: 0.99 - ETA: 4s - loss: 0.0192 - accuracy: 0.99 - ETA: 3s - loss: 0.0191 - accuracy: 0.99 - ET
A: 3s - loss: 0.0191 - accuracy: 0.99 - ETA: 3s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s -
 loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0195 - accuracy: 0.99 - ETA: 2s - loss: 0.0194 - accuracy: 0.99 - ETA: 1s - loss:
 0.0194 - accuracy: 0.99 - ETA: 1s - loss: 0.0193 - accuracy: 0.99 - ETA: 1s - loss: 0.0193 - accuracy: 0.99 - ETA: 1s - loss: 0.0192
 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - ETA: 0s - loss: 0.0197 - accuracy: 0.99 - ETA: 0s - loss: 0.0197 - accur
acy: 0.99 - ETA: 0s - loss: 0.0197 - accuracy: 0.99 - 91s 283ms/step - loss: 0.0197 - accuracy: 0.9975 - val_loss: 0.0228 - val_accura
cy: 0.9968
Epoch 37/50
186/322 [================>.............] - ETA: 0s - loss: 0.0042 - accuracy: 1.00 - ETA: 23s - loss: 0.0044 - accuracy: 1.000 - ETA:
 39s - loss: 0.0044 - accuracy: 1.000 - ETA: 46s - loss: 0.0044 - accuracy: 1.000 - ETA: 1:07 - loss: 0.0044 - accuracy: 1.00 - ETA:
 1:05 - loss: 0.0043 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0043 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0043 - accuracy: 1.00 - ETA:
 1:01 - loss: 0.0042 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0042 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0041 - accuracy: 1.00 - ETA:
 1:10 - loss: 0.0041 - accuracy: 1.00 - ETA: 1:09 - loss: 0.0040 - accuracy: 1.00 - ETA: 1:07 - loss: 0.0040 - accuracy: 1.00 - ETA:
 1:07 - loss: 0.0039 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0039 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0039 - accuracy: 1.00 - ETA:
```

```
 1:07 - loss: 0.0038 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0038 - accuracy: 1.00 - ETA: 1:07 - loss: 0.0037 - accuracy: 1.00 - ETA:
 1:08 - loss: 0.0037 - accuracy: 1.00 - ETA: 1:07 - loss: 0.0036 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0036 - accuracy: 1.00 - ETA:
 1:05 - loss: 0.0036 - accuracy: 1.00 - ETA: 1:08 - loss: 0.0035 - accuracy: 1.00 - ETA: 1:07 - loss: 0.0035 - accuracy: 1.00 - ETA:
 1:06 - loss: 0.0034 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0034 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0034 - accuracy: 1.00 - ETA:
 1:04 - loss: 0.0033 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0033 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0033 - accuracy: 1.00 - ETA:
 1:05 - loss: 0.0032 - accuracy: 1.00 - ETA: 1:04 - loss: 0.0032 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0032 - accuracy: 1.00 - ETA:
 1:03 - loss: 0.0032 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0031 - accuracy: 1.00 - ETA: 1:01 - loss: 0.0031 - accuracy: 1.00 - ETA:
 1:03 - loss: 0.0031 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0031 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0030 - accuracy: 1.00 - ETA:
 1:03 - loss: 0.0030 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0030 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0082 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0128 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0218 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0211 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0236 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0229 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0223 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0217 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0212 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0206 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0199 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0193 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0187 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0205 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0203 - accuracy: 0.99 - ETA: 59s - loss: 0.0225 - accuracy: 0.9973 - ETA: 59s - loss: 0.0246 - accuracy: 0.997 - ETA:
 58s - loss: 0.0244 - accuracy: 0.997 - ETA: 57s - loss: 0.0242 - accuracy: 0.997 - ETA: 57s - loss: 0.0240 - accuracy: 0.997 - ETA: 5
7s - loss: 0.0239 - accuracy: 0.997 - ETA: 56s - loss: 0.0237 - accuracy: 0.997 - ETA: 56s - loss: 0.0235 - accuracy: 0.997 - ETA: 55s
- loss: 0.0233 - accuracy: 0.997 - ETA: 55s - loss: 0.0231 - accuracy: 0.997 - ETA: 55s - loss: 0.0229 - accuracy: 0.997 - ETA: 55s -
 loss: 0.0227 - accuracy: 0.997 - ETA: 55s - loss: 0.0226 - accuracy: 0.997 - ETA: 55s - loss: 0.0243 - accuracy: 0.997 - ETA: 54s - l
oss: 0.0241 - accuracy: 0.997 - ETA: 55s - loss: 0.0239 - accuracy: 0.997 - ETA: 55s - loss: 0.0237 - accuracy: 0.997 - ETA: 54s - los
s: 0.0236 - accuracy: 0.997 - ETA: 54s - loss: 0.0251 - accuracy: 0.996 - ETA: 53s - loss: 0.0249 - accuracy: 0.996 - ETA: 53s - loss:
0.0247 - accuracy: 0.996 - ETA: 53s - loss: 0.0245 - accuracy: 0.997 - ETA: 53s - loss: 0.0244 - accuracy: 0.997 - ETA: 53s - loss: 0.
0242 - accuracy: 0.997 - ETA: 53s - loss: 0.0241 - accuracy: 0.997 - ETA: 53s - loss: 0.0239 - accuracy: 0.997 - ETA: 52s - loss: 0.02
37 - accuracy: 0.997 - ETA: 52s - loss: 0.0236 - accuracy: 0.997 - ETA: 52s - loss: 0.0234 - accuracy: 0.997 - ETA: 52s - loss: 0.0233
- accuracy: 0.997 - ETA: 51s - loss: 0.0231 - accuracy: 0.997 - ETA: 51s - loss: 0.0229 - accuracy: 0.997 - ETA: 51s - loss: 0.0228 -
 accuracy: 0.997 - ETA: 51s - loss: 0.0226 - accuracy: 0.997 - ETA: 51s - loss: 0.0225 - accuracy: 0.997 - ETA: 51s - loss: 0.0223 - a
ccuracy: 0.997 - ETA: 50s - loss: 0.0221 - accuracy: 0.997 - ETA: 50s - loss: 0.0220 - accuracy: 0.997 - ETA: 49s - loss: 0.0218 - acc
uracy: 0.997 - ETA: 49s - loss: 0.0217 - accuracy: 0.997 - ETA: 49s - loss: 0.0215 - accuracy: 0.997 - ETA: 49s - loss: 0.0214 - accur
acy: 0.997 - ETA: 49s - loss: 0.0212 - accuracy: 0.997 - ETA: 48s - loss: 0.0211 - accuracy: 0.997 - ETA: 48s - loss: 0.0209 - accurac
y: 0.997 - ETA: 48s - loss: 0.0208 - accuracy: 0.997 - ETA: 48s - loss: 0.0206 - accuracy: 0.997 - ETA: 47s - loss: 0.0205 - accuracy:
0.997 - ETA: 47s - loss: 0.0219 - accuracy: 0.997 - ETA: 47s - loss: 0.0218 - accuracy: 0.997 - ETA: 47s - loss: 0.0216 - accuracy: 0.
997 - ETA: 47s - loss: 0.0215 - accuracy: 0.997 - ETA: 46s - loss: 0.0214 - accuracy: 0.997 - ETA: 46s - loss: 0.0227 - accuracy: 0.99
7 - ETA: 46s - loss: 0.0226 - accuracy: 0.997 - ETA: 46s - loss: 0.0225 - accuracy: 0.997 - ETA: 45s - loss: 0.0223 - accuracy: 0.997
 - ETA: 45s - loss: 0.0235 - accuracy: 0.997 - ETA: 45s - loss: 0.0234 - accuracy: 0.997 - ETA: 45s - loss: 0.0233 - accuracy: 0.997 -
ETA: 44s - loss: 0.0232 - accuracy: 0.997 - ETA: 44s - loss: 0.0230 - accuracy: 0.997 - ETA: 44s - loss: 0.0229 - accuracy: 0.997 - ET
A: 44s - loss: 0.0228 - accuracy: 0.997 - ETA: 44s - loss: 0.0227 - accuracy: 0.997 - ETA: 43s - loss: 0.0226 - accuracy: 0.997 - ETA:
43s - loss: 0.0224 - accuracy: 0.997 - ETA: 42s - loss: 0.0223 - accuracy: 0.997 - ETA: 42s - loss: 0.0222 - accuracy: 0.997 - ETA: 42
s - loss: 0.0221 - accuracy: 0.997 - ETA: 42s - loss: 0.0220 - accuracy: 0.997 - ETA: 41s - loss: 0.0219 - accuracy: 0.997 - ETA: 41s
 - loss: 0.0218 - accuracy: 0.997 - ETA: 41s - loss: 0.0216 - accuracy: 0.997 - ETA: 40s - loss: 0.0215 - accuracy: 0.997 - ETA: 40s -
loss: 0.0214 - accuracy: 0.997 - ETA: 40s - loss: 0.0213 - accuracy: 0.997 - ETA: 40s - loss: 0.0212 - accuracy: 0.997 - ETA: 39s - lo
ss: 0.0211 - accuracy: 0.997 - ETA: 39s - loss: 0.0210 - accuracy: 0.997 - ETA: 39s - loss: 0.0209 - accuracy: 0.997 - ETA: 38s - los
s: 0.0208 - accuracy: 0.997 - ETA: 38s - loss: 0.0207 - accuracy: 0.997 - ETA: 38s - loss: 0.0205 - accuracy: 0.997 - ETA: 38s - loss:
0.0216 - accuracy: 0.997 - ETA: 37s - loss: 0.0215 - accuracy: 0.997 - ETA: 37s - loss: 0.0214 - accuracy: 0.997 - ETA: 37s - loss: 0.
0213 - accuracy: 0.997 - ETA: 37s - loss: 0.0224 - accuracy: 0.997 - ETA: 36s - loss: 0.0223 - accuracy: 0.997 - ETA: 36s - loss: 0.02
22 - accuracy: 0.997 - ETA: 36s - loss: 0.0221 - accuracy: 0.997 - ETA: 35s - loss: 0.0220 - accuracy: 0.997 - ETA: 35s - loss: 0.0219
- accuracy: 0.997 - ETA: 35s - loss: 0.0218 - accuracy: 0.997 - ETA: 35s - loss: 0.0217 - accuracy: 0.997 - ETA: 34s - loss: 0.0216 -
 accuracy: 0.997 - ETA: 34s - loss: 0.0215 - accuracy: 0.997 - ETA: 34s - loss: 0.0214 - accuracy: 0.997 - ETA: 34s - loss: 0.0213 - a
ccuracy: 0.997 - ETA: 33s - loss: 0.0223 - accuracy: 0.997 - ETA: 33s - loss: 0.0222 - accuracy: 0.997 - ETA: 33s - loss: 0.0221 - acc
uracy: 0.997 - ETA: 33s - loss: 0.0220 - accuracy: 0.997 - ETA: 32s - loss: 0.0219 - accuracy: 0.9973251/322 [======================
>.......] - ETA: 32s - loss: 0.0218 - accuracy: 0.997 - ETA: 32s - loss: 0.0217 - accuracy: 0.997 - ETA: 31s - loss: 0.0216 - accurac
y: 0.997 - ETA: 31s - loss: 0.0215 - accuracy: 0.997 - ETA: 31s - loss: 0.0214 - accuracy: 0.997 - ETA: 31s - loss: 0.0214 - accuracy:
0.997 - ETA: 30s - loss: 0.0213 - accuracy: 0.997 - ETA: 30s - loss: 0.0212 - accuracy: 0.997 - ETA: 30s - loss: 0.0211 - accuracy: 0.
997 - ETA: 30s - loss: 0.0210 - accuracy: 0.997 - ETA: 29s - loss: 0.0209 - accuracy: 0.997 - ETA: 29s - loss: 0.0208 - accuracy: 0.99
7 - ETA: 29s - loss: 0.0207 - accuracy: 0.997 - ETA: 29s - loss: 0.0207 - accuracy: 0.997 - ETA: 28s - loss: 0.0206 - accuracy: 0.997
 - ETA: 28s - loss: 0.0214 - accuracy: 0.997 - ETA: 28s - loss: 0.0214 - accuracy: 0.997 - ETA: 28s - loss: 0.0213 - accuracy: 0.997 -
ETA: 27s - loss: 0.0212 - accuracy: 0.997 - ETA: 27s - loss: 0.0211 - accuracy: 0.997 - ETA: 27s - loss: 0.0210 - accuracy: 0.997 - ET
A: 27s - loss: 0.0209 - accuracy: 0.997 - ETA: 26s - loss: 0.0209 - accuracy: 0.997 - ETA: 26s - loss: 0.0208 - accuracy: 0.997 - ETA:
26s - loss: 0.0207 - accuracy: 0.997 - ETA: 26s - loss: 0.0206 - accuracy: 0.997 - ETA: 25s - loss: 0.0205 - accuracy: 0.997 - ETA: 25
s - loss: 0.0205 - accuracy: 0.997 - ETA: 25s - loss: 0.0204 - accuracy: 0.997 - ETA: 24s - loss: 0.0203 - accuracy: 0.997 - ETA: 24s
 - loss: 0.0202 - accuracy: 0.997 - ETA: 24s - loss: 0.0201 - accuracy: 0.997 - ETA: 24s - loss: 0.0201 - accuracy: 0.997 - ETA: 23s -
loss: 0.0200 - accuracy: 0.997 - ETA: 23s - loss: 0.0199 - accuracy: 0.997 - ETA: 23s - loss: 0.0198 - accuracy: 0.997 - ETA: 23s - lo
ss: 0.0197 - accuracy: 0.997 - ETA: 22s - loss: 0.0197 - accuracy: 0.997 - ETA: 22s - loss: 0.0196 - accuracy: 0.997 - ETA: 22s - los
s: 0.0204 - accuracy: 0.997 - ETA: 22s - loss: 0.0213 - accuracy: 0.997 - ETA: 22s - loss: 0.0221 - accuracy: 0.997 - ETA: 21s - loss:
0.0220 - accuracy: 0.997 - ETA: 21s - loss: 0.0219 - accuracy: 0.997 - ETA: 21s - loss: 0.0219 - accuracy: 0.997 - ETA: 21s - loss: 0.
0218 - accuracy: 0.997 - ETA: 21s - loss: 0.0218 - accuracy: 0.997 - ETA: 21s - loss: 0.0217 - accuracy: 0.997 - ETA: 20s - loss: 0.02
16 - accuracy: 0.997 - ETA: 20s - loss: 0.0216 - accuracy: 0.997 - ETA: 20s - loss: 0.0215 - accuracy: 0.997 - ETA: 20s - loss: 0.0215
- accuracy: 0.997 - ETA: 19s - loss: 0.0214 - accuracy: 0.997 - ETA: 19s - loss: 0.0213 - accuracy: 0.997 - ETA: 19s - loss: 0.0213 -
 accuracy: 0.997 - ETA: 19s - loss: 0.0219 - accuracy: 0.997 - ETA: 19s - loss: 0.0219 - accuracy: 0.997 - ETA: 18s - loss: 0.0218 - a
ccuracy: 0.997 - ETA: 18s - loss: 0.0217 - accuracy: 0.997 - ETA: 18s - loss: 0.0217 - accuracy: 0.997 - ETA: 18s - loss: 0.0216 - acc
uracy: 0.997 - ETA: 18s - loss: 0.0216 - accuracy: 0.997 - ETA: 18s - loss: 0.0215 - accuracy: 0.997 - ETA: 18s - loss: 0.0221 - accur
acy: 0.997 - ETA: 17s - loss: 0.0221 - accuracy: 0.9973WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch up
date (0.163030). Check your callbacks.
322/322 [==============================] - ETA: 17s - loss: 0.0220 - accuracy: 0.997 - ETA: 17s - loss: 0.0220 - accuracy: 0.997 - ET
A: 17s - loss: 0.0219 - accuracy: 0.997 - ETA: 16s - loss: 0.0225 - accuracy: 0.997 - ETA: 16s - loss: 0.0224 - accuracy: 0.997 - ETA:
16s - loss: 0.0224 - accuracy: 0.997 - ETA: 16s - loss: 0.0223 - accuracy: 0.997 - ETA: 16s - loss: 0.0223 - accuracy: 0.997 - ETA: 15
s - loss: 0.0222 - accuracy: 0.997 - ETA: 15s - loss: 0.0221 - accuracy: 0.997 - ETA: 15s - loss: 0.0221 - accuracy: 0.997 - ETA: 15s
 - loss: 0.0220 - accuracy: 0.997 - ETA: 14s - loss: 0.0220 - accuracy: 0.997 - ETA: 14s - loss: 0.0219 - accuracy: 0.997 - ETA: 14s -
loss: 0.0218 - accuracy: 0.997 - ETA: 14s - loss: 0.0218 - accuracy: 0.997 - ETA: 13s - loss: 0.0217 - accuracy: 0.997 - ETA: 13s - lo
ss: 0.0216 - accuracy: 0.997 - ETA: 13s - loss: 0.0216 - accuracy: 0.997 - ETA: 13s - loss: 0.0215 - accuracy: 0.997 - ETA: 13s - los
s: 0.0215 - accuracy: 0.997 - ETA: 12s - loss: 0.0214 - accuracy: 0.997 - ETA: 12s - loss: 0.0213 - accuracy: 0.997 - ETA: 12s - loss:
0.0213 - accuracy: 0.997 - ETA: 12s - loss: 0.0212 - accuracy: 0.997 - ETA: 11s - loss: 0.0211 - accuracy: 0.997 - ETA: 11s - loss: 0.
0211 - accuracy: 0.997 - ETA: 11s - loss: 0.0210 - accuracy: 0.997 - ETA: 11s - loss: 0.0209 - accuracy: 0.997 - ETA: 10s - loss: 0.02
09 - accuracy: 0.997 - ETA: 10s - loss: 0.0208 - accuracy: 0.997 - ETA: 10s - loss: 0.0207 - accuracy: 0.997 - ETA: 10s - loss: 0.0207
- accuracy: 0.997 - ETA: 9s - loss: 0.0206 - accuracy: 0.997 - ETA: 9s - loss: 0.0205 - accuracy: 0.99 - ETA: 9s - loss: 0.0205 - accu
```

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racy: 0.99 - ETA: 9s - loss: 0.0204 - accuracy: 0.99 - ETA: 8s - loss: 0.0204 - accuracy: 0.99 - ETA: 8s - loss: 0.0203 - accuracy: 0.
99 - ETA: 8s - loss: 0.0202 - accuracy: 0.99 - ETA: 8s - loss: 0.0202 - accuracy: 0.99 - ETA: 7s - loss: 0.0201 - accuracy: 0.99 - ET
A: 7s - loss: 0.0201 - accuracy: 0.99 - ETA: 7s - loss: 0.0200 - accuracy: 0.99 - ETA: 6s - loss: 0.0199 - accuracy: 0.99 - ETA: 6s -
 loss: 0.0199 - accuracy: 0.99 - ETA: 6s - loss: 0.0198 - accuracy: 0.99 - ETA: 6s - loss: 0.0198 - accuracy: 0.99 - ETA: 5s - loss:
 0.0197 - accuracy: 0.99 - ETA: 5s - loss: 0.0196 - accuracy: 0.99 - ETA: 5s - loss: 0.0196 - accuracy: 0.99 - ETA: 5s - loss: 0.0195
 - accuracy: 0.99 - ETA: 4s - loss: 0.0195 - accuracy: 0.99 - ETA: 4s - loss: 0.0194 - accuracy: 0.99 - ETA: 4s - loss: 0.0193 - accur
acy: 0.99 - ETA: 4s - loss: 0.0193 - accuracy: 0.99 - ETA: 3s - loss: 0.0192 - accuracy: 0.99 - ETA: 3s - loss: 0.0192 - accuracy: 0.9
9 - ETA: 3s - loss: 0.0191 - accuracy: 0.99 - ETA: 2s - loss: 0.0199 - accuracy: 0.99 - ETA: 2s - loss: 0.0198 - accuracy: 0.99 - ETA:
2s - loss: 0.0198 - accuracy: 0.99 - ETA: 2s - loss: 0.0197 - accuracy: 0.99 - ETA: 1s - loss: 0.0196 - accuracy: 0.99 - ETA: 1s - los
s: 0.0196 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 0s - loss: 0.020
1 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0207 - accuracy: 0.99 - ETA: 0s - loss: 0.0206 - accu
racy: 0.99 - 97s 301ms/step - loss: 0.0206 - accuracy: 0.9975 - val_loss: 0.0249 - val_accuracy: 0.9968
Epoch 38/50
  7/322 [..............................] - ETA: 0s - loss: 0.0060 - accuracy: 1.00 - ETA: 1:04 - loss: 0.0062 - accuracy: 1.00 - ETA:
 1:48 - loss: 0.0061 - accuracy: 1.00 - ETA: 3:41 - loss: 0.0509 - accuracy: 0.99 - ETA: 4:52 - loss: 0.0420 - accuracy: 0.99 - ETA:
 6:06 - loss: 0.0656 - accuracy: 0.98 - ETA: 5:44 - loss: 0.0575 - accuracy: 0.9911WARNING:tensorflow:Method (on_train_batch_end) is s
low compared to the batch update (0.381095). Check your callbacks.
  8/322 [..............................] - ETA: 5:29 - loss: 0.0515 - accuracy: 0.9922WARNING:tensorflow:Method (on_train_batch_end) i
s slow compared to the batch update (0.369594). Check your callbacks.
 12/322 [>.............................] - ETA: 5:22 - loss: 0.0469 - accuracy: 0.99 - ETA: 5:08 - loss: 0.0432 - accuracy: 0.99 - ET
A: 5:12 - loss: 0.0402 - accuracy: 0.99 - ETA: 5:19 - loss: 0.0377 - accuracy: 0.9948WARNING:tensorflow:Method (on_train_batch_end) is
slow compared to the batch update (0.415604). Check your callbacks.
 16/322 [>.............................] - ETA: 5:20 - loss: 0.0355 - accuracy: 0.99 - ETA: 5:17 - loss: 0.0337 - accuracy: 0.99 - ET
A: 5:22 - loss: 0.0320 - accuracy: 0.99 - ETA: 5:13 - loss: 0.0306 - accuracy: 0.9961WARNING:tensorflow:Method (on_train_batch_end) is
slow compared to the batch update (0.353590). Check your callbacks.
 17/322 [>.............................] - ETA: 4:56 - loss: 0.0293 - accuracy: 0.9963WARNING:tensorflow:Method (on_train_batch_end) i
s slow compared to the batch update (0.353590). Check your callbacks.
 18/322 [>.............................] - ETA: 4:43 - loss: 0.0281 - accuracy: 0.9965WARNING:tensorflow:Method (on_train_batch_end) i
s slow compared to the batch update (0.287577). Check your callbacks.
 19/322 [>.............................] - ETA: 4:32 - loss: 0.0351 - accuracy: 0.9951WARNING:tensorflow:Method (on_train_batch_end) i
s slow compared to the batch update (0.287577). Check your callbacks.
 20/322 [>.............................] - ETA: 4:22 - loss: 0.0337 - accuracy: 0.9953WARNING:tensorflow:Method (on_train_batch_end) i
s slow compared to the batch update (0.300090). Check your callbacks.
206/322 [==================>...........] - ETA: 4:16 - loss: 0.0325 - accuracy: 0.99 - ETA: 4:06 - loss: 0.0314 - accuracy: 0.99 - ET
A: 3:58 - loss: 0.0304 - accuracy: 0.99 - ETA: 3:51 - loss: 0.0294 - accuracy: 0.99 - ETA: 3:46 - loss: 0.0285 - accuracy: 0.99 - ETA:
3:42 - loss: 0.0277 - accuracy: 0.99 - ETA: 3:36 - loss: 0.0327 - accuracy: 0.99 - ETA: 3:32 - loss: 0.0317 - accuracy: 0.99 - ETA: 3:
28 - loss: 0.0308 - accuracy: 0.99 - ETA: 3:24 - loss: 0.0300 - accuracy: 0.99 - ETA: 3:20 - loss: 0.0292 - accuracy: 0.99 - ETA: 3:18
- loss: 0.0285 - accuracy: 0.99 - ETA: 3:19 - loss: 0.0278 - accuracy: 0.99 - ETA: 3:19 - loss: 0.0271 - accuracy: 0.99 - ETA: 3:19 -
 loss: 0.0265 - accuracy: 0.99 - ETA: 3:18 - loss: 0.0259 - accuracy: 0.99 - ETA: 3:18 - loss: 0.0253 - accuracy: 0.99 - ETA: 3:16 - l
oss: 0.0248 - accuracy: 0.99 - ETA: 3:15 - loss: 0.0243 - accuracy: 0.99 - ETA: 3:13 - loss: 0.0285 - accuracy: 0.99 - ETA: 3:13 - los
s: 0.0279 - accuracy: 0.99 - ETA: 3:10 - loss: 0.0273 - accuracy: 0.99 - ETA: 3:08 - loss: 0.0268 - accuracy: 0.99 - ETA: 3:06 - loss:
0.0263 - accuracy: 0.99 - ETA: 3:05 - loss: 0.0258 - accuracy: 0.99 - ETA: 3:04 - loss: 0.0292 - accuracy: 0.99 - ETA: 3:03 - loss: 0.
0287 - accuracy: 0.99 - ETA: 3:02 - loss: 0.0318 - accuracy: 0.99 - ETA: 3:00 - loss: 0.0313 - accuracy: 0.99 - ETA: 2:58 - loss: 0.03
09 - accuracy: 0.99 - ETA: 2:56 - loss: 0.0304 - accuracy: 0.99 - ETA: 2:53 - loss: 0.0300 - accuracy: 0.99 - ETA: 2:52 - loss: 0.0296
- accuracy: 0.99 - ETA: 2:50 - loss: 0.0292 - accuracy: 0.99 - ETA: 2:48 - loss: 0.0288 - accuracy: 0.99 - ETA: 2:46 - loss: 0.0284 -
 accuracy: 0.99 - ETA: 2:45 - loss: 0.0280 - accuracy: 0.99 - ETA: 2:42 - loss: 0.0276 - accuracy: 0.99 - ETA: 2:40 - loss: 0.0273 - a
ccuracy: 0.99 - ETA: 2:37 - loss: 0.0269 - accuracy: 0.99 - ETA: 2:35 - loss: 0.0265 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0262 - acc
uracy: 0.99 - ETA: 2:32 - loss: 0.0259 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0255 - accuracy: 0.99 - ETA: 2:28 - loss: 0.0252 - accur
acy: 0.99 - ETA: 2:27 - loss: 0.0249 - accuracy: 0.99 - ETA: 2:25 - loss: 0.0246 - accuracy: 0.99 - ETA: 2:24 - loss: 0.0243 - accurac
y: 0.99 - ETA: 2:23 - loss: 0.0240 - accuracy: 0.99 - ETA: 2:21 - loss: 0.0237 - accuracy: 0.99 - ETA: 2:21 - loss: 0.0234 - accuracy:
0.99 - ETA: 2:19 - loss: 0.0231 - accuracy: 0.99 - ETA: 2:18 - loss: 0.0229 - accuracy: 0.99 - ETA: 2:17 - loss: 0.0226 - accuracy: 0.
99 - ETA: 2:15 - loss: 0.0223 - accuracy: 0.99 - ETA: 2:15 - loss: 0.0221 - accuracy: 0.99 - ETA: 2:13 - loss: 0.0218 - accuracy: 0.99
- ETA: 2:12 - loss: 0.0216 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0214 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0211 - accuracy: 0.99 -
 ETA: 2:08 - loss: 0.0209 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0207 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0204 - accuracy: 0.99 - E
TA: 2:05 - loss: 0.0202 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0200 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0198 - accuracy: 0.99 - ET
A: 2:04 - loss: 0.0196 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0194 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0192 - accuracy: 0.99 - ETA:
2:05 - loss: 0.0216 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0214 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0212 - accuracy: 0.99 - ETA: 2:
03 - loss: 0.0210 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0208 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0206 - accuracy: 0.99 - ETA: 2:01
- loss: 0.0205 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0203 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:59 -
 loss: 0.0199 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:57 - l
oss: 0.0215 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:56 - los
s: 0.0229 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:53 - loss:
0.0224 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:50 - loss: 0.
0219 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:47 - loss: 0.02
31 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0226
- accuracy: 0.99 - ETA: 1:44 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0222 -
 accuracy: 0.99 - ETA: 1:42 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0218 - a
ccuracy: 0.99 - ETA: 1:39 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0214 - acc
uracy: 0.99 - ETA: 1:36 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0210 - accur
acy: 0.99 - ETA: 1:34 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0206 - accurac
y: 0.99 - ETA: 1:32 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0231 - accuracy:
0.99 - ETA: 1:30 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0227 - accuracy: 0.
99 - ETA: 1:28 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0236 - accuracy: 0.99
- ETA: 1:26 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0232 - accuracy: 0.99 -
 ETA: 1:24 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0229 - accuracy: 0.99 - E
TA: 1:23 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0226 - accuracy: 0.99 - ET
A: 1:21 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0222 - accuracy: 0.99 - ETA:
1:19 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:
18 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:16
- loss: 0.0215 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:14 -
 loss: 0.0223 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:12 - l
oss: 0.0220 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:10 - los
s: 0.0217 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:08 - loss:
0.0214 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:06 - loss: 0.
0211 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:05 - loss: 0.02
31 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0228
- accuracy: 0.99 - ETA: 1:03 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0225 -
 accuracy: 0.99 - ETA: 1:01 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0223 - a
ccuracy: 0.99 - ETA: 1:00 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0221 - accuracy: 0.99 - ETA: 59s - loss: 0.0220 - accu
racy: 0.9972 - ETA: 59s - loss: 0.0219 - accuracy: 0.997 - ETA: 58s - loss: 0.0218 - accuracy: 0.997 - ETA: 57s - loss: 0.0217 - accur
acy: 0.997 - ETA: 57s - loss: 0.0217 - accuracy: 0.997 - ETA: 56s - loss: 0.0216 - accuracy: 0.997 - ETA: 56s - loss: 0.0215 - accurac
```

```
y: 0.997 - ETA: 55s - loss: 0.0214 - accuracy: 0.997 - ETA: 54s - loss: 0.0213 - accuracy: 0.997 - ETA: 54s - loss: 0.0212 - accuracy:
0.997 - ETA: 53s - loss: 0.0211 - accuracy: 0.997 - ETA: 53s - loss: 0.0210 - accuracy: 0.997 - ETA: 52s - loss: 0.0219 - accuracy: 0.
997 - ETA: 52s - loss: 0.0218 - accuracy: 0.997 - ETA: 51s - loss: 0.0217 - accuracy: 0.997 - ETA: 50s - loss: 0.0216 - accuracy: 0.99
7 - ETA: 50s - loss: 0.0216 - accuracy: 0.9973295/322 [==========================>...] - ETA: 49s - loss: 0.0215 - accuracy: 0.997 - E
TA: 49s - loss: 0.0214 - accuracy: 0.997 - ETA: 48s - loss: 0.0213 - accuracy: 0.997 - ETA: 48s - loss: 0.0221 - accuracy: 0.997 - ET
A: 47s - loss: 0.0220 - accuracy: 0.997 - ETA: 47s - loss: 0.0228 - accuracy: 0.997 - ETA: 46s - loss: 0.0227 - accuracy: 0.997 - ETA:
46s - loss: 0.0227 - accuracy: 0.997 - ETA: 45s - loss: 0.0226 - accuracy: 0.997 - ETA: 45s - loss: 0.0225 - accuracy: 0.997 - ETA: 44
s - loss: 0.0224 - accuracy: 0.997 - ETA: 43s - loss: 0.0224 - accuracy: 0.997 - ETA: 43s - loss: 0.0223 - accuracy: 0.997 - ETA: 42s
 - loss: 0.0222 - accuracy: 0.997 - ETA: 42s - loss: 0.0221 - accuracy: 0.997 - ETA: 41s - loss: 0.0221 - accuracy: 0.997 - ETA: 41s -
loss: 0.0220 - accuracy: 0.997 - ETA: 40s - loss: 0.0219 - accuracy: 0.997 - ETA: 40s - loss: 0.0226 - accuracy: 0.997 - ETA: 39s - lo
ss: 0.0225 - accuracy: 0.997 - ETA: 39s - loss: 0.0225 - accuracy: 0.997 - ETA: 38s - loss: 0.0224 - accuracy: 0.997 - ETA: 38s - los
s: 0.0223 - accuracy: 0.997 - ETA: 37s - loss: 0.0223 - accuracy: 0.997 - ETA: 37s - loss: 0.0222 - accuracy: 0.997 - ETA: 36s - loss:
0.0228 - accuracy: 0.997 - ETA: 36s - loss: 0.0228 - accuracy: 0.997 - ETA: 36s - loss: 0.0227 - accuracy: 0.997 - ETA: 35s - loss: 0.
0226 - accuracy: 0.997 - ETA: 35s - loss: 0.0225 - accuracy: 0.997 - ETA: 34s - loss: 0.0225 - accuracy: 0.997 - ETA: 34s - loss: 0.02
24 - accuracy: 0.997 - ETA: 33s - loss: 0.0223 - accuracy: 0.997 - ETA: 33s - loss: 0.0223 - accuracy: 0.997 - ETA: 33s - loss: 0.0222
- accuracy: 0.997 - ETA: 32s - loss: 0.0221 - accuracy: 0.997 - ETA: 32s - loss: 0.0221 - accuracy: 0.997 - ETA: 31s - loss: 0.0220 -
 accuracy: 0.997 - ETA: 31s - loss: 0.0226 - accuracy: 0.997 - ETA: 30s - loss: 0.0225 - accuracy: 0.997 - ETA: 30s - loss: 0.0225 - a
ccuracy: 0.997 - ETA: 30s - loss: 0.0224 - accuracy: 0.997 - ETA: 29s - loss: 0.0223 - accuracy: 0.997 - ETA: 29s - loss: 0.0223 - acc
uracy: 0.997 - ETA: 28s - loss: 0.0222 - accuracy: 0.997 - ETA: 28s - loss: 0.0221 - accuracy: 0.997 - ETA: 27s - loss: 0.0220 - accur
acy: 0.997 - ETA: 27s - loss: 0.0220 - accuracy: 0.997 - ETA: 26s - loss: 0.0219 - accuracy: 0.997 - ETA: 26s - loss: 0.0218 - accurac
y: 0.997 - ETA: 25s - loss: 0.0218 - accuracy: 0.997 - ETA: 25s - loss: 0.0217 - accuracy: 0.997 - ETA: 24s - loss: 0.0216 - accuracy:
0.997 - ETA: 24s - loss: 0.0216 - accuracy: 0.997 - ETA: 24s - loss: 0.0215 - accuracy: 0.997 - ETA: 23s - loss: 0.0214 - accuracy: 0.
997 - ETA: 23s - loss: 0.0213 - accuracy: 0.997 - ETA: 22s - loss: 0.0213 - accuracy: 0.997 - ETA: 22s - loss: 0.0212 - accuracy: 0.99
7 - ETA: 22s - loss: 0.0211 - accuracy: 0.997 - ETA: 21s - loss: 0.0211 - accuracy: 0.997 - ETA: 21s - loss: 0.0210 - accuracy: 0.997
 - ETA: 21s - loss: 0.0209 - accuracy: 0.997 - ETA: 20s - loss: 0.0209 - accuracy: 0.997 - ETA: 20s - loss: 0.0208 - accuracy: 0.997 -
ETA: 19s - loss: 0.0207 - accuracy: 0.997 - ETA: 19s - loss: 0.0207 - accuracy: 0.997 - ETA: 19s - loss: 0.0206 - accuracy: 0.997 - ET
A: 18s - loss: 0.0205 - accuracy: 0.997 - ETA: 18s - loss: 0.0205 - accuracy: 0.997 - ETA: 18s - loss: 0.0204 - accuracy: 0.997 - ETA:
17s - loss: 0.0203 - accuracy: 0.997 - ETA: 17s - loss: 0.0203 - accuracy: 0.997 - ETA: 16s - loss: 0.0202 - accuracy: 0.997 - ETA: 16
s - loss: 0.0201 - accuracy: 0.997 - ETA: 16s - loss: 0.0201 - accuracy: 0.997 - ETA: 15s - loss: 0.0200 - accuracy: 0.997 - ETA: 15s
 - loss: 0.0200 - accuracy: 0.997 - ETA: 14s - loss: 0.0199 - accuracy: 0.997 - ETA: 14s - loss: 0.0198 - accuracy: 0.997 - ETA: 14s -
loss: 0.0198 - accuracy: 0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss: 0.0196 - accuracy: 0.997 - ETA: 12s - lo
ss: 0.0196 - accuracy: 0.997 - ETA: 12s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - loss: 0.0195 - accuracy: 0.997 - ETA: 11s - los
s: 0.0194 - accuracy: 0.997 - ETA: 11s - loss: 0.0193 - accuracy: 0.997 - ETA: 10s - loss: 0.0193 - accuracy: 0.9976WARNING:tensorflo
w:Method (on_train_batch_end) is slow compared to the batch update (0.145535). Check your callbacks.
322/322 [==============================] - ETA: 10s - loss: 0.0192 - accuracy: 0.997 - ETA: 10s - loss: 0.0200 - accuracy: 0.997 - ET
A: 9s - loss: 0.0199 - accuracy: 0.997 - ETA: 9s - loss: 0.0198 - accuracy: 0.99 - ETA: 8s - loss: 0.0198 - accuracy: 0.99 - ETA: 8s -
loss: 0.0197 - accuracy: 0.99 - ETA: 8s - loss: 0.0197 - accuracy: 0.99 - ETA: 7s - loss: 0.0196 - accuracy: 0.99 - ETA: 7s - loss: 0.
0196 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 6s - loss: 0.0194 - a
ccuracy: 0.99 - ETA: 5s - loss: 0.0193 - accuracy: 0.99 - ETA: 5s - loss: 0.0193 - accuracy: 0.99 - ETA: 4s - loss: 0.0192 - accuracy:
0.99 - ETA: 4s - loss: 0.0199 - accuracy: 0.99 - ETA: 4s - loss: 0.0198 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accuracy: 0.99 - E
TA: 3s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s -
loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.
0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - 133s 412ms/step - loss: 0.
0200 - accuracy: 0.9975 - val_loss: 0.0231 - val_accuracy: 0.9968
Epoch 39/50
186/322 [================>.............] - ETA: 0s - loss: 0.0047 - accuracy: 1.00 - ETA: 32s - loss: 0.0048 - accuracy: 1.000 - ETA:
 37s - loss: 0.0048 - accuracy: 1.000 - ETA: 38s - loss: 0.0047 - accuracy: 1.000 - ETA: 39s - loss: 0.0048 - accuracy: 1.000 - ETA: 4
0s - loss: 0.0047 - accuracy: 1.000 - ETA: 46s - loss: 0.0047 - accuracy: 1.000 - ETA: 49s - loss: 0.0046 - accuracy: 1.000 - ETA: 52s
- loss: 0.0046 - accuracy: 1.000 - ETA: 53s - loss: 0.0225 - accuracy: 0.996 - ETA: 52s - loss: 0.0208 - accuracy: 0.996 - ETA: 51s -
 loss: 0.0195 - accuracy: 0.997 - ETA: 51s - loss: 0.0184 - accuracy: 0.997 - ETA: 55s - loss: 0.0175 - accuracy: 0.997 - ETA: 1:00 -
 loss: 0.0287 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0361 - accuracy: 0.99 - ETA: 1:07 - l
oss: 0.0345 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0332 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0320 - accuracy: 0.99 - ETA: 1:08 - los
s: 0.0309 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0299 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0290 - accuracy: 0.99 - ETA: 1:05 - loss:
0.0281 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0327 - accuracy: 0.99 - ETA: 1:06 - loss: 0.
0318 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0309 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0301 - accuracy: 0.99 - ETA: 1:04 - loss: 0.02
94 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0287 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0280 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0274
- accuracy: 0.99 - ETA: 1:07 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0262 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0256 -
 accuracy: 0.99 - ETA: 1:12 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0245 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0240 - a
ccuracy: 0.99 - ETA: 1:13 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0273 - acc
uracy: 0.99 - ETA: 1:13 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0262 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0257 - accur
acy: 0.99 - ETA: 1:13 - loss: 0.0253 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0244 - accurac
y: 0.99 - ETA: 1:17 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0232 - accuracy:
0.99 - ETA: 1:20 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0221 - accuracy: 0.
99 - ETA: 1:17 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0211 - accuracy: 0.99
- ETA: 1:14 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0202 - accuracy: 0.99 -
 ETA: 1:12 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0194 - accuracy: 0.99 - E
TA: 1:10 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0186 - accuracy: 0.99 - ET
A: 1:08 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0179 - accuracy: 0.99 - ETA:
1:06 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:
05 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0167 - accuracy: 0.99 - ETA: 1:03
- loss: 0.0165 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0163 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:01 -
 loss: 0.0160 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0156 - accuracy: 0.99 - ETA: 1:00 - l
oss: 0.0155 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0153 - accuracy: 0.99 - ETA: 59s - loss: 0.0152 - accuracy: 0.9981 - ETA: 59s - los
s: 0.0150 - accuracy: 0.998 - ETA: 58s - loss: 0.0148 - accuracy: 0.998 - ETA: 58s - loss: 0.0147 - accuracy: 0.998 - ETA: 58s - loss:
0.0146 - accuracy: 0.998 - ETA: 58s - loss: 0.0144 - accuracy: 0.998 - ETA: 57s - loss: 0.0143 - accuracy: 0.998 - ETA: 57s - loss: 0.
0141 - accuracy: 0.998 - ETA: 56s - loss: 0.0140 - accuracy: 0.998 - ETA: 56s - loss: 0.0139 - accuracy: 0.998 - ETA: 55s - loss: 0.01
38 - accuracy: 0.998 - ETA: 55s - loss: 0.0136 - accuracy: 0.998 - ETA: 55s - loss: 0.0135 - accuracy: 0.998 - ETA: 54s - loss: 0.0134
- accuracy: 0.998 - ETA: 54s - loss: 0.0133 - accuracy: 0.998 - ETA: 53s - loss: 0.0132 - accuracy: 0.998 - ETA: 53s - loss: 0.0131 -
 accuracy: 0.998 - ETA: 52s - loss: 0.0130 - accuracy: 0.998 - ETA: 52s - loss: 0.0128 - accuracy: 0.998 - ETA: 52s - loss: 0.0127 - a
ccuracy: 0.998 - ETA: 51s - loss: 0.0126 - accuracy: 0.998 - ETA: 51s - loss: 0.0125 - accuracy: 0.998 - ETA: 51s - loss: 0.0124 - acc
uracy: 0.998 - ETA: 50s - loss: 0.0123 - accuracy: 0.998 - ETA: 50s - loss: 0.0122 - accuracy: 0.998 - ETA: 49s - loss: 0.0122 - accur
acy: 0.998 - ETA: 49s - loss: 0.0121 - accuracy: 0.998 - ETA: 48s - loss: 0.0120 - accuracy: 0.998 - ETA: 48s - loss: 0.0119 - accurac
y: 0.998 - ETA: 48s - loss: 0.0118 - accuracy: 0.998 - ETA: 47s - loss: 0.0117 - accuracy: 0.998 - ETA: 47s - loss: 0.0116 - accuracy:
0.998 - ETA: 47s - loss: 0.0138 - accuracy: 0.998 - ETA: 47s - loss: 0.0137 - accuracy: 0.998 - ETA: 47s - loss: 0.0155 - accuracy: 0.
998 - ETA: 47s - loss: 0.0154 - accuracy: 0.998 - ETA: 47s - loss: 0.0153 - accuracy: 0.998 - ETA: 47s - loss: 0.0152 - accuracy: 0.99
8 - ETA: 48s - loss: 0.0151 - accuracy: 0.998 - ETA: 48s - loss: 0.0151 - accuracy: 0.998 - ETA: 47s - loss: 0.0150 - accuracy: 0.998
 - ETA: 47s - loss: 0.0149 - accuracy: 0.998 - ETA: 48s - loss: 0.0148 - accuracy: 0.998 - ETA: 48s - loss: 0.0163 - accuracy: 0.998 -
ETA: 49s - loss: 0.0162 - accuracy: 0.998 - ETA: 49s - loss: 0.0161 - accuracy: 0.998 - ETA: 49s - loss: 0.0160 - accuracy: 0.998 - ET
A: 49s - loss: 0.0159 - accuracy: 0.998 - ETA: 49s - loss: 0.0159 - accuracy: 0.998 - ETA: 49s - loss: 0.0158 - accuracy: 0.998 - ETA:
49s - loss: 0.0157 - accuracy: 0.998 - ETA: 49s - loss: 0.0156 - accuracy: 0.998 - ETA: 48s - loss: 0.0168 - accuracy: 0.997 - ETA: 48
s - loss: 0.0168 - accuracy: 0.997 - ETA: 48s - loss: 0.0167 - accuracy: 0.998 - ETA: 48s - loss: 0.0166 - accuracy: 0.998 - ETA: 48s
```

```
 - loss: 0.0165 - accuracy: 0.998 - ETA: 47s - loss: 0.0165 - accuracy: 0.998 - ETA: 47s - loss: 0.0164 - accuracy: 0.998 - ETA: 47s -
loss: 0.0163 - accuracy: 0.998 - ETA: 47s - loss: 0.0162 - accuracy: 0.998 - ETA: 47s - loss: 0.0162 - accuracy: 0.998 - ETA: 46s - lo
ss: 0.0173 - accuracy: 0.997 - ETA: 46s - loss: 0.0172 - accuracy: 0.997 - ETA: 46s - loss: 0.0171 - accuracy: 0.997 - ETA: 46s - los
s: 0.0170 - accuracy: 0.997 - ETA: 46s - loss: 0.0170 - accuracy: 0.997 - ETA: 45s - loss: 0.0169 - accuracy: 0.997 - ETA: 45s - loss:
0.0168 - accuracy: 0.997 - ETA: 45s - loss: 0.0167 - accuracy: 0.998 - ETA: 45s - loss: 0.0167 - accuracy: 0.998 - ETA: 45s - loss: 0.
0166 - accuracy: 0.998 - ETA: 44s - loss: 0.0176 - accuracy: 0.997 - ETA: 44s - loss: 0.0176 - accuracy: 0.997 - ETA: 44s - loss: 0.01
75 - accuracy: 0.997 - ETA: 44s - loss: 0.0174 - accuracy: 0.997 - ETA: 44s - loss: 0.0173 - accuracy: 0.997 - ETA: 43s - loss: 0.0184
- accuracy: 0.997 - ETA: 43s - loss: 0.0183 - accuracy: 0.997 - ETA: 43s - loss: 0.0182 - accuracy: 0.997 - ETA: 43s - loss: 0.0181 -
 accuracy: 0.997 - ETA: 43s - loss: 0.0181 - accuracy: 0.997 - ETA: 42s - loss: 0.0180 - accuracy: 0.997 - ETA: 42s - loss: 0.0179 - a
ccuracy: 0.997 - ETA: 42s - loss: 0.0178 - accuracy: 0.997 - ETA: 42s - loss: 0.0178 - accuracy: 0.997 - ETA: 42s - loss: 0.0177 - acc
uracy: 0.997 - ETA: 41s - loss: 0.0176 - accuracy: 0.997 - ETA: 41s - loss: 0.0175 - accuracy: 0.997 - ETA: 41s - loss: 0.0175 - accur
acy: 0.997 - ETA: 41s - loss: 0.0174 - accuracy: 0.997 - ETA: 40s - loss: 0.0173 - accuracy: 0.997 - ETA: 40s - loss: 0.0172 - accurac
y: 0.997 - ETA: 40s - loss: 0.0172 - accuracy: 0.997 - ETA: 40s - loss: 0.0171 - accuracy: 0.997 - ETA: 40s - loss: 0.0170 - accuracy:
0.997 - ETA: 39s - loss: 0.0169 - accuracy: 0.997 - ETA: 40s - loss: 0.0169 - accuracy: 0.997 - ETA: 39s - loss: 0.0168 - accuracy: 0.
997 - ETA: 39s - loss: 0.0167 - accuracy: 0.998 - ETA: 40s - loss: 0.0166 - accuracy: 0.998 - ETA: 40s - loss: 0.0166 - accuracy: 0.99
8 - ETA: 39s - loss: 0.0176 - accuracy: 0.9978322/322 [==============================] - ETA: 39s - loss: 0.0175 - accuracy: 0.997 - E
TA: 39s - loss: 0.0174 - accuracy: 0.997 - ETA: 38s - loss: 0.0173 - accuracy: 0.997 - ETA: 38s - loss: 0.0173 - accuracy: 0.997 - ET
A: 38s - loss: 0.0172 - accuracy: 0.997 - ETA: 38s - loss: 0.0171 - accuracy: 0.997 - ETA: 37s - loss: 0.0171 - accuracy: 0.997 - ETA:
37s - loss: 0.0170 - accuracy: 0.997 - ETA: 37s - loss: 0.0169 - accuracy: 0.997 - ETA: 37s - loss: 0.0168 - accuracy: 0.997 - ETA: 36
s - loss: 0.0168 - accuracy: 0.997 - ETA: 36s - loss: 0.0167 - accuracy: 0.997 - ETA: 36s - loss: 0.0166 - accuracy: 0.998 - ETA: 36s
 - loss: 0.0166 - accuracy: 0.998 - ETA: 35s - loss: 0.0165 - accuracy: 0.998 - ETA: 35s - loss: 0.0164 - accuracy: 0.998 - ETA: 35s -
loss: 0.0164 - accuracy: 0.998 - ETA: 35s - loss: 0.0163 - accuracy: 0.998 - ETA: 34s - loss: 0.0162 - accuracy: 0.998 - ETA: 34s - lo
ss: 0.0162 - accuracy: 0.998 - ETA: 34s - loss: 0.0161 - accuracy: 0.998 - ETA: 34s - loss: 0.0160 - accuracy: 0.998 - ETA: 33s - los
s: 0.0160 - accuracy: 0.998 - ETA: 33s - loss: 0.0159 - accuracy: 0.998 - ETA: 33s - loss: 0.0158 - accuracy: 0.998 - ETA: 33s - loss:
0.0158 - accuracy: 0.998 - ETA: 32s - loss: 0.0157 - accuracy: 0.998 - ETA: 32s - loss: 0.0157 - accuracy: 0.998 - ETA: 32s - loss: 0.
0156 - accuracy: 0.998 - ETA: 32s - loss: 0.0155 - accuracy: 0.998 - ETA: 31s - loss: 0.0155 - accuracy: 0.998 - ETA: 31s - loss: 0.01
64 - accuracy: 0.998 - ETA: 31s - loss: 0.0163 - accuracy: 0.998 - ETA: 31s - loss: 0.0163 - accuracy: 0.998 - ETA: 30s - loss: 0.0162
- accuracy: 0.998 - ETA: 30s - loss: 0.0162 - accuracy: 0.998 - ETA: 30s - loss: 0.0161 - accuracy: 0.998 - ETA: 30s - loss: 0.0160 -
 accuracy: 0.998 - ETA: 29s - loss: 0.0160 - accuracy: 0.998 - ETA: 29s - loss: 0.0159 - accuracy: 0.998 - ETA: 29s - loss: 0.0159 - a
ccuracy: 0.998 - ETA: 29s - loss: 0.0158 - accuracy: 0.998 - ETA: 28s - loss: 0.0158 - accuracy: 0.998 - ETA: 28s - loss: 0.0157 - acc
uracy: 0.998 - ETA: 28s - loss: 0.0156 - accuracy: 0.998 - ETA: 28s - loss: 0.0156 - accuracy: 0.998 - ETA: 27s - loss: 0.0155 - accur
acy: 0.998 - ETA: 27s - loss: 0.0155 - accuracy: 0.998 - ETA: 27s - loss: 0.0154 - accuracy: 0.998 - ETA: 27s - loss: 0.0154 - accurac
y: 0.998 - ETA: 27s - loss: 0.0163 - accuracy: 0.998 - ETA: 27s - loss: 0.0162 - accuracy: 0.998 - ETA: 27s - loss: 0.0161 - accuracy:
0.998 - ETA: 27s - loss: 0.0161 - accuracy: 0.998 - ETA: 26s - loss: 0.0169 - accuracy: 0.997 - ETA: 26s - loss: 0.0168 - accuracy: 0.
997 - ETA: 26s - loss: 0.0168 - accuracy: 0.997 - ETA: 26s - loss: 0.0167 - accuracy: 0.998 - ETA: 25s - loss: 0.0167 - accuracy: 0.99
8 - ETA: 25s - loss: 0.0173 - accuracy: 0.997 - ETA: 25s - loss: 0.0173 - accuracy: 0.997 - ETA: 25s - loss: 0.0173 - accuracy: 0.997
 - ETA: 25s - loss: 0.0172 - accuracy: 0.997 - ETA: 24s - loss: 0.0172 - accuracy: 0.997 - ETA: 24s - loss: 0.0178 - accuracy: 0.997 -
ETA: 24s - loss: 0.0178 - accuracy: 0.997 - ETA: 24s - loss: 0.0177 - accuracy: 0.997 - ETA: 24s - loss: 0.0177 - accuracy: 0.997 - ET
A: 23s - loss: 0.0189 - accuracy: 0.997 - ETA: 23s - loss: 0.0189 - accuracy: 0.997 - ETA: 23s - loss: 0.0189 - accuracy: 0.997 - ETA:
22s - loss: 0.0188 - accuracy: 0.997 - ETA: 22s - loss: 0.0188 - accuracy: 0.997 - ETA: 22s - loss: 0.0188 - accuracy: 0.997 - ETA: 22
s - loss: 0.0188 - accuracy: 0.997 - ETA: 21s - loss: 0.0188 - accuracy: 0.997 - ETA: 21s - loss: 0.0193 - accuracy: 0.997 - ETA: 21s
 - loss: 0.0193 - accuracy: 0.997 - ETA: 20s - loss: 0.0192 - accuracy: 0.997 - ETA: 20s - loss: 0.0192 - accuracy: 0.997 - ETA: 20s -
loss: 0.0192 - accuracy: 0.997 - ETA: 20s - loss: 0.0197 - accuracy: 0.997 - ETA: 19s - loss: 0.0197 - accuracy: 0.997 - ETA: 19s - lo
ss: 0.0196 - accuracy: 0.997 - ETA: 19s - loss: 0.0196 - accuracy: 0.997 - ETA: 18s - loss: 0.0195 - accuracy: 0.997 - ETA: 18s - los
s: 0.0195 - accuracy: 0.997 - ETA: 18s - loss: 0.0195 - accuracy: 0.997 - ETA: 17s - loss: 0.0194 - accuracy: 0.997 - ETA: 17s - loss:
0.0194 - accuracy: 0.997 - ETA: 17s - loss: 0.0193 - accuracy: 0.997 - ETA: 16s - loss: 0.0193 - accuracy: 0.997 - ETA: 16s - loss: 0.
0192 - accuracy: 0.997 - ETA: 15s - loss: 0.0192 - accuracy: 0.997 - ETA: 15s - loss: 0.0191 - accuracy: 0.997 - ETA: 15s - loss: 0.01
91 - accuracy: 0.997 - ETA: 14s - loss: 0.0190 - accuracy: 0.997 - ETA: 14s - loss: 0.0197 - accuracy: 0.997 - ETA: 13s - loss: 0.0196
- accuracy: 0.997 - ETA: 13s - loss: 0.0196 - accuracy: 0.997 - ETA: 13s - loss: 0.0195 - accuracy: 0.997 - ETA: 12s - loss: 0.0194 -
 accuracy: 0.997 - ETA: 12s - loss: 0.0194 - accuracy: 0.997 - ETA: 12s - loss: 0.0193 - accuracy: 0.997 - ETA: 11s - loss: 0.0193 - a
ccuracy: 0.997 - ETA: 11s - loss: 0.0199 - accuracy: 0.997 - ETA: 10s - loss: 0.0205 - accuracy: 0.997 - ETA: 10s - loss: 0.0204 - acc
uracy: 0.997 - ETA: 10s - loss: 0.0204 - accuracy: 0.997 - ETA: 9s - loss: 0.0203 - accuracy: 0.997 - ETA: 9s - loss: 0.0209 - accurac
y: 0.99 - ETA: 9s - loss: 0.0208 - accuracy: 0.99 - ETA: 8s - loss: 0.0208 - accuracy: 0.99 - ETA: 8s - loss: 0.0208 - accuracy: 0.99
 - ETA: 7s - loss: 0.0207 - accuracy: 0.99 - ETA: 7s - loss: 0.0207 - accuracy: 0.99 - ETA: 7s - loss: 0.0207 - accuracy: 0.99 - ETA:
 6s - loss: 0.0206 - accuracy: 0.99 - ETA: 6s - loss: 0.0206 - accuracy: 0.99 - ETA: 6s - loss: 0.0205 - accuracy: 0.99 - ETA: 5s - lo
ss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss: 0.0204 - accuracy: 0.99 - ETA: 4s - loss: 0.0204 - accuracy: 0.99 - ETA: 4s - loss: 0.02
04 - accuracy: 0.99 - ETA: 4s - loss: 0.0203 - accuracy: 0.99 - ETA: 3s - loss: 0.0203 - accuracy: 0.99 - ETA: 3s - loss: 0.0202 - acc
uracy: 0.99 - ETA: 3s - loss: 0.0202 - accuracy: 0.99 - ETA: 2s - loss: 0.0201 - accuracy: 0.99 - ETA: 2s - loss: 0.0201 - accuracy:
 0.99 - ETA: 1s - loss: 0.0200 - accuracy: 0.99 - ETA: 1s - loss: 0.0200 - accuracy: 0.99 - ETA: 1s - loss: 0.0199 - accuracy: 0.99 -
 ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - 133s 41
3ms/step - loss: 0.0198 - accuracy: 0.9975 - val_loss: 0.0233 - val_accuracy: 0.9968
Epoch 40/50
 18/322 [>.............................] - ETA: 0s - loss: 0.0030 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0030 - accuracy: 1.00 - ETA:
 1:11 - loss: 0.0030 - accuracy: 1.00 - ETA: 1:16 - loss: 0.0029 - accuracy: 1.00 - ETA: 1:20 - loss: 0.0029 - accuracy: 1.00 - ETA:
 1:33 - loss: 0.0028 - accuracy: 1.00 - ETA: 1:52 - loss: 0.0028 - accuracy: 1.00 - ETA: 3:01 - loss: 0.0028 - accuracy: 1.00 - ETA:
 3:31 - loss: 0.0027 - accuracy: 1.00 - ETA: 3:40 - loss: 0.0027 - accuracy: 1.00 - ETA: 3:33 - loss: 0.0027 - accuracy: 1.00 - ETA:
 3:39 - loss: 0.0026 - accuracy: 1.00 - ETA: 3:37 - loss: 0.0194 - accuracy: 0.99 - ETA: 3:32 - loss: 0.0182 - accuracy: 0.99 - ETA:
 3:38 - loss: 0.0172 - accuracy: 0.99 - ETA: 3:45 - loss: 0.0163 - accuracy: 0.99 - ETA: 3:54 - loss: 0.0156 - accuracy: 0.99 - ETA:
 3:49 - loss: 0.0265 - accuracy: 0.9965WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.284072).
Check your callbacks.
 20/322 [>.............................] - ETA: 3:43 - loss: 0.0359 - accuracy: 0.99 - ETA: 3:38 - loss: 0.0344 - accuracy: 0.9953WARN
ING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.271566). Check your callbacks.
206/322 [==================>...........] - ETA: 3:33 - loss: 0.0332 - accuracy: 0.99 - ETA: 3:30 - loss: 0.0401 - accuracy: 0.99 - ET
A: 3:27 - loss: 0.0390 - accuracy: 0.99 - ETA: 3:25 - loss: 0.0381 - accuracy: 0.99 - ETA: 3:22 - loss: 0.0371 - accuracy: 0.99 - ETA:
3:17 - loss: 0.0362 - accuracy: 0.99 - ETA: 3:11 - loss: 0.0353 - accuracy: 0.99 - ETA: 3:08 - loss: 0.0344 - accuracy: 0.99 - ETA: 3:
05 - loss: 0.0336 - accuracy: 0.99 - ETA: 3:03 - loss: 0.0328 - accuracy: 0.99 - ETA: 3:01 - loss: 0.0320 - accuracy: 0.99 - ETA: 2:57
- loss: 0.0313 - accuracy: 0.99 - ETA: 2:54 - loss: 0.0306 - accuracy: 0.99 - ETA: 2:53 - loss: 0.0350 - accuracy: 0.99 - ETA: 2:51 -
 loss: 0.0342 - accuracy: 0.99 - ETA: 2:48 - loss: 0.0335 - accuracy: 0.99 - ETA: 2:45 - loss: 0.0328 - accuracy: 0.99 - ETA: 2:43 - l
oss: 0.0322 - accuracy: 0.99 - ETA: 2:41 - loss: 0.0316 - accuracy: 0.99 - ETA: 2:39 - loss: 0.0310 - accuracy: 0.99 - ETA: 2:37 - los
s: 0.0304 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0299 - accuracy: 0.99 - ETA: 2:32 - loss: 0.0293 - accuracy: 0.99 - ETA: 2:31 - loss:
0.0288 - accuracy: 0.99 - ETA: 2:29 - loss: 0.0283 - accuracy: 0.99 - ETA: 2:26 - loss: 0.0278 - accuracy: 0.99 - ETA: 2:24 - loss: 0.
0273 - accuracy: 0.99 - ETA: 2:22 - loss: 0.0269 - accuracy: 0.99 - ETA: 2:20 - loss: 0.0264 - accuracy: 0.99 - ETA: 2:20 - loss: 0.02
60 - accuracy: 0.99 - ETA: 2:18 - loss: 0.0256 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0251 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0247
- accuracy: 0.99 - ETA: 2:13 - loss: 0.0243 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0240 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0236 -
 accuracy: 0.99 - ETA: 2:09 - loss: 0.0232 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0229 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0225 - a
ccuracy: 0.99 - ETA: 2:06 - loss: 0.0222 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0219 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0216 - acc
uracy: 0.99 - ETA: 2:03 - loss: 0.0213 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0210 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0207 - accur
acy: 0.99 - ETA: 2:01 - loss: 0.0204 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0199 - accurac
y: 0.99 - ETA: 1:59 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0222 - accuracy:
0.99 - ETA: 1:55 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0214 - accuracy: 0.
99 - ETA: 1:54 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0207 - accuracy: 0.99
```

```
- ETA: 1:52 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0201 - accuracy: 0.99 -
 ETA: 1:51 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0194 - accuracy: 0.99 - E
TA: 1:48 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0213 - accuracy: 0.99 - ET
A: 1:46 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0207 - accuracy: 0.99 - ETA:
1:43 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:
42 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:42
- loss: 0.0194 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:42 -
 loss: 0.0229 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:41 - l
oss: 0.0224 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:39 - los
s: 0.0220 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:37 - loss:
0.0232 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:35 - loss: 0.
0228 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:33 - loss: 0.02
23 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0219
- accuracy: 0.99 - ETA: 1:31 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0215 -
 accuracy: 0.99 - ETA: 1:30 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0211 - a
ccuracy: 0.99 - ETA: 1:28 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0207 - acc
uracy: 0.99 - ETA: 1:26 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0203 - accur
acy: 0.99 - ETA: 1:25 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0199 - accurac
y: 0.99 - ETA: 1:25 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0195 - accuracy:
0.99 - ETA: 1:23 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0222 - accuracy: 0.
99 - ETA: 1:23 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0218 - accuracy: 0.99
- ETA: 1:21 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0215 - accuracy: 0.99 -
 ETA: 1:19 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0212 - accuracy: 0.99 - E
TA: 1:17 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0221 - accuracy: 0.99 - ET
A: 1:15 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0217 - accuracy: 0.99 - ETA:
1:13 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:
11 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:09
- loss: 0.0232 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:08 -
 loss: 0.0239 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:06 - l
oss: 0.0237 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:04 - los
s: 0.0235 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:03 - loss:
0.0232 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:02 - loss: 0.
0229 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:02 - loss: 0.02
26 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0223
- accuracy: 0.99 - ETA: 1:00 - loss: 0.0222 - accuracy: 0.99 - ETA: 59s - loss: 0.0221 - accuracy: 0.9973 - ETA: 59s - loss: 0.0220 -
 accuracy: 0.997 - ETA: 58s - loss: 0.0219 - accuracy: 0.997 - ETA: 58s - loss: 0.0218 - accuracy: 0.997 - ETA: 57s - loss: 0.0217 - a
ccuracy: 0.997 - ETA: 57s - loss: 0.0216 - accuracy: 0.997 - ETA: 56s - loss: 0.0215 - accuracy: 0.997 - ETA: 56s - loss: 0.0214 - acc
uracy: 0.997 - ETA: 55s - loss: 0.0213 - accuracy: 0.997 - ETA: 54s - loss: 0.0212 - accuracy: 0.997 - ETA: 54s - loss: 0.0211 - accur
acy: 0.997 - ETA: 53s - loss: 0.0210 - accuracy: 0.997 - ETA: 53s - loss: 0.0221 - accuracy: 0.997 - ETA: 52s - loss: 0.0220 - accurac
y: 0.997 - ETA: 52s - loss: 0.0219 - accuracy: 0.997 - ETA: 51s - loss: 0.0218 - accuracy: 0.997 - ETA: 51s - loss: 0.0217 - accuracy:
0.997 - ETA: 50s - loss: 0.0216 - accuracy: 0.997 - ETA: 50s - loss: 0.0215 - accuracy: 0.997 - ETA: 49s - loss: 0.0214 - accuracy: 0.
997 - ETA: 49s - loss: 0.0213 - accuracy: 0.997 - ETA: 48s - loss: 0.0212 - accuracy: 0.997 - ETA: 48s - loss: 0.0211 - accuracy: 0.99
7 - ETA: 47s - loss: 0.0210 - accuracy: 0.9974300/322 [==========================>...] - ETA: 47s - loss: 0.0210 - accuracy: 0.997 - E
TA: 46s - loss: 0.0209 - accuracy: 0.997 - ETA: 45s - loss: 0.0218 - accuracy: 0.997 - ETA: 45s - loss: 0.0217 - accuracy: 0.997 - ET
A: 44s - loss: 0.0216 - accuracy: 0.997 - ETA: 44s - loss: 0.0215 - accuracy: 0.997 - ETA: 44s - loss: 0.0214 - accuracy: 0.997 - ETA:
43s - loss: 0.0223 - accuracy: 0.997 - ETA: 42s - loss: 0.0222 - accuracy: 0.997 - ETA: 42s - loss: 0.0221 - accuracy: 0.997 - ETA: 41
s - loss: 0.0220 - accuracy: 0.997 - ETA: 41s - loss: 0.0220 - accuracy: 0.997 - ETA: 41s - loss: 0.0219 - accuracy: 0.997 - ETA: 40s
 - loss: 0.0218 - accuracy: 0.997 - ETA: 40s - loss: 0.0217 - accuracy: 0.997 - ETA: 39s - loss: 0.0217 - accuracy: 0.997 - ETA: 39s -
loss: 0.0216 - accuracy: 0.997 - ETA: 38s - loss: 0.0215 - accuracy: 0.997 - ETA: 38s - loss: 0.0214 - accuracy: 0.997 - ETA: 37s - lo
ss: 0.0214 - accuracy: 0.997 - ETA: 37s - loss: 0.0213 - accuracy: 0.997 - ETA: 36s - loss: 0.0212 - accuracy: 0.997 - ETA: 36s - los
s: 0.0211 - accuracy: 0.997 - ETA: 36s - loss: 0.0211 - accuracy: 0.997 - ETA: 35s - loss: 0.0217 - accuracy: 0.997 - ETA: 35s - loss:
0.0225 - accuracy: 0.997 - ETA: 34s - loss: 0.0224 - accuracy: 0.997 - ETA: 34s - loss: 0.0223 - accuracy: 0.997 - ETA: 33s - loss: 0.
0223 - accuracy: 0.997 - ETA: 33s - loss: 0.0222 - accuracy: 0.997 - ETA: 32s - loss: 0.0222 - accuracy: 0.997 - ETA: 32s - loss: 0.02
21 - accuracy: 0.997 - ETA: 31s - loss: 0.0220 - accuracy: 0.997 - ETA: 31s - loss: 0.0220 - accuracy: 0.997 - ETA: 31s - loss: 0.0219
- accuracy: 0.997 - ETA: 30s - loss: 0.0218 - accuracy: 0.997 - ETA: 30s - loss: 0.0218 - accuracy: 0.997 - ETA: 29s - loss: 0.0217 -
 accuracy: 0.997 - ETA: 29s - loss: 0.0216 - accuracy: 0.997 - ETA: 28s - loss: 0.0216 - accuracy: 0.997 - ETA: 28s - loss: 0.0215 - a
ccuracy: 0.997 - ETA: 28s - loss: 0.0214 - accuracy: 0.997 - ETA: 28s - loss: 0.0214 - accuracy: 0.997 - ETA: 27s - loss: 0.0213 - acc
uracy: 0.997 - ETA: 27s - loss: 0.0212 - accuracy: 0.997 - ETA: 26s - loss: 0.0212 - accuracy: 0.997 - ETA: 26s - loss: 0.0211 - accur
acy: 0.997 - ETA: 26s - loss: 0.0210 - accuracy: 0.997 - ETA: 25s - loss: 0.0210 - accuracy: 0.997 - ETA: 25s - loss: 0.0209 - accurac
y: 0.997 - ETA: 24s - loss: 0.0216 - accuracy: 0.997 - ETA: 24s - loss: 0.0215 - accuracy: 0.997 - ETA: 24s - loss: 0.0215 - accuracy:
0.997 - ETA: 23s - loss: 0.0214 - accuracy: 0.997 - ETA: 23s - loss: 0.0213 - accuracy: 0.997 - ETA: 22s - loss: 0.0213 - accuracy: 0.
997 - ETA: 22s - loss: 0.0212 - accuracy: 0.997 - ETA: 21s - loss: 0.0211 - accuracy: 0.997 - ETA: 21s - loss: 0.0211 - accuracy: 0.99
7 - ETA: 21s - loss: 0.0210 - accuracy: 0.997 - ETA: 20s - loss: 0.0209 - accuracy: 0.997 - ETA: 20s - loss: 0.0209 - accuracy: 0.997
 - ETA: 19s - loss: 0.0208 - accuracy: 0.997 - ETA: 19s - loss: 0.0208 - accuracy: 0.997 - ETA: 19s - loss: 0.0207 - accuracy: 0.997 -
ETA: 18s - loss: 0.0206 - accuracy: 0.997 - ETA: 18s - loss: 0.0206 - accuracy: 0.997 - ETA: 17s - loss: 0.0205 - accuracy: 0.997 - ET
A: 17s - loss: 0.0204 - accuracy: 0.997 - ETA: 17s - loss: 0.0204 - accuracy: 0.997 - ETA: 16s - loss: 0.0203 - accuracy: 0.997 - ETA:
16s - loss: 0.0202 - accuracy: 0.997 - ETA: 15s - loss: 0.0202 - accuracy: 0.997 - ETA: 15s - loss: 0.0201 - accuracy: 0.997 - ETA: 15
s - loss: 0.0208 - accuracy: 0.997 - ETA: 14s - loss: 0.0207 - accuracy: 0.997 - ETA: 14s - loss: 0.0207 - accuracy: 0.997 - ETA: 13s
 - loss: 0.0206 - accuracy: 0.997 - ETA: 13s - loss: 0.0206 - accuracy: 0.997 - ETA: 13s - loss: 0.0205 - accuracy: 0.997 - ETA: 12s -
loss: 0.0204 - accuracy: 0.997 - ETA: 12s - loss: 0.0204 - accuracy: 0.997 - ETA: 12s - loss: 0.0210 - accuracy: 0.997 - ETA: 11s - lo
ss: 0.0210 - accuracy: 0.997 - ETA: 11s - loss: 0.0209 - accuracy: 0.997 - ETA: 11s - loss: 0.0208 - accuracy: 0.997 - ETA: 10s - los
s: 0.0208 - accuracy: 0.997 - ETA: 10s - loss: 0.0213 - accuracy: 0.997 - ETA: 10s - loss: 0.0219 - accuracy: 0.997 - ETA: 9s - loss:
 0.0218 - accuracy: 0.997 - ETA: 9s - loss: 0.0218 - accuracy: 0.99 - ETA: 9s - loss: 0.0217 - accuracy: 0.99 - ETA: 8s - loss: 0.0217
- accuracy: 0.99 - ETA: 8s - loss: 0.0216 - accuracy: 0.9973WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the bat
ch update (0.180546). Check your callbacks.
322/322 [==============================] - ETA: 7s - loss: 0.0216 - accuracy: 0.99 - ETA: 7s - loss: 0.0215 - accuracy: 0.99 - ETA: 7s
- loss: 0.0215 - accuracy: 0.99 - ETA: 6s - loss: 0.0215 - accuracy: 0.99 - ETA: 6s - loss: 0.0214 - accuracy: 0.99 - ETA: 6s - loss:
 0.0214 - accuracy: 0.99 - ETA: 5s - loss: 0.0213 - accuracy: 0.99 - ETA: 5s - loss: 0.0213 - accuracy: 0.99 - ETA: 4s - loss: 0.0212
 - accuracy: 0.99 - ETA: 4s - loss: 0.0212 - accuracy: 0.99 - ETA: 4s - loss: 0.0211 - accuracy: 0.99 - ETA: 3s - loss: 0.0211 - accur
acy: 0.99 - ETA: 3s - loss: 0.0210 - accuracy: 0.99 - ETA: 3s - loss: 0.0210 - accuracy: 0.99 - ETA: 2s - loss: 0.0209 - accuracy: 0.9
9 - ETA: 2s - loss: 0.0209 - accuracy: 0.99 - ETA: 1s - loss: 0.0208 - accuracy: 0.99 - ETA: 1s - loss: 0.0207 - accuracy: 0.99 - ETA:
1s - loss: 0.0207 - accuracy: 0.99 - ETA: 0s - loss: 0.0206 - accuracy: 0.99 - ETA: 0s - loss: 0.0206 - accuracy: 0.99 - ETA: 0s - los
s: 0.0206 - accuracy: 0.99 - 128s 399ms/step - loss: 0.0206 - accuracy: 0.9975 - val_loss: 0.0233 - val_accuracy: 0.9968
Epoch 41/50
 29/322 [=>............................] - ETA: 0s - loss: 0.0030 - accuracy: 1.00 - ETA: 1:04 - loss: 0.0029 - accuracy: 1.00 - ETA:
 1:30 - loss: 0.0029 - accuracy: 1.00 - ETA: 1:54 - loss: 0.0028 - accuracy: 1.00 - ETA: 2:22 - loss: 0.0028 - accuracy: 1.00 - ETA:
 2:28 - loss: 0.0358 - accuracy: 0.99 - ETA: 2:38 - loss: 0.0311 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0535 - accuracy: 0.99 - ETA:
 2:19 - loss: 0.0480 - accuracy: 0.99 - ETA: 2:11 - loss: 0.0437 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0403 - accuracy: 0.99 - ETA:
 2:07 - loss: 0.0522 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0488 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0459 - accuracy: 0.99 - ETA:
 2:20 - loss: 0.0550 - accuracy: 0.99 - ETA: 2:19 - loss: 0.0625 - accuracy: 0.99 - ETA: 2:17 - loss: 0.0600 - accuracy: 0.99 - ETA:
 2:14 - loss: 0.0577 - accuracy: 0.99 - ETA: 2:11 - loss: 0.0557 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0537 - accuracy: 0.99 - ETA:
```

```
 2:10 - loss: 0.0519 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0501 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0485 - accuracy: 0.99 - ETA:
 2:27 - loss: 0.0470 - accuracy: 0.99 - ETA: 2:40 - loss: 0.0456 - accuracy: 0.99 - ETA: 2:40 - loss: 0.0443 - accuracy: 0.99 - ETA:
 2:37 - loss: 0.0431 - accuracy: 0.99 - ETA: 2:35 - loss: 0.0419 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0407 - accuracy: 0.9946WARNIN
G:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.200052). Check your callbacks.
139/322 [===========>.................] - ETA: 2:31 - loss: 0.0397 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0386 - accuracy: 0.99 - ET
A: 2:23 - loss: 0.0377 - accuracy: 0.99 - ETA: 2:20 - loss: 0.0367 - accuracy: 0.99 - ETA: 2:17 - loss: 0.0359 - accuracy: 0.99 - ETA:
2:14 - loss: 0.0350 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0342 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0334 - accuracy: 0.99 - ETA: 2:
08 - loss: 0.0326 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0319 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0312 - accuracy: 0.99 - ETA: 2:01
- loss: 0.0306 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0299 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0293 - accuracy: 0.99 - ETA: 1:56 -
 loss: 0.0287 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0282 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0276 - accuracy: 0.99 - ETA: 1:53 - l
oss: 0.0271 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:51 - los
s: 0.0256 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0292 - accuracy: 0.99 - ETA: 1:51 - loss:
0.0287 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0283 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0278 - accuracy: 0.99 - ETA: 1:48 - loss: 0.
0274 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0270 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:47 - loss: 0.02
62 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0258 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0288 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0284
- accuracy: 0.99 - ETA: 1:46 - loss: 0.0280 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0273 -
 accuracy: 0.99 - ETA: 1:43 - loss: 0.0270 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0292 - a
ccuracy: 0.99 - ETA: 1:42 - loss: 0.0289 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0285 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0282 - acc
uracy: 0.99 - ETA: 1:40 - loss: 0.0279 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0296 - accur
acy: 0.99 - ETA: 1:37 - loss: 0.0292 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0289 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0286 - accurac
y: 0.99 - ETA: 1:36 - loss: 0.0284 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0278 - accuracy:
0.99 - ETA: 1:34 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0270 - accuracy: 0.
99 - ETA: 1:32 - loss: 0.0288 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0286 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0283 - accuracy: 0.99
- ETA: 1:30 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0278 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0276 - accuracy: 0.99 -
 ETA: 1:28 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0269 - accuracy: 0.99 - E
TA: 1:26 - loss: 0.0284 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0282 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0280 - accuracy: 0.99 - ET
A: 1:24 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0273 - accuracy: 0.99 - ETA:
1:22 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0286 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0283 - accuracy: 0.99 - ETA: 1:
20 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0279 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:18
- loss: 0.0275 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:17 -
 loss: 0.0269 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:15 - l
oss: 0.0263 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0259 - accuracy: 0.99 - ETA: 1:13 - los
s: 0.0257 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0255 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0253 - accuracy: 0.99 - ETA: 1:12 - loss:
0.0251 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:11 - loss: 0.
0246 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:11 - loss: 0.02
41 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0236
- accuracy: 0.99 - ETA: 1:11 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0231 -
 accuracy: 0.99 - ETA: 1:13 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0226 - a
ccuracy: 0.99 - ETA: 1:13 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0221 - acc
uracy: 0.99 - ETA: 1:16 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0249 - accur
acy: 0.99 - ETA: 1:16 - loss: 0.0262 - accuracy: 0.9966WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch up
date (0.372591). Check your callbacks.
141/322 [============>................] - ETA: 1:16 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0271 - accuracy: 0.9965WARN
ING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.270566). Check your callbacks.
161/322 [==============>..............] - ETA: 1:16 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0270 - accuracy: 0.99 - ET
A: 1:17 - loss: 0.0270 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0269 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0268 - accuracy: 0.99 - ETA:
1:16 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0276 - accuracy: 0.99 - ETA: 1:
17 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0274 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:16
- loss: 0.0272 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0270 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0269 - accuracy: 0.99 - ETA: 1:17 -
 loss: 0.0268 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:18 - l
oss: 0.0265 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0264 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0263 - accuracy: 0.9967WARNING:tensorfl
ow:Method (on_train_batch_end) is slow compared to the batch update (0.329083). Check your callbacks.
164/322 [==============>..............] - ETA: 1:18 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0260 - accuracy: 0.99 - ET
A: 1:17 - loss: 0.0259 - accuracy: 0.9968WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.22805
8). Check your callbacks.
322/322 [==============================] - ETA: 1:16 - loss: 0.0258 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0256 - accuracy: 0.99 - ET
A: 1:15 - loss: 0.0255 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0253 - accuracy: 0.99 - ETA:
1:13 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0249 - accuracy: 0.99 - ETA: 1:
11 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0245 - accuracy: 0.99 - ETA: 1:09
- loss: 0.0244 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0243 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:09 -
 loss: 0.0241 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:07 - l
oss: 0.0248 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:07 - los
s: 0.0245 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0243 - accuracy: 0.99 - ETA: 1:06 - loss:
0.0242 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:04 - loss: 0.
0238 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:02 - loss: 0.02
35 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0232
- accuracy: 0.99 - ETA: 1:00 - loss: 0.0231 - accuracy: 0.99 - ETA: 59s - loss: 0.0230 - accuracy: 0.9972 - ETA: 59s - loss: 0.0239 -
 accuracy: 0.997 - ETA: 58s - loss: 0.0238 - accuracy: 0.997 - ETA: 58s - loss: 0.0237 - accuracy: 0.997 - ETA: 57s - loss: 0.0236 - a
ccuracy: 0.997 - ETA: 57s - loss: 0.0235 - accuracy: 0.997 - ETA: 56s - loss: 0.0234 - accuracy: 0.997 - ETA: 55s - loss: 0.0233 - acc
uracy: 0.997 - ETA: 55s - loss: 0.0232 - accuracy: 0.997 - ETA: 54s - loss: 0.0231 - accuracy: 0.997 - ETA: 54s - loss: 0.0230 - accur
acy: 0.997 - ETA: 53s - loss: 0.0229 - accuracy: 0.997 - ETA: 53s - loss: 0.0228 - accuracy: 0.997 - ETA: 52s - loss: 0.0228 - accurac
y: 0.997 - ETA: 52s - loss: 0.0227 - accuracy: 0.997 - ETA: 51s - loss: 0.0226 - accuracy: 0.997 - ETA: 51s - loss: 0.0225 - accuracy:
0.997 - ETA: 50s - loss: 0.0224 - accuracy: 0.997 - ETA: 50s - loss: 0.0223 - accuracy: 0.997 - ETA: 49s - loss: 0.0222 - accuracy: 0.
997 - ETA: 49s - loss: 0.0221 - accuracy: 0.997 - ETA: 48s - loss: 0.0220 - accuracy: 0.997 - ETA: 48s - loss: 0.0219 - accuracy: 0.99
7 - ETA: 47s - loss: 0.0219 - accuracy: 0.997 - ETA: 46s - loss: 0.0218 - accuracy: 0.997 - ETA: 46s - loss: 0.0217 - accuracy: 0.997
 - ETA: 45s - loss: 0.0216 - accuracy: 0.997 - ETA: 45s - loss: 0.0234 - accuracy: 0.997 - ETA: 44s - loss: 0.0233 - accuracy: 0.997 -
ETA: 44s - loss: 0.0232 - accuracy: 0.997 - ETA: 43s - loss: 0.0231 - accuracy: 0.997 - ETA: 43s - loss: 0.0230 - accuracy: 0.997 - ET
A: 42s - loss: 0.0230 - accuracy: 0.997 - ETA: 42s - loss: 0.0229 - accuracy: 0.997 - ETA: 41s - loss: 0.0228 - accuracy: 0.997 - ETA:
41s - loss: 0.0228 - accuracy: 0.997 - ETA: 40s - loss: 0.0227 - accuracy: 0.997 - ETA: 40s - loss: 0.0226 - accuracy: 0.997 - ETA: 39
s - loss: 0.0225 - accuracy: 0.997 - ETA: 38s - loss: 0.0225 - accuracy: 0.997 - ETA: 38s - loss: 0.0224 - accuracy: 0.997 - ETA: 38s
 - loss: 0.0223 - accuracy: 0.997 - ETA: 37s - loss: 0.0222 - accuracy: 0.997 - ETA: 36s - loss: 0.0229 - accuracy: 0.997 - ETA: 36s -
loss: 0.0229 - accuracy: 0.997 - ETA: 35s - loss: 0.0228 - accuracy: 0.997 - ETA: 35s - loss: 0.0227 - accuracy: 0.997 - ETA: 34s - lo
ss: 0.0226 - accuracy: 0.997 - ETA: 34s - loss: 0.0226 - accuracy: 0.997 - ETA: 33s - loss: 0.0225 - accuracy: 0.997 - ETA: 33s - los
s: 0.0224 - accuracy: 0.997 - ETA: 32s - loss: 0.0224 - accuracy: 0.997 - ETA: 32s - loss: 0.0223 - accuracy: 0.997 - ETA: 32s - loss:
0.0222 - accuracy: 0.997 - ETA: 31s - loss: 0.0221 - accuracy: 0.997 - ETA: 31s - loss: 0.0221 - accuracy: 0.997 - ETA: 30s - loss: 0.
0220 - accuracy: 0.997 - ETA: 29s - loss: 0.0219 - accuracy: 0.997 - ETA: 29s - loss: 0.0219 - accuracy: 0.997 - ETA: 29s - loss: 0.02
25 - accuracy: 0.997 - ETA: 28s - loss: 0.0224 - accuracy: 0.997 - ETA: 28s - loss: 0.0224 - accuracy: 0.997 - ETA: 27s - loss: 0.0223
- accuracy: 0.997 - ETA: 27s - loss: 0.0222 - accuracy: 0.997 - ETA: 27s - loss: 0.0222 - accuracy: 0.997 - ETA: 26s - loss: 0.0221 -
 accuracy: 0.997 - ETA: 26s - loss: 0.0220 - accuracy: 0.997 - ETA: 25s - loss: 0.0220 - accuracy: 0.997 - ETA: 25s - loss: 0.0219 - a
ccuracy: 0.997 - ETA: 24s - loss: 0.0218 - accuracy: 0.997 - ETA: 24s - loss: 0.0225 - accuracy: 0.997 - ETA: 23s - loss: 0.0224 - acc
uracy: 0.997 - ETA: 23s - loss: 0.0230 - accuracy: 0.997 - ETA: 22s - loss: 0.0230 - accuracy: 0.997 - ETA: 22s - loss: 0.0229 - accur
```

```
acy: 0.997 - ETA: 21s - loss: 0.0228 - accuracy: 0.997 - ETA: 21s - loss: 0.0228 - accuracy: 0.997 - ETA: 20s - loss: 0.0227 - accurac
y: 0.997 - ETA: 20s - loss: 0.0227 - accuracy: 0.997 - ETA: 20s - loss: 0.0226 - accuracy: 0.997 - ETA: 19s - loss: 0.0225 - accuracy:
0.997 - ETA: 19s - loss: 0.0225 - accuracy: 0.997 - ETA: 18s - loss: 0.0224 - accuracy: 0.997 - ETA: 18s - loss: 0.0224 - accuracy: 0.
997 - ETA: 17s - loss: 0.0223 - accuracy: 0.997 - ETA: 17s - loss: 0.0222 - accuracy: 0.997 - ETA: 16s - loss: 0.0222 - accuracy: 0.99
7 - ETA: 16s - loss: 0.0221 - accuracy: 0.997 - ETA: 15s - loss: 0.0221 - accuracy: 0.997 - ETA: 15s - loss: 0.0220 - accuracy: 0.997
 - ETA: 14s - loss: 0.0219 - accuracy: 0.997 - ETA: 14s - loss: 0.0219 - accuracy: 0.997 - ETA: 14s - loss: 0.0218 - accuracy: 0.997 -
ETA: 13s - loss: 0.0217 - accuracy: 0.997 - ETA: 13s - loss: 0.0217 - accuracy: 0.997 - ETA: 12s - loss: 0.0216 - accuracy: 0.997 - ET
A: 12s - loss: 0.0216 - accuracy: 0.997 - ETA: 11s - loss: 0.0215 - accuracy: 0.997 - ETA: 11s - loss: 0.0214 - accuracy: 0.997 - ETA:
11s - loss: 0.0214 - accuracy: 0.997 - ETA: 10s - loss: 0.0213 - accuracy: 0.997 - ETA: 10s - loss: 0.0212 - accuracy: 0.997 - ETA: 9s
- loss: 0.0219 - accuracy: 0.997 - ETA: 9s - loss: 0.0218 - accuracy: 0.99 - ETA: 8s - loss: 0.0217 - accuracy: 0.99 - ETA: 8s - loss:
0.0217 - accuracy: 0.99 - ETA: 7s - loss: 0.0216 - accuracy: 0.99 - ETA: 7s - loss: 0.0216 - accuracy: 0.99 - ETA: 6s - loss: 0.0215 -
accuracy: 0.99 - ETA: 6s - loss: 0.0214 - accuracy: 0.99 - ETA: 5s - loss: 0.0214 - accuracy: 0.99 - ETA: 5s - loss: 0.0213 - accurac
y: 0.99 - ETA: 5s - loss: 0.0213 - accuracy: 0.99 - ETA: 4s - loss: 0.0212 - accuracy: 0.99 - ETA: 4s - loss: 0.0211 - accuracy: 0.99
 - ETA: 3s - loss: 0.0211 - accuracy: 0.99 - ETA: 3s - loss: 0.0210 - accuracy: 0.99 - ETA: 2s - loss: 0.0210 - accuracy: 0.99 - ETA:
 2s - loss: 0.0209 - accuracy: 0.99 - ETA: 1s - loss: 0.0209 - accuracy: 0.99 - ETA: 1s - loss: 0.0208 - accuracy: 0.99 - ETA: 0s - lo
ss: 0.0207 - accuracy: 0.99 - ETA: 0s - loss: 0.0207 - accuracy: 0.99 - ETA: 0s - loss: 0.0207 - accuracy: 0.99 - 156s 486ms/step - lo
ss: 0.0207 - accuracy: 0.9975 - val_loss: 0.0240 - val_accuracy: 0.9968
Epoch 42/50
186/322 [================>............] - ETA: 0s - loss: 0.0025 - accuracy: 1.00 - ETA: 1:15 - loss: 0.0025 - accuracy: 1.00 - ETA:
 1:42 - loss: 0.0025 - accuracy: 1.00 - ETA: 1:39 - loss: 0.0025 - accuracy: 1.00 - ETA: 1:40 - loss: 0.0025 - accuracy: 1.00 - ETA:
 1:34 - loss: 0.0025 - accuracy: 1.00 - ETA: 1:27 - loss: 0.0312 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0276 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0399 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0369 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0344 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0324 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0425 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0403 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0485 - accuracy: 0.99 - ETA:
 1:13 - loss: 0.0464 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0530 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0512 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0497 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0482 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0468 - accuracy: 0.99 - ETA:
 1:32 - loss: 0.0454 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0441 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0429 - accuracy: 0.99 - ETA:
 1:38 - loss: 0.0417 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0406 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0396 - accuracy: 0.99 - ETA:
 1:42 - loss: 0.0386 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0377 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0368 - accuracy: 0.99 - ETA:
 1:47 - loss: 0.0359 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0351 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0343 - accuracy: 0.99 - ETA:
 1:42 - loss: 0.0335 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0328 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0321 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0314 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0307 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0301 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0295 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0289 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0283 - accuracy: 0.99 - ETA:
 1:34 - loss: 0.0278 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0272 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0267 - accuracy: 0.99 - ETA:
 1:31 - loss: 0.0262 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0258 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0253 - accuracy: 0.99 - ETA:
 1:28 - loss: 0.0249 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0240 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0229 - accuracy: 0.99 - ETA:
 1:24 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0218 - accuracy: 0.99 - ETA:
 1:21 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0243 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0234 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0225 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0217 - accuracy: 0.99 - ETA:
 1:15 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0238 - accuracy: 0.99 - ETA:
 1:14 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0230 - accuracy: 0.99 - ETA:
 1:15 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0248 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0243 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0241 - accuracy: 0.99 - ETA:
 1:17 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0277 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0274 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0291 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0289 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0287 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0285 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0283 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0282 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0280 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0278 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0273 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0269 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0267 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0279 - accuracy: 0.99 - ETA:
 1:21 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0273 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0285 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0283 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0295 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0293 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0291 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0289 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0288 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0286 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0284 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0282 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0279 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0277 - accuracy: 0.99 - ETA:
 1:17 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0274 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0272 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0285 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0283 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0282 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0280 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0278 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0276 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0275 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0273 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0271 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0284 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0282 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0280 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0279 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0276 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0274 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0272 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0271 - accuracy: 0.99 - ETA:
 1:17 - loss: 0.0269 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0268 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0266 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0263 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0262 - accuracy: 0.99 - ETA:
 1:15 - loss: 0.0260 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0259 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0257 - accuracy: 0.99 - ETA:
 1:15 - loss: 0.0256 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0253 - accuracy: 0.99 - ETA:
 1:13 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0249 - accuracy: 0.99 - ETA:
 1:12 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0244 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0243 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0240 - accuracy: 0.99 - ETA:
 1:10 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0237 - accuracy: 0.99 - ETA:
 1:09 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0233 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0229 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0226 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0222 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0219 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0227 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0226 - accuracy: 0.9971208/322 [==================>..........] - ETA: 59s - loss: 0.0225 - accuracy: 0.9972 - ETA: 59
s - loss: 0.0224 - accuracy: 0.997 - ETA: 59s - loss: 0.0223 - accuracy: 0.997 - ETA: 58s - loss: 0.0222 - accuracy: 0.997 - ETA: 58s
 - loss: 0.0221 - accuracy: 0.997 - ETA: 58s - loss: 0.0220 - accuracy: 0.997 - ETA: 57s - loss: 0.0219 - accuracy: 0.997 - ETA: 57s -
loss: 0.0218 - accuracy: 0.997 - ETA: 56s - loss: 0.0217 - accuracy: 0.997 - ETA: 56s - loss: 0.0216 - accuracy: 0.997 - ETA: 55s - lo
ss: 0.0215 - accuracy: 0.997 - ETA: 55s - loss: 0.0214 - accuracy: 0.997 - ETA: 55s - loss: 0.0213 - accuracy: 0.997 - ETA: 54s - los
s: 0.0212 - accuracy: 0.997 - ETA: 54s - loss: 0.0211 - accuracy: 0.997 - ETA: 54s - loss: 0.0210 - accuracy: 0.997 - ETA: 53s - loss:
0.0209 - accuracy: 0.997 - ETA: 53s - loss: 0.0209 - accuracy: 0.997 - ETA: 53s - loss: 0.0208 - accuracy: 0.997 - ETA: 52s - loss: 0.
0207 - accuracy: 0.997 - ETA: 52s - loss: 0.0206 - accuracy: 0.997 - ETA: 51s - loss: 0.0205 - accuracy: 0.9974WARNING:tensorflow:Meth
od (on_train_batch_end) is slow compared to the batch update (0.219553). Check your callbacks.
223/322 [===================>.........] - ETA: 51s - loss: 0.0204 - accuracy: 0.997 - ETA: 51s - loss: 0.0203 - accuracy: 0.997 - ET
A: 51s - loss: 0.0202 - accuracy: 0.997 - ETA: 51s - loss: 0.0202 - accuracy: 0.997 - ETA: 50s - loss: 0.0201 - accuracy: 0.997 - ETA:
```

```
50s - loss: 0.0200 - accuracy: 0.997 - ETA: 50s - loss: 0.0199 - accuracy: 0.997 - ETA: 49s - loss: 0.0198 - accuracy: 0.997 - ETA: 49
s - loss: 0.0197 - accuracy: 0.997 - ETA: 49s - loss: 0.0197 - accuracy: 0.997 - ETA: 48s - loss: 0.0196 - accuracy: 0.997 - ETA: 48s
 - loss: 0.0195 - accuracy: 0.997 - ETA: 48s - loss: 0.0194 - accuracy: 0.997 - ETA: 47s - loss: 0.0193 - accuracy: 0.997 - ETA: 47s -
loss: 0.0193 - accuracy: 0.9976WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.287574). Check y
our callbacks.
322/322 [==============================] - ETA: 46s - loss: 0.0192 - accuracy: 0.997 - ETA: 46s - loss: 0.0191 - accuracy: 0.997 - ET
A: 46s - loss: 0.0190 - accuracy: 0.997 - ETA: 46s - loss: 0.0190 - accuracy: 0.997 - ETA: 45s - loss: 0.0189 - accuracy: 0.997 - ETA:
45s - loss: 0.0188 - accuracy: 0.997 - ETA: 44s - loss: 0.0187 - accuracy: 0.997 - ETA: 44s - loss: 0.0196 - accuracy: 0.997 - ETA: 43
s - loss: 0.0196 - accuracy: 0.997 - ETA: 43s - loss: 0.0195 - accuracy: 0.997 - ETA: 42s - loss: 0.0194 - accuracy: 0.997 - ETA: 41s
 - loss: 0.0193 - accuracy: 0.997 - ETA: 41s - loss: 0.0193 - accuracy: 0.997 - ETA: 40s - loss: 0.0192 - accuracy: 0.997 - ETA: 40s -
loss: 0.0191 - accuracy: 0.997 - ETA: 39s - loss: 0.0191 - accuracy: 0.997 - ETA: 39s - loss: 0.0190 - accuracy: 0.997 - ETA: 38s - lo
ss: 0.0189 - accuracy: 0.997 - ETA: 38s - loss: 0.0189 - accuracy: 0.997 - ETA: 37s - loss: 0.0188 - accuracy: 0.997 - ETA: 37s - los
s: 0.0187 - accuracy: 0.997 - ETA: 36s - loss: 0.0196 - accuracy: 0.997 - ETA: 36s - loss: 0.0195 - accuracy: 0.997 - ETA: 35s - loss:
0.0194 - accuracy: 0.997 - ETA: 35s - loss: 0.0194 - accuracy: 0.997 - ETA: 34s - loss: 0.0193 - accuracy: 0.997 - ETA: 34s - loss: 0.
0192 - accuracy: 0.997 - ETA: 33s - loss: 0.0192 - accuracy: 0.997 - ETA: 33s - loss: 0.0191 - accuracy: 0.997 - ETA: 32s - loss: 0.01
90 - accuracy: 0.997 - ETA: 32s - loss: 0.0190 - accuracy: 0.997 - ETA: 31s - loss: 0.0197 - accuracy: 0.997 - ETA: 31s - loss: 0.0196
- accuracy: 0.997 - ETA: 31s - loss: 0.0196 - accuracy: 0.997 - ETA: 30s - loss: 0.0195 - accuracy: 0.997 - ETA: 30s - loss: 0.0194 -
 accuracy: 0.997 - ETA: 29s - loss: 0.0194 - accuracy: 0.997 - ETA: 29s - loss: 0.0193 - accuracy: 0.997 - ETA: 28s - loss: 0.0193 - a
ccuracy: 0.997 - ETA: 28s - loss: 0.0192 - accuracy: 0.997 - ETA: 27s - loss: 0.0192 - accuracy: 0.997 - ETA: 27s - loss: 0.0191 - acc
uracy: 0.997 - ETA: 27s - loss: 0.0190 - accuracy: 0.997 - ETA: 26s - loss: 0.0190 - accuracy: 0.997 - ETA: 26s - loss: 0.0189 - accur
acy: 0.997 - ETA: 25s - loss: 0.0189 - accuracy: 0.997 - ETA: 25s - loss: 0.0188 - accuracy: 0.997 - ETA: 24s - loss: 0.0188 - accurac
y: 0.997 - ETA: 24s - loss: 0.0187 - accuracy: 0.997 - ETA: 24s - loss: 0.0186 - accuracy: 0.997 - ETA: 23s - loss: 0.0186 - accuracy:
0.997 - ETA: 23s - loss: 0.0185 - accuracy: 0.997 - ETA: 22s - loss: 0.0185 - accuracy: 0.997 - ETA: 22s - loss: 0.0184 - accuracy: 0.
997 - ETA: 21s - loss: 0.0184 - accuracy: 0.997 - ETA: 21s - loss: 0.0183 - accuracy: 0.997 - ETA: 20s - loss: 0.0197 - accuracy: 0.99
7 - ETA: 20s - loss: 0.0197 - accuracy: 0.997 - ETA: 19s - loss: 0.0196 - accuracy: 0.997 - ETA: 19s - loss: 0.0196 - accuracy: 0.997
 - ETA: 18s - loss: 0.0195 - accuracy: 0.997 - ETA: 18s - loss: 0.0195 - accuracy: 0.997 - ETA: 17s - loss: 0.0194 - accuracy: 0.997 -
ETA: 17s - loss: 0.0194 - accuracy: 0.997 - ETA: 17s - loss: 0.0199 - accuracy: 0.997 - ETA: 16s - loss: 0.0199 - accuracy: 0.997 - ET
A: 16s - loss: 0.0204 - accuracy: 0.997 - ETA: 15s - loss: 0.0204 - accuracy: 0.997 - ETA: 15s - loss: 0.0203 - accuracy: 0.997 - ETA:
14s - loss: 0.0203 - accuracy: 0.997 - ETA: 14s - loss: 0.0203 - accuracy: 0.997 - ETA: 13s - loss: 0.0202 - accuracy: 0.997 - ETA: 13
s - loss: 0.0202 - accuracy: 0.997 - ETA: 12s - loss: 0.0201 - accuracy: 0.997 - ETA: 12s - loss: 0.0201 - accuracy: 0.997 - ETA: 11s
 - loss: 0.0201 - accuracy: 0.997 - ETA: 11s - loss: 0.0200 - accuracy: 0.997 - ETA: 10s - loss: 0.0200 - accuracy: 0.997 - ETA: 10s -
loss: 0.0199 - accuracy: 0.997 - ETA: 9s - loss: 0.0199 - accuracy: 0.997 - ETA: 9s - loss: 0.0198 - accuracy: 0.99 - ETA: 8s - loss:
 0.0198 - accuracy: 0.99 - ETA: 8s - loss: 0.0197 - accuracy: 0.99 - ETA: 7s - loss: 0.0197 - accuracy: 0.99 - ETA: 6s - loss: 0.0203
 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 5s - loss: 0.0208 - accuracy: 0.99 - ETA: 5s - loss: 0.0207 - accur
acy: 0.99 - ETA: 4s - loss: 0.0207 - accuracy: 0.99 - ETA: 4s - loss: 0.0206 - accuracy: 0.99 - ETA: 3s - loss: 0.0206 - accuracy: 0.9
9 - ETA: 3s - loss: 0.0206 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99 - ETA:
1s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0204 - accuracy: 0.99 - ETA: 0s - loss: 0.0203 - accuracy: 0.99 - ETA: 0s - los
s: 0.0203 - accuracy: 0.99 - ETA: 0s - loss: 0.0203 - accuracy: 0.99 - 163s 507ms/step - loss: 0.0203 - accuracy: 0.9975 - val_loss:
 0.0231 - val_accuracy: 0.9968
Epoch 43/50
186/322 [================>.............] - ETA: 0s - loss: 0.1843 - accuracy: 0.96 - ETA: 33s - loss: 0.0947 - accuracy: 0.984 - ETA:
 52s - loss: 0.0648 - accuracy: 0.989 - ETA: 1:11 - loss: 0.0949 - accuracy: 0.98 - ETA: 1:20 - loss: 0.0771 - accuracy: 0.98 - ETA:
 1:23 - loss: 0.0653 - accuracy: 0.98 - ETA: 1:21 - loss: 0.0569 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0507 - accuracy: 0.99 - ETA:
 1:24 - loss: 0.0647 - accuracy: 0.98 - ETA: 1:29 - loss: 0.0590 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0543 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0505 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0473 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0444 - accuracy: 0.99 - ETA:
 1:31 - loss: 0.0420 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0398 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0378 - accuracy: 0.99 - ETA:
 1:29 - loss: 0.0360 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0345 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0330 - accuracy: 0.99 - ETA:
 1:32 - loss: 0.0317 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0305 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0294 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0283 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0274 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0265 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0249 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0241 - accuracy: 0.99 - ETA:
 1:36 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0222 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0205 - accuracy: 0.99 - ETA:
 1:36 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0191 - accuracy: 0.99 - ETA:
 1:35 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0179 - accuracy: 0.99 - ETA:
 1:36 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0172 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0168 - accuracy: 0.99 - ETA:
 1:32 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0162 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0205 - accuracy: 0.99 - ETA:
 1:31 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0237 - accuracy: 0.99 - ETA:
 1:32 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0227 - accuracy: 0.99 - ETA:
 1:30 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0251 - accuracy: 0.99 - ETA:
 1:28 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0241 - accuracy: 0.99 - ETA:
 1:27 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0260 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0251 - accuracy: 0.99 - ETA:
 1:24 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0243 - accuracy: 0.99 - ETA:
 1:22 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0235 - accuracy: 0.99 - ETA:
 1:21 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0255 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0253 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0245 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0243 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0259 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0252 - accuracy: 0.99 - ETA:
 1:17 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0246 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0239 - accuracy: 0.99 - ETA:
 1:15 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0233 - accuracy: 0.99 - ETA:
 1:14 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0246 - accuracy: 0.99 - ETA:
 1:13 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0240 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0234 - accuracy: 0.99 - ETA:
 1:10 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0228 - accuracy: 0.99 - ETA:
 1:09 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0223 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0218 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0213 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0208 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0203 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0199 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0195 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0191 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0188 - accuracy: 0.99 - ETA: 59s - loss: 0.0187 - accuracy: 0.9976 - ETA:
 59s - loss: 0.0202 - accuracy: 0.997 - ETA: 59s - loss: 0.0201 - accuracy: 0.997 - ETA: 58s - loss: 0.0199 - accuracy: 0.997 - ETA: 5
8s - loss: 0.0198 - accuracy: 0.997 - ETA: 57s - loss: 0.0197 - accuracy: 0.997 - ETA: 57s - loss: 0.0196 - accuracy: 0.997 - ETA: 57s
- loss: 0.0194 - accuracy: 0.997 - ETA: 56s - loss: 0.0193 - accuracy: 0.997 - ETA: 56s - loss: 0.0207 - accuracy: 0.997 - ETA: 55s -
 loss: 0.0206 - accuracy: 0.997 - ETA: 55s - loss: 0.0205 - accuracy: 0.997 - ETA: 54s - loss: 0.0203 - accuracy: 0.997 - ETA: 54s - l
oss: 0.0202 - accuracy: 0.997 - ETA: 54s - loss: 0.0201 - accuracy: 0.997 - ETA: 54s - loss: 0.0200 - accuracy: 0.997 - ETA: 53s - los
s: 0.0199 - accuracy: 0.997 - ETA: 53s - loss: 0.0198 - accuracy: 0.997 - ETA: 53s - loss: 0.0197 - accuracy: 0.997 - ETA: 54s - loss:
0.0196 - accuracy: 0.997 - ETA: 54s - loss: 0.0195 - accuracy: 0.997 - ETA: 55s - loss: 0.0194 - accuracy: 0.997 - ETA: 55s - loss: 0.
```

```
0193 - accuracy: 0.997 - ETA: 54s - loss: 0.0192 - accuracy: 0.997 - ETA: 54s - loss: 0.0190 - accuracy: 0.997 - ETA: 55s - loss: 0.01
89 - accuracy: 0.997 - ETA: 55s - loss: 0.0188 - accuracy: 0.997 - ETA: 55s - loss: 0.0187 - accuracy: 0.997 - ETA: 54s - loss: 0.0187
- accuracy: 0.997 - ETA: 54s - loss: 0.0186 - accuracy: 0.997 - ETA: 54s - loss: 0.0185 - accuracy: 0.997 - ETA: 53s - loss: 0.0184 -
 accuracy: 0.997 - ETA: 53s - loss: 0.0183 - accuracy: 0.997 - ETA: 53s - loss: 0.0182 - accuracy: 0.997 - ETA: 53s - loss: 0.0181 - a
ccuracy: 0.997 - ETA: 53s - loss: 0.0180 - accuracy: 0.997 - ETA: 52s - loss: 0.0179 - accuracy: 0.997 - ETA: 52s - loss: 0.0178 - acc
uracy: 0.997 - ETA: 51s - loss: 0.0177 - accuracy: 0.997 - ETA: 51s - loss: 0.0176 - accuracy: 0.997 - ETA: 51s - loss: 0.0175 - accur
acy: 0.997 - ETA: 51s - loss: 0.0174 - accuracy: 0.997 - ETA: 51s - loss: 0.0174 - accuracy: 0.997 - ETA: 51s - loss: 0.0173 - accurac
y: 0.997 - ETA: 51s - loss: 0.0172 - accuracy: 0.997 - ETA: 51s - loss: 0.0171 - accuracy: 0.997 - ETA: 52s - loss: 0.0170 - accuracy:
0.997 - ETA: 51s - loss: 0.0169 - accuracy: 0.997 - ETA: 51s - loss: 0.0169 - accuracy: 0.997 - ETA: 50s - loss: 0.0168 - accuracy: 0.
997 - ETA: 50s - loss: 0.0179 - accuracy: 0.997 - ETA: 50s - loss: 0.0178 - accuracy: 0.997 - ETA: 50s - loss: 0.0177 - accuracy: 0.99
7 - ETA: 49s - loss: 0.0177 - accuracy: 0.997 - ETA: 49s - loss: 0.0176 - accuracy: 0.997 - ETA: 49s - loss: 0.0175 - accuracy: 0.9978
322/322 [==============================] - ETA: 48s - loss: 0.0174 - accuracy: 0.997 - ETA: 48s - loss: 0.0173 - accuracy: 0.997 - ET
A: 48s - loss: 0.0173 - accuracy: 0.997 - ETA: 47s - loss: 0.0172 - accuracy: 0.997 - ETA: 47s - loss: 0.0171 - accuracy: 0.997 - ETA:
47s - loss: 0.0170 - accuracy: 0.997 - ETA: 47s - loss: 0.0170 - accuracy: 0.997 - ETA: 46s - loss: 0.0169 - accuracy: 0.997 - ETA: 46
s - loss: 0.0168 - accuracy: 0.997 - ETA: 46s - loss: 0.0168 - accuracy: 0.997 - ETA: 46s - loss: 0.0167 - accuracy: 0.997 - ETA: 47s
 - loss: 0.0166 - accuracy: 0.997 - ETA: 47s - loss: 0.0165 - accuracy: 0.998 - ETA: 47s - loss: 0.0165 - accuracy: 0.998 - ETA: 47s -
loss: 0.0164 - accuracy: 0.998 - ETA: 46s - loss: 0.0163 - accuracy: 0.998 - ETA: 46s - loss: 0.0163 - accuracy: 0.998 - ETA: 46s - lo
ss: 0.0162 - accuracy: 0.998 - ETA: 46s - loss: 0.0161 - accuracy: 0.998 - ETA: 46s - loss: 0.0161 - accuracy: 0.998 - ETA: 46s - los
s: 0.0160 - accuracy: 0.998 - ETA: 45s - loss: 0.0159 - accuracy: 0.998 - ETA: 45s - loss: 0.0159 - accuracy: 0.998 - ETA: 45s - loss:
0.0158 - accuracy: 0.998 - ETA: 45s - loss: 0.0168 - accuracy: 0.997 - ETA: 45s - loss: 0.0167 - accuracy: 0.997 - ETA: 44s - loss: 0.
0167 - accuracy: 0.997 - ETA: 44s - loss: 0.0166 - accuracy: 0.998 - ETA: 44s - loss: 0.0165 - accuracy: 0.998 - ETA: 43s - loss: 0.01
65 - accuracy: 0.998 - ETA: 43s - loss: 0.0164 - accuracy: 0.998 - ETA: 43s - loss: 0.0173 - accuracy: 0.997 - ETA: 42s - loss: 0.0182
- accuracy: 0.997 - ETA: 42s - loss: 0.0182 - accuracy: 0.997 - ETA: 42s - loss: 0.0181 - accuracy: 0.997 - ETA: 41s - loss: 0.0189 -
 accuracy: 0.997 - ETA: 41s - loss: 0.0189 - accuracy: 0.997 - ETA: 41s - loss: 0.0189 - accuracy: 0.997 - ETA: 40s - loss: 0.0188 - a
ccuracy: 0.997 - ETA: 40s - loss: 0.0188 - accuracy: 0.997 - ETA: 39s - loss: 0.0188 - accuracy: 0.997 - ETA: 39s - loss: 0.0187 - acc
uracy: 0.997 - ETA: 39s - loss: 0.0187 - accuracy: 0.997 - ETA: 38s - loss: 0.0187 - accuracy: 0.997 - ETA: 38s - loss: 0.0200 - accur
acy: 0.997 - ETA: 37s - loss: 0.0200 - accuracy: 0.997 - ETA: 37s - loss: 0.0199 - accuracy: 0.997 - ETA: 37s - loss: 0.0199 - accurac
y: 0.997 - ETA: 36s - loss: 0.0199 - accuracy: 0.997 - ETA: 36s - loss: 0.0198 - accuracy: 0.997 - ETA: 35s - loss: 0.0198 - accuracy:
0.997 - ETA: 35s - loss: 0.0204 - accuracy: 0.997 - ETA: 35s - loss: 0.0204 - accuracy: 0.997 - ETA: 34s - loss: 0.0203 - accuracy: 0.
997 - ETA: 34s - loss: 0.0203 - accuracy: 0.997 - ETA: 33s - loss: 0.0203 - accuracy: 0.997 - ETA: 33s - loss: 0.0202 - accuracy: 0.99
7 - ETA: 32s - loss: 0.0202 - accuracy: 0.997 - ETA: 32s - loss: 0.0201 - accuracy: 0.997 - ETA: 31s - loss: 0.0201 - accuracy: 0.997
 - ETA: 31s - loss: 0.0200 - accuracy: 0.997 - ETA: 31s - loss: 0.0200 - accuracy: 0.997 - ETA: 30s - loss: 0.0206 - accuracy: 0.997 -
ETA: 30s - loss: 0.0205 - accuracy: 0.997 - ETA: 30s - loss: 0.0205 - accuracy: 0.997 - ETA: 29s - loss: 0.0204 - accuracy: 0.997 - ET
A: 29s - loss: 0.0204 - accuracy: 0.997 - ETA: 28s - loss: 0.0203 - accuracy: 0.997 - ETA: 28s - loss: 0.0203 - accuracy: 0.997 - ETA:
27s - loss: 0.0202 - accuracy: 0.997 - ETA: 27s - loss: 0.0201 - accuracy: 0.997 - ETA: 27s - loss: 0.0201 - accuracy: 0.997 - ETA: 26
s - loss: 0.0200 - accuracy: 0.997 - ETA: 26s - loss: 0.0200 - accuracy: 0.997 - ETA: 25s - loss: 0.0199 - accuracy: 0.997 - ETA: 25s
 - loss: 0.0198 - accuracy: 0.997 - ETA: 25s - loss: 0.0198 - accuracy: 0.997 - ETA: 24s - loss: 0.0197 - accuracy: 0.997 - ETA: 24s -
loss: 0.0197 - accuracy: 0.997 - ETA: 23s - loss: 0.0196 - accuracy: 0.997 - ETA: 23s - loss: 0.0195 - accuracy: 0.997 - ETA: 22s - lo
ss: 0.0195 - accuracy: 0.997 - ETA: 22s - loss: 0.0194 - accuracy: 0.997 - ETA: 22s - loss: 0.0193 - accuracy: 0.997 - ETA: 21s - los
s: 0.0193 - accuracy: 0.997 - ETA: 21s - loss: 0.0192 - accuracy: 0.997 - ETA: 20s - loss: 0.0192 - accuracy: 0.997 - ETA: 20s - loss:
0.0191 - accuracy: 0.997 - ETA: 19s - loss: 0.0190 - accuracy: 0.997 - ETA: 19s - loss: 0.0190 - accuracy: 0.997 - ETA: 19s - loss: 0.
0189 - accuracy: 0.997 - ETA: 18s - loss: 0.0197 - accuracy: 0.997 - ETA: 18s - loss: 0.0203 - accuracy: 0.997 - ETA: 17s - loss: 0.02
03 - accuracy: 0.997 - ETA: 17s - loss: 0.0202 - accuracy: 0.997 - ETA: 16s - loss: 0.0202 - accuracy: 0.997 - ETA: 16s - loss: 0.0201
- accuracy: 0.997 - ETA: 16s - loss: 0.0201 - accuracy: 0.997 - ETA: 15s - loss: 0.0200 - accuracy: 0.997 - ETA: 15s - loss: 0.0200 -
 accuracy: 0.997 - ETA: 14s - loss: 0.0199 - accuracy: 0.997 - ETA: 14s - loss: 0.0199 - accuracy: 0.997 - ETA: 13s - loss: 0.0198 - a
ccuracy: 0.997 - ETA: 13s - loss: 0.0198 - accuracy: 0.997 - ETA: 13s - loss: 0.0197 - accuracy: 0.997 - ETA: 12s - loss: 0.0196 - acc
uracy: 0.997 - ETA: 12s - loss: 0.0196 - accuracy: 0.997 - ETA: 11s - loss: 0.0195 - accuracy: 0.997 - ETA: 11s - loss: 0.0195 - accur
acy: 0.997 - ETA: 11s - loss: 0.0194 - accuracy: 0.997 - ETA: 10s - loss: 0.0194 - accuracy: 0.997 - ETA: 10s - loss: 0.0193 - accurac
y: 0.997 - ETA: 9s - loss: 0.0193 - accuracy: 0.997 - ETA: 9s - loss: 0.0199 - accuracy: 0.99 - ETA: 8s - loss: 0.0198 - accuracy: 0.9
9 - ETA: 8s - loss: 0.0198 - accuracy: 0.99 - ETA: 8s - loss: 0.0197 - accuracy: 0.99 - ETA: 7s - loss: 0.0197 - accuracy: 0.99 - ETA:
7s - loss: 0.0196 - accuracy: 0.99 - ETA: 6s - loss: 0.0196 - accuracy: 0.99 - ETA: 6s - loss: 0.0195 - accuracy: 0.99 - ETA: 5s - los
s: 0.0195 - accuracy: 0.99 - ETA: 5s - loss: 0.0194 - accuracy: 0.99 - ETA: 5s - loss: 0.0194 - accuracy: 0.99 - ETA: 4s - loss: 0.019
9 - accuracy: 0.99 - ETA: 4s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accuracy: 0.99 - ETA: 3s - loss: 0.0198 - accu
racy: 0.99 - ETA: 3s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss: 0.0197 - accuracy: 0.99 - ETA: 2s - loss: 0.0196 - accuracy: 0.
99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0201 - accuracy: 0.99 - ET
A: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - 149s 462ms/step - loss: 0.0200 - accuracy: 0.9975 -
 val_loss: 0.0230 - val_accuracy: 0.9968
Epoch 44/50
186/322 [================>............] - ETA: 0s - loss: 0.0054 - accuracy: 1.00 - ETA: 32s - loss: 0.0054 - accuracy: 1.000 - ETA:
 46s - loss: 0.0053 - accuracy: 1.000 - ETA: 1:20 - loss: 0.0053 - accuracy: 1.00 - ETA: 1:40 - loss: 0.0052 - accuracy: 1.00 - ETA:
 1:46 - loss: 0.0051 - accuracy: 1.00 - ETA: 1:54 - loss: 0.0050 - accuracy: 1.00 - ETA: 2:03 - loss: 0.0049 - accuracy: 1.00 - ETA:
 2:06 - loss: 0.0261 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0239 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0222 - accuracy: 0.99 - ETA:
 2:13 - loss: 0.0208 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0196 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0186 - accuracy: 0.99 - ETA:
 2:12 - loss: 0.0177 - accuracy: 0.99 - ETA: 2:18 - loss: 0.0169 - accuracy: 0.99 - ETA: 2:18 - loss: 0.0162 - accuracy: 0.99 - ETA:
 2:21 - loss: 0.0156 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0150 - accuracy: 0.99 - ETA: 2:23 - loss: 0.0144 - accuracy: 0.99 - ETA:
 2:24 - loss: 0.0139 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0135 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0130 - accuracy: 0.99 - ETA:
 2:24 - loss: 0.0126 - accuracy: 0.99 - ETA: 2:22 - loss: 0.0123 - accuracy: 0.99 - ETA: 2:25 - loss: 0.0119 - accuracy: 0.99 - ETA:
 2:25 - loss: 0.0116 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0113 - accuracy: 0.99 - ETA: 2:29 - loss: 0.0110 - accuracy: 0.99 - ETA:
 2:29 - loss: 0.0107 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0105 - accuracy: 0.99 - ETA: 2:26 - loss: 0.0102 - accuracy: 0.99 - ETA:
 2:27 - loss: 0.0100 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0098 - accuracy: 0.99 - ETA: 2:25 - loss: 0.0096 - accuracy: 0.99 - ETA:
 2:23 - loss: 0.0094 - accuracy: 0.99 - ETA: 2:23 - loss: 0.0146 - accuracy: 0.99 - ETA: 2:23 - loss: 0.0143 - accuracy: 0.99 - ETA:
 2:23 - loss: 0.0140 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0190 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0186 - accuracy: 0.99 - ETA:
 2:33 - loss: 0.0183 - accuracy: 0.99 - ETA: 2:32 - loss: 0.0222 - accuracy: 0.99 - ETA: 2:31 - loss: 0.0218 - accuracy: 0.99 - ETA:
 2:32 - loss: 0.0215 - accuracy: 0.99 - ETA: 2:33 - loss: 0.0213 - accuracy: 0.99 - ETA: 2:41 - loss: 0.0210 - accuracy: 0.99 - ETA:
 2:43 - loss: 0.0207 - accuracy: 0.99 - ETA: 2:40 - loss: 0.0204 - accuracy: 0.99 - ETA: 2:40 - loss: 0.0202 - accuracy: 0.99 - ETA:
 2:39 - loss: 0.0199 - accuracy: 0.99 - ETA: 2:38 - loss: 0.0196 - accuracy: 0.99 - ETA: 2:39 - loss: 0.0194 - accuracy: 0.99 - ETA:
 2:38 - loss: 0.0191 - accuracy: 0.99 - ETA: 2:37 - loss: 0.0189 - accuracy: 0.99 - ETA: 2:38 - loss: 0.0186 - accuracy: 0.99 - ETA:
 2:37 - loss: 0.0184 - accuracy: 0.99 - ETA: 2:36 - loss: 0.0182 - accuracy: 0.99 - ETA: 2:35 - loss: 0.0180 - accuracy: 0.99 - ETA:
 2:36 - loss: 0.0177 - accuracy: 0.99 - ETA: 2:37 - loss: 0.0175 - accuracy: 0.99 - ETA: 2:37 - loss: 0.0173 - accuracy: 0.99 - ETA:
 2:36 - loss: 0.0171 - accuracy: 0.99 - ETA: 2:35 - loss: 0.0169 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0167 - accuracy: 0.99 - ETA:
 2:34 - loss: 0.0165 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0163 - accuracy: 0.99 - ETA: 2:33 - loss: 0.0161 - accuracy: 0.99 - ETA:
 2:32 - loss: 0.0159 - accuracy: 0.99 - ETA: 2:32 - loss: 0.0157 - accuracy: 0.99 - ETA: 2:32 - loss: 0.0156 - accuracy: 0.99 - ETA:
 2:32 - loss: 0.0154 - accuracy: 0.99 - ETA: 2:31 - loss: 0.0152 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0150 - accuracy: 0.99 - ETA:
 2:29 - loss: 0.0149 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0147 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0146 - accuracy: 0.99 - ETA:
 2:30 - loss: 0.0144 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0143 - accuracy: 0.99 - ETA: 2:29 - loss: 0.0141 - accuracy: 0.99 - ETA:
 2:29 - loss: 0.0140 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0138 - accuracy: 0.99 - ETA: 2:31 - loss: 0.0137 - accuracy: 0.99 - ETA:
 2:30 - loss: 0.0135 - accuracy: 0.99 - ETA: 2:29 - loss: 0.0134 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0133 - accuracy: 0.99 - ETA:
 2:29 - loss: 0.0132 - accuracy: 0.99 - ETA: 2:29 - loss: 0.0130 - accuracy: 0.99 - ETA: 2:29 - loss: 0.0129 - accuracy: 0.99 - ETA:
 2:27 - loss: 0.0128 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0127 - accuracy: 0.99 - ETA: 2:26 - loss: 0.0126 - accuracy: 0.99 - ETA:
 2:25 - loss: 0.0124 - accuracy: 0.99 - ETA: 2:24 - loss: 0.0123 - accuracy: 0.99 - ETA: 2:23 - loss: 0.0122 - accuracy: 0.99 - ETA:
 2:23 - loss: 0.0121 - accuracy: 0.99 - ETA: 2:22 - loss: 0.0120 - accuracy: 0.99 - ETA: 2:21 - loss: 0.0119 - accuracy: 0.99 - ETA:
```

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 2:20 - loss: 0.0118 - accuracy: 0.99 - ETA: 2:20 - loss: 0.0117 - accuracy: 0.99 - ETA: 2:19 - loss: 0.0116 - accuracy: 0.99 - ETA:
 2:18 - loss: 0.0115 - accuracy: 0.99 - ETA: 2:18 - loss: 0.0114 - accuracy: 0.99 - ETA: 2:17 - loss: 0.0113 - accuracy: 0.99 - ETA:
 2:17 - loss: 0.0113 - accuracy: 0.99 - ETA: 2:16 - loss: 0.0112 - accuracy: 0.99 - ETA: 2:15 - loss: 0.0111 - accuracy: 0.99 - ETA:
 2:15 - loss: 0.0110 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0109 - accuracy: 0.99 - ETA: 2:13 - loss: 0.0108 - accuracy: 0.99 - ETA:
 2:13 - loss: 0.0129 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0128 - accuracy: 0.99 - ETA: 2:11 - loss: 0.0127 - accuracy: 0.99 - ETA:
 2:10 - loss: 0.0126 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0126 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0125 - accuracy: 0.99 - ETA:
 2:09 - loss: 0.0124 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0141 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0140 - accuracy: 0.99 - ETA:
 2:07 - loss: 0.0139 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0138 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0138 - accuracy: 0.99 - ETA:
 2:06 - loss: 0.0137 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0136 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0135 - accuracy: 0.99 - ETA:
 2:03 - loss: 0.0134 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0134 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0133 - accuracy: 0.99 - ETA:
 2:01 - loss: 0.0132 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0131 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0131 - accuracy: 0.99 - ETA:
 1:58 - loss: 0.0130 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0144 - accuracy: 0.99 - ETA:
 1:56 - loss: 0.0143 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0143 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0142 - accuracy: 0.99 - ETA:
 1:54 - loss: 0.0141 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0140 - accuracy: 0.99 - ETA:
 1:51 - loss: 0.0139 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0138 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0138 - accuracy: 0.99 - ETA:
 1:48 - loss: 0.0137 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0136 - accuracy: 0.99 - ETA:
 1:47 - loss: 0.0135 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0134 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0134 - accuracy: 0.99 - ETA:
 1:45 - loss: 0.0133 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0132 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0132 - accuracy: 0.99 - ETA:
 1:42 - loss: 0.0131 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0130 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0130 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0129 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0128 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0128 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0139 - accuracy: 0.99 - ETA:
 1:38 - loss: 0.0138 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0138 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0137 - accuracy: 0.99 - ETA:
 1:36 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0135 - accuracy: 0.99 - ETA:
 1:34 - loss: 0.0146 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0145 - accuracy: 0.99 - ETA:
 1:32 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0143 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0143 - accuracy: 0.99 - ETA:
 1:30 - loss: 0.0142 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0142 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0141 - accuracy: 0.99 - ETA:
 1:28 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0150 - accuracy: 0.99 - ETA:
 1:26 - loss: 0.0150 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0149 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0149 - accuracy: 0.99 - ETA:
 1:23 - loss: 0.0148 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0147 - accuracy: 0.99 - ETA:
 1:21 - loss: 0.0146 - accuracy: 0.9983322/322 [==============================] - ETA: 1:20 - loss: 0.0146 - accuracy: 0.99 - ETA: 1:2
0 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:17
 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0143 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0143 - accuracy: 0.99 - ETA: 1:15 -
loss: 0.0142 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0141 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0141 - accuracy: 0.99 - ETA: 1:13 - lo
ss: 0.0140 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0139 - accuracy: 0.99 - ETA: 1:10 - los
s: 0.0148 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:08 - loss:
0.0146 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0146 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:06 - loss: 0.
0145 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:04 - loss: 0.01
43 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0143 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0142 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0142
- accuracy: 0.99 - ETA: 1:01 - loss: 0.0141 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0141 - accuracy: 0.99 - ETA: 59s - loss: 0.0149 - a
ccuracy: 0.9983 - ETA: 59s - loss: 0.0149 - accuracy: 0.998 - ETA: 58s - loss: 0.0148 - accuracy: 0.998 - ETA: 57s - loss: 0.0148 - ac
curacy: 0.998 - ETA: 57s - loss: 0.0147 - accuracy: 0.998 - ETA: 56s - loss: 0.0147 - accuracy: 0.998 - ETA: 55s - loss: 0.0146 - accu
racy: 0.998 - ETA: 55s - loss: 0.0146 - accuracy: 0.998 - ETA: 54s - loss: 0.0153 - accuracy: 0.998 - ETA: 53s - loss: 0.0152 - accura
cy: 0.998 - ETA: 53s - loss: 0.0152 - accuracy: 0.998 - ETA: 52s - loss: 0.0151 - accuracy: 0.998 - ETA: 51s - loss: 0.0151 - accurac
y: 0.998 - ETA: 51s - loss: 0.0151 - accuracy: 0.998 - ETA: 50s - loss: 0.0150 - accuracy: 0.998 - ETA: 49s - loss: 0.0150 - accuracy:
0.998 - ETA: 49s - loss: 0.0149 - accuracy: 0.998 - ETA: 48s - loss: 0.0149 - accuracy: 0.998 - ETA: 47s - loss: 0.0156 - accuracy: 0.
998 - ETA: 47s - loss: 0.0156 - accuracy: 0.998 - ETA: 46s - loss: 0.0163 - accuracy: 0.998 - ETA: 46s - loss: 0.0163 - accuracy: 0.99
8 - ETA: 45s - loss: 0.0162 - accuracy: 0.998 - ETA: 44s - loss: 0.0162 - accuracy: 0.998 - ETA: 44s - loss: 0.0162 - accuracy: 0.998
 - ETA: 43s - loss: 0.0161 - accuracy: 0.998 - ETA: 42s - loss: 0.0161 - accuracy: 0.998 - ETA: 42s - loss: 0.0160 - accuracy: 0.998 -
ETA: 41s - loss: 0.0167 - accuracy: 0.997 - ETA: 41s - loss: 0.0166 - accuracy: 0.998 - ETA: 40s - loss: 0.0173 - accuracy: 0.997 - ET
A: 39s - loss: 0.0172 - accuracy: 0.997 - ETA: 39s - loss: 0.0172 - accuracy: 0.997 - ETA: 38s - loss: 0.0172 - accuracy: 0.997 - ETA:
38s - loss: 0.0171 - accuracy: 0.997 - ETA: 37s - loss: 0.0171 - accuracy: 0.997 - ETA: 36s - loss: 0.0171 - accuracy: 0.997 - ETA: 36
s - loss: 0.0170 - accuracy: 0.997 - ETA: 35s - loss: 0.0170 - accuracy: 0.997 - ETA: 35s - loss: 0.0170 - accuracy: 0.997 - ETA: 34s
 - loss: 0.0169 - accuracy: 0.997 - ETA: 34s - loss: 0.0169 - accuracy: 0.997 - ETA: 33s - loss: 0.0168 - accuracy: 0.997 - ETA: 32s -
loss: 0.0168 - accuracy: 0.997 - ETA: 32s - loss: 0.0168 - accuracy: 0.997 - ETA: 31s - loss: 0.0167 - accuracy: 0.998 - ETA: 31s - lo
ss: 0.0167 - accuracy: 0.998 - ETA: 30s - loss: 0.0174 - accuracy: 0.997 - ETA: 30s - loss: 0.0173 - accuracy: 0.997 - ETA: 29s - los
s: 0.0180 - accuracy: 0.997 - ETA: 28s - loss: 0.0179 - accuracy: 0.997 - ETA: 28s - loss: 0.0179 - accuracy: 0.997 - ETA: 27s - loss:
0.0178 - accuracy: 0.997 - ETA: 27s - loss: 0.0178 - accuracy: 0.997 - ETA: 26s - loss: 0.0178 - accuracy: 0.997 - ETA: 26s - loss: 0.
0184 - accuracy: 0.997 - ETA: 25s - loss: 0.0183 - accuracy: 0.997 - ETA: 25s - loss: 0.0189 - accuracy: 0.997 - ETA: 24s - loss: 0.01
89 - accuracy: 0.997 - ETA: 23s - loss: 0.0188 - accuracy: 0.997 - ETA: 23s - loss: 0.0194 - accuracy: 0.997 - ETA: 23s - loss: 0.0194
- accuracy: 0.997 - ETA: 22s - loss: 0.0193 - accuracy: 0.997 - ETA: 22s - loss: 0.0193 - accuracy: 0.997 - ETA: 21s - loss: 0.0193 -
 accuracy: 0.997 - ETA: 21s - loss: 0.0193 - accuracy: 0.997 - ETA: 20s - loss: 0.0192 - accuracy: 0.997 - ETA: 20s - loss: 0.0192 - a
ccuracy: 0.997 - ETA: 19s - loss: 0.0192 - accuracy: 0.997 - ETA: 19s - loss: 0.0191 - accuracy: 0.997 - ETA: 18s - loss: 0.0191 - acc
uracy: 0.997 - ETA: 18s - loss: 0.0191 - accuracy: 0.997 - ETA: 17s - loss: 0.0190 - accuracy: 0.997 - ETA: 17s - loss: 0.0190 - accur
acy: 0.997 - ETA: 16s - loss: 0.0189 - accuracy: 0.997 - ETA: 16s - loss: 0.0189 - accuracy: 0.997 - ETA: 15s - loss: 0.0188 - accurac
y: 0.997 - ETA: 15s - loss: 0.0188 - accuracy: 0.997 - ETA: 14s - loss: 0.0194 - accuracy: 0.997 - ETA: 14s - loss: 0.0194 - accuracy:
0.997 - ETA: 13s - loss: 0.0193 - accuracy: 0.997 - ETA: 13s - loss: 0.0193 - accuracy: 0.997 - ETA: 12s - loss: 0.0192 - accuracy: 0.
997 - ETA: 12s - loss: 0.0192 - accuracy: 0.997 - ETA: 11s - loss: 0.0191 - accuracy: 0.997 - ETA: 11s - loss: 0.0191 - accuracy: 0.99
7 - ETA: 10s - loss: 0.0190 - accuracy: 0.997 - ETA: 9s - loss: 0.0190 - accuracy: 0.997 - ETA: 9s - loss: 0.0189 - accuracy: 0.99 - E
TA: 8s - loss: 0.0189 - accuracy: 0.99 - ETA: 8s - loss: 0.0189 - accuracy: 0.99 - ETA: 7s - loss: 0.0194 - accuracy: 0.99 - ETA: 7s -
loss: 0.0194 - accuracy: 0.99 - ETA: 6s - loss: 0.0193 - accuracy: 0.99 - ETA: 6s - loss: 0.0193 - accuracy: 0.99 - ETA: 5s - loss: 0.
0192 - accuracy: 0.99 - ETA: 5s - loss: 0.0198 - accuracy: 0.99 - ETA: 4s - loss: 0.0197 - accuracy: 0.99 - ETA: 4s - loss: 0.0197 - a
ccuracy: 0.99 - ETA: 3s - loss: 0.0196 - accuracy: 0.99 - ETA: 3s - loss: 0.0201 - accuracy: 0.99 - ETA: 2s - loss: 0.0201 - accuracy:
0.99 - ETA: 2s - loss: 0.0200 - accuracy: 0.99 - ETA: 1s - loss: 0.0200 - accuracy: 0.99 - ETA: 1s - loss: 0.0199 - accuracy: 0.99 - E
TA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0198 - accuracy: 0.99 - 163s 506m
s/step - loss: 0.0198 - accuracy: 0.9975 - val_loss: 0.0232 - val_accuracy: 0.9968
Epoch 45/50
186/322 [================>.............] - ETA: 0s - loss: 0.0060 - accuracy: 1.00 - ETA: 58s - loss: 0.0059 - accuracy: 1.000 - ETA:
 1:23 - loss: 0.0059 - accuracy: 1.00 - ETA: 1:30 - loss: 0.0057 - accuracy: 1.00 - ETA: 1:46 - loss: 0.0056 - accuracy: 1.00 - ETA:
 1:42 - loss: 0.0055 - accuracy: 1.00 - ETA: 1:42 - loss: 0.0054 - accuracy: 1.00 - ETA: 1:46 - loss: 0.0053 - accuracy: 1.00 - ETA:
 1:55 - loss: 0.0052 - accuracy: 1.00 - ETA: 1:55 - loss: 0.0051 - accuracy: 1.00 - ETA: 1:54 - loss: 0.0050 - accuracy: 1.00 - ETA:
 1:49 - loss: 0.0049 - accuracy: 1.00 - ETA: 1:56 - loss: 0.0048 - accuracy: 1.00 - ETA: 1:56 - loss: 0.0048 - accuracy: 1.00 - ETA:
 1:53 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0275 - accuracy: 0.99 - ETA:
 1:51 - loss: 0.0263 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0242 - accuracy: 0.99 - ETA:
 1:53 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0219 - accuracy: 0.99 - ETA:
 1:51 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0201 - accuracy: 0.99 - ETA:
 1:53 - loss: 0.0260 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0253 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0246 - accuracy: 0.99 - ETA:
 1:55 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0228 - accuracy: 0.99 - ETA:
 1:53 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0213 - accuracy: 0.99 - ETA:
 1:58 - loss: 0.0209 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0250 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0245 - accuracy: 0.99 - ETA:
 2:03 - loss: 0.0240 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0279 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0273 - accuracy: 0.99 - ETA:
 2:04 - loss: 0.0268 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0264 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0260 - accuracy: 0.99 - ETA:
```

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 2:03 - loss: 0.0256 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0252 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0248 - accuracy: 0.99 - ETA:
 2:04 - loss: 0.0244 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0240 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0237 - accuracy: 0.99 - ETA:
 2:03 - loss: 0.0233 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0230 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0226 - accuracy: 0.99 - ETA:
 2:02 - loss: 0.0223 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0216 - accuracy: 0.99 - ETA:
 1:58 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0207 - accuracy: 0.99 - ETA:
 1:55 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0199 - accuracy: 0.99 - ETA:
 1:52 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0222 - accuracy: 0.99 - ETA:
 1:50 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0214 - accuracy: 0.99 - ETA:
 1:48 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0207 - accuracy: 0.99 - ETA:
 1:46 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0200 - accuracy: 0.99 - ETA:
 1:44 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0220 - accuracy: 0.99 - ETA:
 1:43 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0213 - accuracy: 0.99 - ETA:
 1:40 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0207 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0201 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0195 - accuracy: 0.99 - ETA:
 1:37 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0212 - accuracy: 0.99 - ETA:
 1:35 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0206 - accuracy: 0.99 - ETA:
 1:33 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0221 - accuracy: 0.99 - ETA:
 1:32 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0234 - accuracy: 0.99 - ETA:
 1:30 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0229 - accuracy: 0.99 - ETA:
 1:28 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0225 - accuracy: 0.99 - ETA:
 1:26 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0220 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0216 - accuracy: 0.99 - ETA:
 1:23 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0226 - accuracy: 0.99 - ETA:
 1:21 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0222 - accuracy: 0.99 - ETA:
 1:20 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0233 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0243 - accuracy: 0.99 - ETA:
 1:17 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0239 - accuracy: 0.99 - ETA:
 1:16 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0260 - accuracy: 0.99 - ETA:
 1:14 - loss: 0.0259 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0258 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0257 - accuracy: 0.99 - ETA:
 1:13 - loss: 0.0255 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0253 - accuracy: 0.99 - ETA:
 1:12 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0250 - accuracy: 0.99 - ETA:
 1:10 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0246 - accuracy: 0.99 - ETA:
 1:09 - loss: 0.0245 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0243 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0242 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0251 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0248 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0247 - accuracy: 0.99 - ETA:
 1:06 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0245 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0243 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0240 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0248 - accuracy: 0.99 - ETA:
 1:03 - loss: 0.0247 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0245 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0244 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0243 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0240 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0237 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0233 - accuracy: 0.99 - ETA: 5
9s - loss: 0.0232 - accuracy: 0.9969 - ETA: 59s - loss: 0.0231 - accuracy: 0.997 - ETA: 59s - loss: 0.0230 - accuracy: 0.997 - ETA: 58
s - loss: 0.0229 - accuracy: 0.997 - ETA: 58s - loss: 0.0228 - accuracy: 0.997 - ETA: 57s - loss: 0.0227 - accuracy: 0.997 - ETA: 57s
 - loss: 0.0226 - accuracy: 0.997 - ETA: 56s - loss: 0.0224 - accuracy: 0.997 - ETA: 56s - loss: 0.0223 - accuracy: 0.997 - ETA: 55s -
loss: 0.0222 - accuracy: 0.997 - ETA: 55s - loss: 0.0221 - accuracy: 0.997 - ETA: 55s - loss: 0.0220 - accuracy: 0.997 - ETA: 54s - lo
ss: 0.0219 - accuracy: 0.9971322/322 [==============================] - ETA: 54s - loss: 0.0218 - accuracy: 0.997 - ETA: 53s - loss:
 0.0217 - accuracy: 0.997 - ETA: 53s - loss: 0.0216 - accuracy: 0.997 - ETA: 52s - loss: 0.0215 - accuracy: 0.997 - ETA: 52s - loss:
 0.0214 - accuracy: 0.997 - ETA: 52s - loss: 0.0213 - accuracy: 0.997 - ETA: 51s - loss: 0.0212 - accuracy: 0.997 - ETA: 51s - loss:
 0.0211 - accuracy: 0.997 - ETA: 51s - loss: 0.0210 - accuracy: 0.997 - ETA: 50s - loss: 0.0209 - accuracy: 0.997 - ETA: 50s - loss:
 0.0208 - accuracy: 0.997 - ETA: 49s - loss: 0.0207 - accuracy: 0.997 - ETA: 49s - loss: 0.0206 - accuracy: 0.997 - ETA: 48s - loss:
 0.0205 - accuracy: 0.997 - ETA: 48s - loss: 0.0205 - accuracy: 0.997 - ETA: 47s - loss: 0.0204 - accuracy: 0.997 - ETA: 47s - loss:
 0.0214 - accuracy: 0.997 - ETA: 47s - loss: 0.0213 - accuracy: 0.997 - ETA: 46s - loss: 0.0223 - accuracy: 0.997 - ETA: 46s - loss:
 0.0222 - accuracy: 0.997 - ETA: 46s - loss: 0.0221 - accuracy: 0.997 - ETA: 45s - loss: 0.0220 - accuracy: 0.997 - ETA: 45s - loss:
 0.0219 - accuracy: 0.997 - ETA: 44s - loss: 0.0219 - accuracy: 0.997 - ETA: 44s - loss: 0.0218 - accuracy: 0.997 - ETA: 43s - loss:
 0.0217 - accuracy: 0.997 - ETA: 43s - loss: 0.0216 - accuracy: 0.997 - ETA: 43s - loss: 0.0215 - accuracy: 0.997 - ETA: 42s - loss:
 0.0215 - accuracy: 0.997 - ETA: 42s - loss: 0.0223 - accuracy: 0.997 - ETA: 41s - loss: 0.0222 - accuracy: 0.997 - ETA: 41s - loss:
 0.0229 - accuracy: 0.997 - ETA: 40s - loss: 0.0228 - accuracy: 0.997 - ETA: 40s - loss: 0.0227 - accuracy: 0.997 - ETA: 40s - loss:
 0.0227 - accuracy: 0.997 - ETA: 39s - loss: 0.0226 - accuracy: 0.997 - ETA: 39s - loss: 0.0225 - accuracy: 0.997 - ETA: 38s - loss:
 0.0224 - accuracy: 0.997 - ETA: 38s - loss: 0.0224 - accuracy: 0.997 - ETA: 38s - loss: 0.0223 - accuracy: 0.997 - ETA: 37s - loss:
 0.0222 - accuracy: 0.997 - ETA: 37s - loss: 0.0222 - accuracy: 0.997 - ETA: 36s - loss: 0.0221 - accuracy: 0.997 - ETA: 36s - loss:
 0.0220 - accuracy: 0.997 - ETA: 35s - loss: 0.0219 - accuracy: 0.997 - ETA: 35s - loss: 0.0219 - accuracy: 0.997 - ETA: 35s - loss:
 0.0218 - accuracy: 0.997 - ETA: 34s - loss: 0.0225 - accuracy: 0.997 - ETA: 34s - loss: 0.0224 - accuracy: 0.997 - ETA: 34s - loss:
 0.0223 - accuracy: 0.997 - ETA: 33s - loss: 0.0223 - accuracy: 0.997 - ETA: 33s - loss: 0.0222 - accuracy: 0.997 - ETA: 32s - loss:
 0.0221 - accuracy: 0.997 - ETA: 32s - loss: 0.0221 - accuracy: 0.997 - ETA: 31s - loss: 0.0220 - accuracy: 0.997 - ETA: 31s - loss:
 0.0219 - accuracy: 0.997 - ETA: 31s - loss: 0.0219 - accuracy: 0.997 - ETA: 30s - loss: 0.0218 - accuracy: 0.997 - ETA: 30s - loss:
 0.0217 - accuracy: 0.997 - ETA: 30s - loss: 0.0216 - accuracy: 0.997 - ETA: 29s - loss: 0.0216 - accuracy: 0.997 - ETA: 29s - loss:
 0.0223 - accuracy: 0.997 - ETA: 28s - loss: 0.0222 - accuracy: 0.997 - ETA: 28s - loss: 0.0221 - accuracy: 0.997 - ETA: 28s - loss:
 0.0220 - accuracy: 0.997 - ETA: 27s - loss: 0.0220 - accuracy: 0.997 - ETA: 27s - loss: 0.0219 - accuracy: 0.997 - ETA: 26s - loss:
 0.0218 - accuracy: 0.997 - ETA: 26s - loss: 0.0218 - accuracy: 0.997 - ETA: 26s - loss: 0.0217 - accuracy: 0.997 - ETA: 25s - loss:
 0.0216 - accuracy: 0.997 - ETA: 25s - loss: 0.0216 - accuracy: 0.997 - ETA: 24s - loss: 0.0215 - accuracy: 0.997 - ETA: 24s - loss:
 0.0214 - accuracy: 0.997 - ETA: 24s - loss: 0.0213 - accuracy: 0.997 - ETA: 23s - loss: 0.0213 - accuracy: 0.997 - ETA: 23s - loss:
 0.0212 - accuracy: 0.997 - ETA: 22s - loss: 0.0211 - accuracy: 0.997 - ETA: 22s - loss: 0.0211 - accuracy: 0.997 - ETA: 22s - loss:
 0.0210 - accuracy: 0.997 - ETA: 21s - loss: 0.0209 - accuracy: 0.997 - ETA: 21s - loss: 0.0209 - accuracy: 0.997 - ETA: 20s - loss:
 0.0208 - accuracy: 0.997 - ETA: 20s - loss: 0.0215 - accuracy: 0.997 - ETA: 20s - loss: 0.0214 - accuracy: 0.997 - ETA: 19s - loss:
 0.0221 - accuracy: 0.997 - ETA: 19s - loss: 0.0220 - accuracy: 0.997 - ETA: 18s - loss: 0.0220 - accuracy: 0.997 - ETA: 18s - loss:
 0.0219 - accuracy: 0.997 - ETA: 18s - loss: 0.0218 - accuracy: 0.997 - ETA: 17s - loss: 0.0218 - accuracy: 0.997 - ETA: 17s - loss:
 0.0217 - accuracy: 0.997 - ETA: 16s - loss: 0.0217 - accuracy: 0.997 - ETA: 16s - loss: 0.0216 - accuracy: 0.997 - ETA: 16s - loss:
 0.0215 - accuracy: 0.997 - ETA: 15s - loss: 0.0215 - accuracy: 0.997 - ETA: 15s - loss: 0.0214 - accuracy: 0.997 - ETA: 14s - loss:
 0.0214 - accuracy: 0.997 - ETA: 14s - loss: 0.0213 - accuracy: 0.997 - ETA: 14s - loss: 0.0212 - accuracy: 0.997 - ETA: 13s - loss:
 0.0212 - accuracy: 0.997 - ETA: 13s - loss: 0.0211 - accuracy: 0.997 - ETA: 13s - loss: 0.0211 - accuracy: 0.997 - ETA: 12s - loss:
 0.0210 - accuracy: 0.997 - ETA: 12s - loss: 0.0209 - accuracy: 0.997 - ETA: 11s - loss: 0.0209 - accuracy: 0.997 - ETA: 11s - loss:
 0.0208 - accuracy: 0.997 - ETA: 10s - loss: 0.0208 - accuracy: 0.997 - ETA: 10s - loss: 0.0207 - accuracy: 0.997 - ETA: 10s - loss:
 0.0206 - accuracy: 0.997 - ETA: 9s - loss: 0.0206 - accuracy: 0.997 - ETA: 9s - loss: 0.0205 - accuracy: 0.99 - ETA: 8s - loss: 0.020
5 - accuracy: 0.99 - ETA: 8s - loss: 0.0204 - accuracy: 0.99 - ETA: 8s - loss: 0.0203 - accuracy: 0.99 - ETA: 7s - loss: 0.0203 - accu
racy: 0.99 - ETA: 7s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0202 - accuracy: 0.99 - ETA: 6s - loss: 0.0201 - accuracy: 0.
99 - ETA: 6s - loss: 0.0201 - accuracy: 0.99 - ETA: 5s - loss: 0.0200 - accuracy: 0.99 - ETA: 5s - loss: 0.0199 - accuracy: 0.99 - ET
A: 5s - loss: 0.0199 - accuracy: 0.99 - ETA: 4s - loss: 0.0198 - accuracy: 0.99 - ETA: 4s - loss: 0.0198 - accuracy: 0.99 - ETA: 3s -
 loss: 0.0197 - accuracy: 0.99 - ETA: 3s - loss: 0.0197 - accuracy: 0.99 - ETA: 3s - loss: 0.0196 - accuracy: 0.99 - ETA: 2s - loss:
 0.0196 - accuracy: 0.99 - ETA: 2s - loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.0202 - accuracy: 0.99 - ETA: 1s - loss: 0.0201
```

 - accuracy: 0.99 - ETA: 1s - loss: 0.0201 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - 126s 393ms/step - loss: 0.0199 - accuracy: 0.9975 - val_loss: 0.0241 - val_accuracy: 0.9968
Epoch 46/50
186/322 [================>............] - ETA: 0s - loss: 0.0033 - accuracy: 1.00 - ETA: 33s - loss: 0.1068 - accuracy: 0.984 - ETA: 43s - loss: 0.0724 - accuracy: 0.989 - ETA: 48s - loss: 0.0553 - accuracy: 0.992 - ETA: 53s - loss: 0.0451 - accuracy: 0.993 - ETA: 58s - loss: 0.0383 - accuracy: 0.994 - ETA: 59s - loss: 0.0596 - accuracy: 0.991 - ETA: 1:00 - loss: 0.0528 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0475 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0432 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0398 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0369 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0345 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0450 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0423 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0401 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0381 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0363 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0347 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0333 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0320 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0308 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0297 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0287 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0278 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0269 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0261 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0315 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0306 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0298 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0290 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0283 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0276 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0269 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0263 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0226 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0256 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0250 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0267 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0264 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0261 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0284 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0280 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0277 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0274 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0271 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0268 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0266 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0263 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0260 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0257 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0252 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0249 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0241 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0254 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0249 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0246 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0244 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0242 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0222 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0216 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0185 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0180 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0178 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0176 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0198 - accuracy: 0.9975322/322 [==============================] - ETA: 1:11 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0191 - accuracy: 0.99 - ETA: 59s - loss: 0.0190 - accuracy: 0.9976 - ETA: 59s - loss: 0.0198 - accuracy: 0.997 - ETA: 58s - loss: 0.0197 - accuracy: 0.997 - ETA: 58s - loss: 0.0197 - accuracy: 0.997 - ETA: 57s - loss: 0.0196 - accuracy: 0.997 - ETA: 57s - loss: 0.0195 - accuracy: 0.997 - ETA: 56s - loss: 0.0211 - accuracy: 0.997 - ETA: 56s - loss: 0.0211 - accuracy: 0.997 - ETA: 55s - loss: 0.0210 - accuracy: 0.997 - ETA: 55s - loss: 0.0209 - accuracy: 0.997 - ETA: 54s - loss: 0.0209 - accuracy: 0.997 - ETA: 53s - loss: 0.0216 - accuracy: 0.997 - ETA: 53s - loss: 0.0215 - accuracy: 0.997 - ETA: 52s - loss: 0.0215 - accuracy: 0.997 - ETA: 51s - loss: 0.0214 - accuracy: 0.997 - ETA: 51s - loss: 0.0214 - accuracy: 0.997 - ETA: 50s - loss: 0.0213 - accuracy: 0.997 - ETA: 50s - loss: 0.0213 - accuracy: 0.997 - ETA: 49s - loss: 0.0212 - accuracy: 0.997 - ETA: 48s - loss: 0.0211 - accuracy: 0.997 - ETA: 48s - loss: 0.0211 - accuracy: 0.997 - ETA: 47s - loss: 0.0210 - accuracy: 0.997 - ETA: 47s - loss: 0.0210 - accuracy: 0.997 - ETA: 46s - loss: 0.0209 - accuracy: 0.997 - ETA: 45s - loss: 0.0208 - accuracy: 0.997 - ETA: 45s - loss: 0.0208 - accuracy: 0.997 - ETA: 44s - loss: 0.0207 - accuracy: 0.997 - ETA: 44s - loss: 0.0214 - accuracy: 0.997 - ETA: 43s - loss: 0.0214 - accuracy: 0.997 - ETA: 43s - loss: 0.0213 - accuracy: 0.997 - ETA: 42s - loss: 0.0212 - accuracy: 0.997 - ETA: 42s - loss: 0.0212 - accuracy: 0.997 - ETA: 41s - loss: 0.0211 - accuracy: 0.997 - ETA: 41s - loss: 0.0210 - accuracy: 0.997 - ETA: 40s - loss: 0.0210 - accuracy: 0.997 - ETA: 40s - loss: 0.0209 - accuracy: 0.997 - ETA: 39s - loss: 0.0215 - accuracy: 0.997 - ETA: 39s - loss: 0.0215 - accuracy: 0.997 - ETA: 38s - loss: 0.0214 - accuracy: 0.997 - ETA: 38s - loss: 0.0214 - accuracy: 0.997 - ETA: 37s - loss: 0.0213 - accuracy: 0.997 - ETA: 37s - loss: 0.0212 - accuracy: 0.997 - ETA: 36s - loss: 0.0212 - accuracy: 0.997 - ETA: 36s - loss: 0.0211 - accuracy: 0.997 - ETA: 36s - loss: 0.0210 - accuracy: 0.997 - ETA: 35s - loss: 0.0210 - accuracy: 0.997 - ETA: 35s - loss: 0.0209 - accuracy: 0.997 - ETA: 34s - loss: 0.0208 - accuracy: 0.997 - ETA: 34s - loss: 0.0208 - accuracy: 0.997 - ETA: 33s - loss: 0.0207 - accuracy: 0.997 - ETA: 32s - loss: 0.0206 - accuracy: 0.997 - ETA: 32s - loss: 0.0206 - accuracy: 0.997 - ETA: 32s - loss: 0.0205 - accuracy: 0.997 - ETA: 31s - loss: 0.0204 - accuracy: 0.997 - ETA: 30s -

```
loss: 0.0204 - accuracy: 0.997 - ETA: 30s - loss: 0.0203 - accuracy: 0.997 - ETA: 29s - loss: 0.0210 - accuracy: 0.997 - ETA: 29s - lo
ss: 0.0217 - accuracy: 0.997 - ETA: 28s - loss: 0.0216 - accuracy: 0.997 - ETA: 28s - loss: 0.0215 - accuracy: 0.997 - ETA: 27s - los
s: 0.0215 - accuracy: 0.997 - ETA: 27s - loss: 0.0214 - accuracy: 0.997 - ETA: 26s - loss: 0.0214 - accuracy: 0.997 - ETA: 26s - loss:
0.0213 - accuracy: 0.997 - ETA: 25s - loss: 0.0212 - accuracy: 0.997 - ETA: 25s - loss: 0.0212 - accuracy: 0.997 - ETA: 24s - loss: 0.
0211 - accuracy: 0.997 - ETA: 24s - loss: 0.0211 - accuracy: 0.997 - ETA: 23s - loss: 0.0210 - accuracy: 0.997 - ETA: 22s - loss: 0.02
10 - accuracy: 0.997 - ETA: 22s - loss: 0.0209 - accuracy: 0.997 - ETA: 22s - loss: 0.0208 - accuracy: 0.997 - ETA: 21s - loss: 0.0208
- accuracy: 0.997 - ETA: 20s - loss: 0.0207 - accuracy: 0.997 - ETA: 20s - loss: 0.0207 - accuracy: 0.997 - ETA: 20s - loss: 0.0213 -
 accuracy: 0.997 - ETA: 19s - loss: 0.0212 - accuracy: 0.997 - ETA: 19s - loss: 0.0212 - accuracy: 0.997 - ETA: 18s - loss: 0.0211 - a
ccuracy: 0.997 - ETA: 18s - loss: 0.0211 - accuracy: 0.997 - ETA: 17s - loss: 0.0210 - accuracy: 0.997 - ETA: 17s - loss: 0.0209 - acc
uracy: 0.997 - ETA: 16s - loss: 0.0209 - accuracy: 0.997 - ETA: 15s - loss: 0.0208 - accuracy: 0.997 - ETA: 15s - loss: 0.0208 - accur
acy: 0.997 - ETA: 14s - loss: 0.0207 - accuracy: 0.997 - ETA: 14s - loss: 0.0207 - accuracy: 0.997 - ETA: 13s - loss: 0.0206 - accurac
y: 0.997 - ETA: 13s - loss: 0.0205 - accuracy: 0.997 - ETA: 12s - loss: 0.0205 - accuracy: 0.997 - ETA: 12s - loss: 0.0204 - accuracy:
0.997 - ETA: 11s - loss: 0.0204 - accuracy: 0.997 - ETA: 11s - loss: 0.0203 - accuracy: 0.997 - ETA: 10s - loss: 0.0203 - accuracy: 0.
997 - ETA: 10s - loss: 0.0209 - accuracy: 0.997 - ETA: 9s - loss: 0.0208 - accuracy: 0.997 - ETA: 8s - loss: 0.0207 - accuracy: 0.99 -
ETA: 8s - loss: 0.0207 - accuracy: 0.99 - ETA: 7s - loss: 0.0206 - accuracy: 0.99 - ETA: 7s - loss: 0.0206 - accuracy: 0.99 - ETA: 6s
 - loss: 0.0205 - accuracy: 0.99 - ETA: 6s - loss: 0.0205 - accuracy: 0.99 - ETA: 5s - loss: 0.0204 - accuracy: 0.99 - ETA: 5s - loss:
0.0204 - accuracy: 0.99 - ETA: 4s - loss: 0.0203 - accuracy: 0.99 - ETA: 3s - loss: 0.0203 - accuracy: 0.99 - ETA: 3s - loss: 0.0202 -
accuracy: 0.99 - ETA: 2s - loss: 0.0201 - accuracy: 0.99 - ETA: 2s - loss: 0.0201 - accuracy: 0.99 - ETA: 1s - loss: 0.0200 - accurac
y: 0.99 - ETA: 1s - loss: 0.0200 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99 - ETA: 0s - loss: 0.0199 - accuracy: 0.99
 - 206s 641ms/step - loss: 0.0199 - accuracy: 0.9975 - val_loss: 0.0234 - val_accuracy: 0.9968
Epoch 47/50
  6/322 [..............................] - ETA: 0s - loss: 0.0028 - accuracy: 1.00 - ETA: 5:05 - loss: 0.0028 - accuracy: 1.00 - ETA:
 4:56 - loss: 0.0699 - accuracy: 0.98 - ETA: 5:31 - loss: 0.0532 - accuracy: 0.99 - ETA: 6:19 - loss: 0.0432 - accuracy: 0.99 - ETA:
 6:21 - loss: 0.0366 - accuracy: 0.9948WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.668166).
Check your callbacks.
  8/322 [..............................] - ETA: 6:31 - loss: 0.0319 - accuracy: 0.99 - ETA: 6:04 - loss: 0.0284 - accuracy: 0.9961WARN
ING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.457616). Check your callbacks.
194/322 [=================>............] - ETA: 5:42 - loss: 0.0256 - accuracy: 0.99 - ETA: 5:43 - loss: 0.0234 - accuracy: 0.99 - ET
A: 5:33 - loss: 0.0392 - accuracy: 0.99 - ETA: 5:45 - loss: 0.0362 - accuracy: 0.99 - ETA: 5:49 - loss: 0.0338 - accuracy: 0.99 - ETA:
5:56 - loss: 0.0317 - accuracy: 0.99 - ETA: 6:24 - loss: 0.0422 - accuracy: 0.99 - ETA: 6:22 - loss: 0.0399 - accuracy: 0.99 - ETA: 6:
15 - loss: 0.0379 - accuracy: 0.99 - ETA: 6:17 - loss: 0.0361 - accuracy: 0.99 - ETA: 6:13 - loss: 0.0431 - accuracy: 0.99 - ETA: 6:05
- loss: 0.0413 - accuracy: 0.99 - ETA: 5:56 - loss: 0.0397 - accuracy: 0.99 - ETA: 5:46 - loss: 0.0383 - accuracy: 0.99 - ETA: 5:39 -
 loss: 0.0369 - accuracy: 0.99 - ETA: 5:33 - loss: 0.0357 - accuracy: 0.99 - ETA: 5:26 - loss: 0.0408 - accuracy: 0.99 - ETA: 5:21 - l
oss: 0.0395 - accuracy: 0.99 - ETA: 5:19 - loss: 0.0383 - accuracy: 0.99 - ETA: 5:13 - loss: 0.0428 - accuracy: 0.99 - ETA: 5:08 - los
s: 0.0416 - accuracy: 0.99 - ETA: 5:06 - loss: 0.0406 - accuracy: 0.99 - ETA: 5:01 - loss: 0.0396 - accuracy: 0.99 - ETA: 5:04 - loss:
0.0387 - accuracy: 0.99 - ETA: 5:00 - loss: 0.0378 - accuracy: 0.99 - ETA: 4:54 - loss: 0.0370 - accuracy: 0.99 - ETA: 4:50 - loss: 0.
0361 - accuracy: 0.99 - ETA: 4:51 - loss: 0.0394 - accuracy: 0.99 - ETA: 4:47 - loss: 0.0386 - accuracy: 0.99 - ETA: 4:42 - loss: 0.03
78 - accuracy: 0.99 - ETA: 4:39 - loss: 0.0370 - accuracy: 0.99 - ETA: 4:34 - loss: 0.0363 - accuracy: 0.99 - ETA: 4:30 - loss: 0.0356
- accuracy: 0.99 - ETA: 4:27 - loss: 0.0349 - accuracy: 0.99 - ETA: 4:23 - loss: 0.0342 - accuracy: 0.99 - ETA: 4:19 - loss: 0.0336 -
 accuracy: 0.99 - ETA: 4:15 - loss: 0.0330 - accuracy: 0.99 - ETA: 4:14 - loss: 0.0323 - accuracy: 0.99 - ETA: 4:13 - loss: 0.0318 - a
ccuracy: 0.99 - ETA: 4:10 - loss: 0.0312 - accuracy: 0.99 - ETA: 4:08 - loss: 0.0306 - accuracy: 0.99 - ETA: 4:07 - loss: 0.0301 - acc
uracy: 0.99 - ETA: 4:03 - loss: 0.0296 - accuracy: 0.99 - ETA: 4:01 - loss: 0.0291 - accuracy: 0.99 - ETA: 3:59 - loss: 0.0286 - accur
acy: 0.99 - ETA: 3:58 - loss: 0.0281 - accuracy: 0.99 - ETA: 3:59 - loss: 0.0277 - accuracy: 0.99 - ETA: 3:56 - loss: 0.0272 - accurac
y: 0.99 - ETA: 3:53 - loss: 0.0268 - accuracy: 0.99 - ETA: 3:50 - loss: 0.0264 - accuracy: 0.99 - ETA: 3:48 - loss: 0.0260 - accuracy:
0.99 - ETA: 3:44 - loss: 0.0256 - accuracy: 0.99 - ETA: 3:40 - loss: 0.0252 - accuracy: 0.99 - ETA: 3:38 - loss: 0.0248 - accuracy: 0.
99 - ETA: 3:37 - loss: 0.0245 - accuracy: 0.99 - ETA: 3:36 - loss: 0.0241 - accuracy: 0.99 - ETA: 3:35 - loss: 0.0238 - accuracy: 0.99
- ETA: 3:33 - loss: 0.0235 - accuracy: 0.99 - ETA: 3:32 - loss: 0.0232 - accuracy: 0.99 - ETA: 3:33 - loss: 0.0229 - accuracy: 0.99 -
 ETA: 3:32 - loss: 0.0226 - accuracy: 0.99 - ETA: 3:31 - loss: 0.0223 - accuracy: 0.99 - ETA: 3:29 - loss: 0.0220 - accuracy: 0.99 - E
TA: 3:27 - loss: 0.0217 - accuracy: 0.99 - ETA: 3:25 - loss: 0.0214 - accuracy: 0.99 - ETA: 3:24 - loss: 0.0212 - accuracy: 0.99 - ET
A: 3:22 - loss: 0.0209 - accuracy: 0.99 - ETA: 3:19 - loss: 0.0207 - accuracy: 0.99 - ETA: 3:17 - loss: 0.0204 - accuracy: 0.99 - ETA:
3:16 - loss: 0.0202 - accuracy: 0.99 - ETA: 3:16 - loss: 0.0200 - accuracy: 0.99 - ETA: 3:15 - loss: 0.0197 - accuracy: 0.99 - ETA: 3:
13 - loss: 0.0195 - accuracy: 0.99 - ETA: 3:14 - loss: 0.0193 - accuracy: 0.99 - ETA: 3:12 - loss: 0.0191 - accuracy: 0.99 - ETA: 3:11
- loss: 0.0189 - accuracy: 0.99 - ETA: 3:11 - loss: 0.0187 - accuracy: 0.99 - ETA: 3:10 - loss: 0.0212 - accuracy: 0.99 - ETA: 3:08 -
 loss: 0.0209 - accuracy: 0.99 - ETA: 3:06 - loss: 0.0207 - accuracy: 0.99 - ETA: 3:06 - loss: 0.0205 - accuracy: 0.99 - ETA: 3:06 - l
oss: 0.0203 - accuracy: 0.99 - ETA: 3:05 - loss: 0.0201 - accuracy: 0.99 - ETA: 3:04 - loss: 0.0200 - accuracy: 0.99 - ETA: 3:04 - los
s: 0.0198 - accuracy: 0.99 - ETA: 3:03 - loss: 0.0196 - accuracy: 0.99 - ETA: 3:02 - loss: 0.0194 - accuracy: 0.99 - ETA: 3:01 - loss:
0.0215 - accuracy: 0.99 - ETA: 2:59 - loss: 0.0213 - accuracy: 0.99 - ETA: 3:00 - loss: 0.0212 - accuracy: 0.99 - ETA: 2:59 - loss: 0.
0210 - accuracy: 0.99 - ETA: 2:57 - loss: 0.0208 - accuracy: 0.99 - ETA: 2:55 - loss: 0.0206 - accuracy: 0.99 - ETA: 2:54 - loss: 0.02
25 - accuracy: 0.99 - ETA: 2:53 - loss: 0.0223 - accuracy: 0.99 - ETA: 2:51 - loss: 0.0221 - accuracy: 0.99 - ETA: 2:49 - loss: 0.0220
- accuracy: 0.99 - ETA: 2:47 - loss: 0.0218 - accuracy: 0.99 - ETA: 2:46 - loss: 0.0233 - accuracy: 0.99 - ETA: 2:44 - loss: 0.0232 -
 accuracy: 0.99 - ETA: 2:43 - loss: 0.0230 - accuracy: 0.99 - ETA: 2:42 - loss: 0.0229 - accuracy: 0.99 - ETA: 2:42 - loss: 0.0227 - a
ccuracy: 0.99 - ETA: 2:40 - loss: 0.0226 - accuracy: 0.99 - ETA: 2:39 - loss: 0.0224 - accuracy: 0.99 - ETA: 2:38 - loss: 0.0223 - acc
uracy: 0.99 - ETA: 2:37 - loss: 0.0221 - accuracy: 0.99 - ETA: 2:36 - loss: 0.0220 - accuracy: 0.99 - ETA: 2:35 - loss: 0.0219 - accur
acy: 0.99 - ETA: 2:34 - loss: 0.0217 - accuracy: 0.99 - ETA: 2:34 - loss: 0.0216 - accuracy: 0.99 - ETA: 2:33 - loss: 0.0214 - accurac
y: 0.99 - ETA: 2:32 - loss: 0.0213 - accuracy: 0.99 - ETA: 2:32 - loss: 0.0212 - accuracy: 0.99 - ETA: 2:30 - loss: 0.0210 - accuracy:
0.99 - ETA: 2:30 - loss: 0.0209 - accuracy: 0.99 - ETA: 2:28 - loss: 0.0223 - accuracy: 0.99 - ETA: 2:27 - loss: 0.0222 - accuracy: 0.
99 - ETA: 2:26 - loss: 0.0220 - accuracy: 0.99 - ETA: 2:25 - loss: 0.0219 - accuracy: 0.99 - ETA: 2:25 - loss: 0.0232 - accuracy: 0.99
- ETA: 2:24 - loss: 0.0230 - accuracy: 0.99 - ETA: 2:23 - loss: 0.0229 - accuracy: 0.99 - ETA: 2:22 - loss: 0.0228 - accuracy: 0.99 -
 ETA: 2:21 - loss: 0.0227 - accuracy: 0.99 - ETA: 2:21 - loss: 0.0250 - accuracy: 0.99 - ETA: 2:20 - loss: 0.0249 - accuracy: 0.99 - E
TA: 2:18 - loss: 0.0248 - accuracy: 0.99 - ETA: 2:17 - loss: 0.0257 - accuracy: 0.99 - ETA: 2:17 - loss: 0.0257 - accuracy: 0.99 - ET
A: 2:16 - loss: 0.0256 - accuracy: 0.99 - ETA: 2:15 - loss: 0.0255 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0254 - accuracy: 0.99 - ETA:
2:14 - loss: 0.0253 - accuracy: 0.99 - ETA: 2:13 - loss: 0.0252 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0251 - accuracy: 0.99 - ETA: 2:
13 - loss: 0.0250 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0249 - accuracy: 0.99 - ETA: 2:11 - loss: 0.0248 - accuracy: 0.99 - ETA: 2:10
- loss: 0.0247 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0246 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0245 - accuracy: 0.99 - ETA: 2:07 -
 loss: 0.0244 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0242 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0241 - accuracy: 0.99 - ETA: 2:04 - l
oss: 0.0240 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0239 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0237 - accuracy: 0.99 - ETA: 2:02 - los
s: 0.0236 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0235 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0234 - accuracy: 0.99 - ETA: 2:00 - loss:
0.0232 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:57 - loss: 0.
0241 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:55 - loss: 0.02
37 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0233
- accuracy: 0.99 - ETA: 1:51 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0230 -
 accuracy: 0.99 - ETA: 1:49 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0239 - a
ccuracy: 0.99 - ETA: 1:46 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0235 - acc
uracy: 0.99 - ETA: 1:45 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0232 - accur
acy: 0.99 - ETA: 1:42 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0229 - accurac
y: 0.99 - ETA: 1:40 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0225 - accuracy:
0.99 - ETA: 1:39 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0222 - accuracy: 0.
99 - ETA: 1:37 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0230 - accuracy: 0.99
- ETA: 1:36 - loss: 0.0229 - accuracy: 0.9969322/322 [==============================] - ETA: 1:36 - loss: 0.0228 - accuracy: 0.99 - ET
A: 1:36 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0225 - accuracy: 0.99 - ETA:
1:34 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:
```

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33 - loss: 0.0231 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:30
- loss: 0.0228 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:28 -
 loss: 0.0225 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:26 - l
oss: 0.0223 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0229 - accuracy: 0.99 - ETA: 1:24 - los
s: 0.0229 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:21 - loss:
0.0226 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:19 - loss: 0.
0240 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0239 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0238 - accuracy: 0.99 - ETA: 1:16 - loss: 0.02
37 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0237 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0236 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0235
- accuracy: 0.99 - ETA: 1:13 - loss: 0.0235 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0234 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0233 -
 accuracy: 0.99 - ETA: 1:11 - loss: 0.0233 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0232 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0231 - a
ccuracy: 0.99 - ETA: 1:08 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0230 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0229 - acc
uracy: 0.99 - ETA: 1:06 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0227 - accur
acy: 0.99 - ETA: 1:03 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0224 - accurac
y: 0.99 - ETA: 1:01 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0223 - accuracy: 0.99 - ETA: 59s - loss: 0.0222 - accuracy:
 0.9971 - ETA: 59s - loss: 0.0221 - accuracy: 0.997 - ETA: 58s - loss: 0.0220 - accuracy: 0.997 - ETA: 57s - loss: 0.0219 - accuracy:
 0.997 - ETA: 56s - loss: 0.0219 - accuracy: 0.997 - ETA: 55s - loss: 0.0218 - accuracy: 0.997 - ETA: 55s - loss: 0.0217 - accuracy:
 0.997 - ETA: 54s - loss: 0.0216 - accuracy: 0.997 - ETA: 53s - loss: 0.0216 - accuracy: 0.997 - ETA: 52s - loss: 0.0215 - accuracy:
 0.997 - ETA: 51s - loss: 0.0214 - accuracy: 0.997 - ETA: 51s - loss: 0.0213 - accuracy: 0.997 - ETA: 50s - loss: 0.0213 - accuracy:
 0.997 - ETA: 49s - loss: 0.0212 - accuracy: 0.997 - ETA: 48s - loss: 0.0211 - accuracy: 0.997 - ETA: 47s - loss: 0.0210 - accuracy:
 0.997 - ETA: 47s - loss: 0.0210 - accuracy: 0.997 - ETA: 46s - loss: 0.0209 - accuracy: 0.997 - ETA: 45s - loss: 0.0208 - accuracy:
 0.997 - ETA: 44s - loss: 0.0208 - accuracy: 0.997 - ETA: 43s - loss: 0.0207 - accuracy: 0.997 - ETA: 43s - loss: 0.0206 - accuracy:
 0.997 - ETA: 42s - loss: 0.0205 - accuracy: 0.997 - ETA: 41s - loss: 0.0205 - accuracy: 0.997 - ETA: 40s - loss: 0.0204 - accuracy:
 0.997 - ETA: 39s - loss: 0.0203 - accuracy: 0.997 - ETA: 39s - loss: 0.0203 - accuracy: 0.997 - ETA: 38s - loss: 0.0202 - accuracy:
 0.997 - ETA: 37s - loss: 0.0201 - accuracy: 0.997 - ETA: 36s - loss: 0.0201 - accuracy: 0.997 - ETA: 36s - loss: 0.0200 - accuracy:
 0.997 - ETA: 35s - loss: 0.0199 - accuracy: 0.997 - ETA: 34s - loss: 0.0199 - accuracy: 0.997 - ETA: 33s - loss: 0.0198 - accuracy:
 0.997 - ETA: 33s - loss: 0.0197 - accuracy: 0.997 - ETA: 32s - loss: 0.0197 - accuracy: 0.997 - ETA: 31s - loss: 0.0196 - accuracy:
 0.997 - ETA: 30s - loss: 0.0196 - accuracy: 0.997 - ETA: 30s - loss: 0.0195 - accuracy: 0.997 - ETA: 29s - loss: 0.0194 - accuracy:
 0.997 - ETA: 28s - loss: 0.0194 - accuracy: 0.997 - ETA: 27s - loss: 0.0193 - accuracy: 0.997 - ETA: 27s - loss: 0.0193 - accuracy:
 0.997 - ETA: 26s - loss: 0.0192 - accuracy: 0.997 - ETA: 25s - loss: 0.0191 - accuracy: 0.997 - ETA: 24s - loss: 0.0191 - accuracy:
 0.997 - ETA: 23s - loss: 0.0190 - accuracy: 0.997 - ETA: 23s - loss: 0.0190 - accuracy: 0.997 - ETA: 22s - loss: 0.0189 - accuracy:
 0.997 - ETA: 21s - loss: 0.0188 - accuracy: 0.997 - ETA: 20s - loss: 0.0188 - accuracy: 0.997 - ETA: 20s - loss: 0.0187 - accuracy:
 0.997 - ETA: 19s - loss: 0.0187 - accuracy: 0.997 - ETA: 18s - loss: 0.0186 - accuracy: 0.997 - ETA: 18s - loss: 0.0202 - accuracy:
 0.997 - ETA: 17s - loss: 0.0201 - accuracy: 0.997 - ETA: 16s - loss: 0.0201 - accuracy: 0.997 - ETA: 15s - loss: 0.0200 - accuracy:
 0.997 - ETA: 14s - loss: 0.0200 - accuracy: 0.997 - ETA: 14s - loss: 0.0199 - accuracy: 0.997 - ETA: 13s - loss: 0.0199 - accuracy:
 0.997 - ETA: 12s - loss: 0.0198 - accuracy: 0.997 - ETA: 11s - loss: 0.0198 - accuracy: 0.997 - ETA: 11s - loss: 0.0197 - accuracy:
 0.997 - ETA: 10s - loss: 0.0197 - accuracy: 0.997 - ETA: 9s - loss: 0.0196 - accuracy: 0.997 - ETA: 8s - loss: 0.0196 - accuracy: 0.9
9 - ETA: 8s - loss: 0.0195 - accuracy: 0.99 - ETA: 7s - loss: 0.0195 - accuracy: 0.99 - ETA: 6s - loss: 0.0194 - accuracy: 0.99 - ETA:
5s - loss: 0.0200 - accuracy: 0.99 - ETA: 5s - loss: 0.0200 - accuracy: 0.99 - ETA: 4s - loss: 0.0199 - accuracy: 0.99 - ETA: 3s - los
s: 0.0199 - accuracy: 0.99 - ETA: 2s - loss: 0.0198 - accuracy: 0.99 - ETA: 2s - loss: 0.0198 - accuracy: 0.99 - ETA: 1s - loss: 0.019
7 - accuracy: 0.99 - ETA: 0s - loss: 0.0197 - accuracy: 0.99 - ETA: 0s - loss: 0.0197 - accuracy: 0.99 - 236s 734ms/step - loss: 0.019
7 - accuracy: 0.9975 - val_loss: 0.0228 - val_accuracy: 0.9968
Epoch 48/50
109/322 [=========>....................] - ETA: 0s - loss: 0.0043 - accuracy: 1.00 - ETA: 57s - loss: 0.0042 - accuracy: 1.000 - ETA:
 1:14 - loss: 0.0041 - accuracy: 1.00 - ETA: 1:27 - loss: 0.0041 - accuracy: 1.00 - ETA: 1:26 - loss: 0.0041 - accuracy: 1.00 - ETA:
 1:32 - loss: 0.0040 - accuracy: 1.00 - ETA: 1:31 - loss: 0.0040 - accuracy: 1.00 - ETA: 1:36 - loss: 0.0039 - accuracy: 1.00 - ETA:
 1:35 - loss: 0.0039 - accuracy: 1.00 - ETA: 1:35 - loss: 0.0038 - accuracy: 1.00 - ETA: 1:32 - loss: 0.0037 - accuracy: 1.00 - ETA:
 1:30 - loss: 0.0037 - accuracy: 1.00 - ETA: 1:32 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0183 - accuracy: 0.99 - ETA:
 1:33 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0157 - accuracy: 0.99 - ETA:
 1:31 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0140 - accuracy: 0.99 - ETA:
 1:31 - loss: 0.0135 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0131 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0127 - accuracy: 0.99 - ETA:
 1:33 - loss: 0.0123 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0119 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0116 - accuracy: 0.99 - ETA:
 1:32 - loss: 0.0113 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0110 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0107 - accuracy: 0.99 - ETA:
 1:30 - loss: 0.0105 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0102 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0100 - accuracy: 0.99 - ETA:
 1:35 - loss: 0.0159 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0155 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0152 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0148 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0143 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0140 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0137 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0135 - accuracy: 0.99 - ETA:
 1:44 - loss: 0.0132 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0130 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0128 - accuracy: 0.99 - ETA:
 1:48 - loss: 0.0126 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0163 - accuracy: 0.99 - ETA:
 1:50 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0156 - accuracy: 0.99 - ETA:
 1:53 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0151 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0149 - accuracy: 0.99 - ETA:
 1:57 - loss: 0.0147 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0145 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0143 - accuracy: 0.99 - ETA:
 1:59 - loss: 0.0141 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0139 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0137 - accuracy: 0.99 - ETA:
 2:01 - loss: 0.0136 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0166 - accuracy: 0.99 - ETA: 2:00 - loss: 0.0193 - accuracy: 0.99 - ETA:
 2:00 - loss: 0.0190 - accuracy: 0.99 - ETA: 2:01 - loss: 0.0188 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0186 - accuracy: 0.99 - ETA:
 2:05 - loss: 0.0184 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0182 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0180 - accuracy: 0.99 - ETA:
 2:07 - loss: 0.0179 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0177 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0175 - accuracy: 0.99 - ETA:
 2:12 - loss: 0.0173 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0196 - accuracy: 0.99 - ETA: 2:13 - loss: 0.0194 - accuracy: 0.99 - ETA:
 2:13 - loss: 0.0193 - accuracy: 0.99 - ETA: 2:13 - loss: 0.0191 - accuracy: 0.99 - ETA: 2:13 - loss: 0.0189 - accuracy: 0.99 - ETA:
 2:13 - loss: 0.0187 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0186 - accuracy: 0.99 - ETA: 2:14 - loss: 0.0184 - accuracy: 0.99 - ETA:
 2:12 - loss: 0.0182 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0181 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0200 - accuracy: 0.99 - ETA:
 2:12 - loss: 0.0198 - accuracy: 0.99 - ETA: 2:10 - loss: 0.0197 - accuracy: 0.99 - ETA: 2:09 - loss: 0.0195 - accuracy: 0.99 - ETA:
 2:08 - loss: 0.0193 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0192 - accuracy: 0.99 - ETA: 2:08 - loss: 0.0190 - accuracy: 0.99 - ETA:
 2:07 - loss: 0.0189 - accuracy: 0.99 - ETA: 2:06 - loss: 0.0187 - accuracy: 0.99 - ETA: 2:05 - loss: 0.0186 - accuracy: 0.99 - ETA:
 2:04 - loss: 0.0184 - accuracy: 0.99 - ETA: 2:03 - loss: 0.0182 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0181 - accuracy: 0.99 - ETA:
 2:02 - loss: 0.0179 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0178 - accuracy: 0.99 - ETA: 2:02 - loss: 0.0177 - accuracy: 0.99 - ETA:
 2:01 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0172 - accuracy: 0.99 - ETA:
 1:59 - loss: 0.0171 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0168 - accuracy: 0.99 - ETA:
 1:58 - loss: 0.0167 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0165 - accuracy: 0.99 - ETA: 1:59 - loss: 0.0164 - accuracy: 0.99 - ETA:
 1:59 - loss: 0.0163 - accuracy: 0.99 - ETA: 1:58 - loss: 0.0162 - accuracy: 0.9980WARNING:tensorflow:Method (on_train_batch_end) is s
low compared to the batch update (0.277566). Check your callbacks.
227/322 [===================>.........] - ETA: 1:57 - loss: 0.0160 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0159 - accuracy: 0.99 - ET
A: 1:56 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0157 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0156 - accuracy: 0.99 - ETA:
1:55 - loss: 0.0154 - accuracy: 0.99 - ETA: 1:56 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0170 - accuracy: 0.99 - ETA: 1:
55 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:53
- loss: 0.0183 - accuracy: 0.99 - ETA: 1:53 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:52 -
 loss: 0.0195 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:51 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:50 - l
oss: 0.0193 - accuracy: 0.99 - ETA: 1:50 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:49 - los
s: 0.0190 - accuracy: 0.99 - ETA: 1:49 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:47 - loss:
0.0200 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:46 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:45 - loss: 0.
0197 - accuracy: 0.99 - ETA: 1:45 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:44 - loss: 0.01
94 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0203
```

```
- accuracy: 0.99 - ETA: 1:43 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:42 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0213 -
 accuracy: 0.99 - ETA: 1:42 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:41 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0221 - a
ccuracy: 0.99 - ETA: 1:39 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:38 - loss: 0.0229 - acc
uracy: 0.99 - ETA: 1:37 - loss: 0.0228 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0227 - accur
acy: 0.99 - ETA: 1:36 - loss: 0.0226 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0225 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0224 - accurac
y: 0.99 - ETA: 1:34 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:33 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0222 - accuracy:
0.99 - ETA: 1:31 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:31 - loss: 0.0219 - accuracy: 0.
99 - ETA: 1:31 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0216 - accuracy: 0.99
- ETA: 1:29 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0213 - accuracy: 0.99 -
 ETA: 1:27 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0210 - accuracy: 0.99 - E
TA: 1:25 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0208 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0207 - accuracy: 0.99 - ET
A: 1:23 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:23 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0204 - accuracy: 0.99 - ETA:
1:22 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0213 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:
20 - loss: 0.0211 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0209 - accuracy: 0.99 - ETA: 1:18
- loss: 0.0208 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:17 -
 loss: 0.0206 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:15 - l
oss: 0.0203 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:14 - los
s: 0.0200 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0198 - accuracy: 0.99 - ETA: 1:12 - loss:
0.0197 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0196 - accuracy: 0.99 - ETA: 1:11 - loss: 0.
0195 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0194 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:08 - loss: 0.01
92 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0191 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0190
- accuracy: 0.99 - ETA: 1:06 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0187 -
 accuracy: 0.99 - ETA: 1:04 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0185 - a
ccuracy: 0.99 - ETA: 1:02 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0183 - acc
uracy: 0.99 - ETA: 1:00 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0181 - accuracy: 0.99 - ETA: 59s - loss: 0.0180 - accura
cy: 0.9977 - ETA: 58s - loss: 0.0180 - accuracy: 0.997 - ETA: 58s - loss: 0.0179 - accuracy: 0.997 - ETA: 58s - loss: 0.0178 - accurac
y: 0.997 - ETA: 58s - loss: 0.0188 - accuracy: 0.997 - ETA: 57s - loss: 0.0187 - accuracy: 0.997 - ETA: 56s - loss: 0.0186 - accuracy:
0.997 - ETA: 56s - loss: 0.0186 - accuracy: 0.997 - ETA: 55s - loss: 0.0185 - accuracy: 0.997 - ETA: 54s - loss: 0.0203 - accuracy: 0.
9974WARNING:tensorflow:Method (on_train_batch_end) is slow compared to the batch update (0.189041). Check your callbacks.
322/322 [==============================] - ETA: 54s - loss: 0.0211 - accuracy: 0.997 - ETA: 53s - loss: 0.0210 - accuracy: 0.997 - ET
A: 52s - loss: 0.0210 - accuracy: 0.997 - ETA: 52s - loss: 0.0210 - accuracy: 0.997 - ETA: 51s - loss: 0.0210 - accuracy: 0.997 - ETA:
51s - loss: 0.0209 - accuracy: 0.997 - ETA: 50s - loss: 0.0209 - accuracy: 0.997 - ETA: 50s - loss: 0.0208 - accuracy: 0.997 - ETA: 49
s - loss: 0.0208 - accuracy: 0.997 - ETA: 49s - loss: 0.0207 - accuracy: 0.997 - ETA: 48s - loss: 0.0207 - accuracy: 0.997 - ETA: 48s
 - loss: 0.0206 - accuracy: 0.997 - ETA: 47s - loss: 0.0206 - accuracy: 0.997 - ETA: 46s - loss: 0.0213 - accuracy: 0.997 - ETA: 46s -
loss: 0.0212 - accuracy: 0.997 - ETA: 45s - loss: 0.0212 - accuracy: 0.997 - ETA: 44s - loss: 0.0211 - accuracy: 0.997 - ETA: 44s - lo
ss: 0.0211 - accuracy: 0.997 - ETA: 43s - loss: 0.0210 - accuracy: 0.997 - ETA: 43s - loss: 0.0210 - accuracy: 0.997 - ETA: 42s - los
s: 0.0209 - accuracy: 0.997 - ETA: 42s - loss: 0.0208 - accuracy: 0.997 - ETA: 41s - loss: 0.0208 - accuracy: 0.997 - ETA: 41s - loss:
0.0207 - accuracy: 0.997 - ETA: 40s - loss: 0.0207 - accuracy: 0.997 - ETA: 39s - loss: 0.0206 - accuracy: 0.997 - ETA: 39s - loss: 0.
0206 - accuracy: 0.997 - ETA: 38s - loss: 0.0205 - accuracy: 0.997 - ETA: 38s - loss: 0.0204 - accuracy: 0.997 - ETA: 37s - loss: 0.02
11 - accuracy: 0.997 - ETA: 37s - loss: 0.0210 - accuracy: 0.997 - ETA: 36s - loss: 0.0210 - accuracy: 0.997 - ETA: 36s - loss: 0.0209
- accuracy: 0.997 - ETA: 35s - loss: 0.0208 - accuracy: 0.997 - ETA: 34s - loss: 0.0208 - accuracy: 0.997 - ETA: 34s - loss: 0.0207 -
 accuracy: 0.997 - ETA: 33s - loss: 0.0207 - accuracy: 0.997 - ETA: 32s - loss: 0.0206 - accuracy: 0.997 - ETA: 32s - loss: 0.0205 - a
ccuracy: 0.997 - ETA: 31s - loss: 0.0205 - accuracy: 0.997 - ETA: 31s - loss: 0.0204 - accuracy: 0.997 - ETA: 30s - loss: 0.0203 - acc
uracy: 0.997 - ETA: 29s - loss: 0.0203 - accuracy: 0.997 - ETA: 29s - loss: 0.0202 - accuracy: 0.997 - ETA: 28s - loss: 0.0202 - accur
acy: 0.997 - ETA: 28s - loss: 0.0201 - accuracy: 0.997 - ETA: 27s - loss: 0.0200 - accuracy: 0.997 - ETA: 26s - loss: 0.0200 - accurac
y: 0.997 - ETA: 26s - loss: 0.0199 - accuracy: 0.997 - ETA: 25s - loss: 0.0198 - accuracy: 0.997 - ETA: 25s - loss: 0.0198 - accuracy:
0.997 - ETA: 24s - loss: 0.0197 - accuracy: 0.997 - ETA: 23s - loss: 0.0197 - accuracy: 0.997 - ETA: 23s - loss: 0.0196 - accuracy: 0.
997 - ETA: 22s - loss: 0.0195 - accuracy: 0.997 - ETA: 22s - loss: 0.0195 - accuracy: 0.997 - ETA: 21s - loss: 0.0194 - accuracy: 0.99
7 - ETA: 20s - loss: 0.0194 - accuracy: 0.997 - ETA: 20s - loss: 0.0193 - accuracy: 0.997 - ETA: 19s - loss: 0.0192 - accuracy: 0.997
 - ETA: 19s - loss: 0.0192 - accuracy: 0.997 - ETA: 18s - loss: 0.0191 - accuracy: 0.997 - ETA: 17s - loss: 0.0191 - accuracy: 0.997 -
ETA: 17s - loss: 0.0190 - accuracy: 0.997 - ETA: 16s - loss: 0.0190 - accuracy: 0.997 - ETA: 16s - loss: 0.0197 - accuracy: 0.997 - ET
A: 15s - loss: 0.0196 - accuracy: 0.997 - ETA: 15s - loss: 0.0195 - accuracy: 0.997 - ETA: 14s - loss: 0.0195 - accuracy: 0.997 - ETA:
13s - loss: 0.0201 - accuracy: 0.997 - ETA: 13s - loss: 0.0207 - accuracy: 0.997 - ETA: 12s - loss: 0.0207 - accuracy: 0.997 - ETA: 12
s - loss: 0.0207 - accuracy: 0.997 - ETA: 11s - loss: 0.0206 - accuracy: 0.997 - ETA: 11s - loss: 0.0206 - accuracy: 0.997 - ETA: 10s
 - loss: 0.0205 - accuracy: 0.997 - ETA: 9s - loss: 0.0211 - accuracy: 0.997 - ETA: 9s - loss: 0.0210 - accuracy: 0.99 - ETA: 8s - los
s: 0.0210 - accuracy: 0.99 - ETA: 8s - loss: 0.0210 - accuracy: 0.99 - ETA: 7s - loss: 0.0209 - accuracy: 0.99 - ETA: 7s - loss: 0.020
9 - accuracy: 0.99 - ETA: 6s - loss: 0.0208 - accuracy: 0.99 - ETA: 5s - loss: 0.0208 - accuracy: 0.99 - ETA: 5s - loss: 0.0207 - accu
racy: 0.99 - ETA: 4s - loss: 0.0207 - accuracy: 0.99 - ETA: 4s - loss: 0.0207 - accuracy: 0.99 - ETA: 3s - loss: 0.0206 - accuracy: 0.
99 - ETA: 3s - loss: 0.0206 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99 - ETA: 2s - loss: 0.0205 - accuracy: 0.99 - ET
A: 1s - loss: 0.0204 - accuracy: 0.99 - ETA: 1s - loss: 0.0204 - accuracy: 0.99 - ETA: 0s - loss: 0.0203 - accuracy: 0.99 - ETA: 0s -
 loss: 0.0203 - accuracy: 0.99 - 182s 564ms/step - loss: 0.0203 - accuracy: 0.9975 - val_loss: 0.0234 - val_accuracy: 0.9968
Epoch 49/50
186/322 [================>.............] - ETA: 0s - loss: 0.0043 - accuracy: 1.00 - ETA: 1:07 - loss: 0.0043 - accuracy: 1.00 - ETA:
 1:33 - loss: 0.0042 - accuracy: 1.00 - ETA: 2:05 - loss: 0.0041 - accuracy: 1.00 - ETA: 2:07 - loss: 0.0040 - accuracy: 1.00 - ETA:
 2:01 - loss: 0.0039 - accuracy: 1.00 - ETA: 2:05 - loss: 0.0038 - accuracy: 1.00 - ETA: 2:08 - loss: 0.0037 - accuracy: 1.00 - ETA:
 2:13 - loss: 0.0036 - accuracy: 1.00 - ETA: 2:14 - loss: 0.0035 - accuracy: 1.00 - ETA: 2:21 - loss: 0.0035 - accuracy: 1.00 - ETA:
 2:23 - loss: 0.0034 - accuracy: 1.00 - ETA: 2:23 - loss: 0.0034 - accuracy: 1.00 - ETA: 2:32 - loss: 0.0033 - accuracy: 1.00 - ETA:
 2:29 - loss: 0.0033 - accuracy: 1.00 - ETA: 2:25 - loss: 0.0032 - accuracy: 1.00 - ETA: 2:21 - loss: 0.0032 - accuracy: 1.00 - ETA:
 2:16 - loss: 0.0031 - accuracy: 1.00 - ETA: 2:21 - loss: 0.0031 - accuracy: 1.00 - ETA: 2:18 - loss: 0.0137 - accuracy: 0.99 - ETA:
 2:14 - loss: 0.0131 - accuracy: 0.99 - ETA: 2:11 - loss: 0.0126 - accuracy: 0.99 - ETA: 2:12 - loss: 0.0122 - accuracy: 0.99 - ETA:
 2:10 - loss: 0.0119 - accuracy: 0.99 - ETA: 2:07 - loss: 0.0115 - accuracy: 0.99 - ETA: 2:04 - loss: 0.0112 - accuracy: 0.99 - ETA:
 2:00 - loss: 0.0109 - accuracy: 0.99 - ETA: 1:57 - loss: 0.0106 - accuracy: 0.99 - ETA: 1:55 - loss: 0.0103 - accuracy: 0.99 - ETA:
 1:54 - loss: 0.0101 - accuracy: 0.99 - ETA: 1:54 - loss: 0.0099 - accuracy: 0.99 - ETA: 1:52 - loss: 0.0096 - accuracy: 0.99 - ETA:
 1:50 - loss: 0.0094 - accuracy: 0.99 - ETA: 1:48 - loss: 0.0092 - accuracy: 0.99 - ETA: 1:47 - loss: 0.0090 - accuracy: 0.99 - ETA:
 1:45 - loss: 0.0088 - accuracy: 0.99 - ETA: 1:44 - loss: 0.0144 - accuracy: 0.99 - ETA: 1:43 - loss: 0.0141 - accuracy: 0.99 - ETA:
 1:41 - loss: 0.0138 - accuracy: 0.99 - ETA: 1:40 - loss: 0.0136 - accuracy: 0.99 - ETA: 1:39 - loss: 0.0180 - accuracy: 0.99 - ETA:
 1:39 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:37 - loss: 0.0174 - accuracy: 0.99 - ETA: 1:36 - loss: 0.0171 - accuracy: 0.99 - ETA:
 1:35 - loss: 0.0168 - accuracy: 0.99 - ETA: 1:35 - loss: 0.0166 - accuracy: 0.99 - ETA: 1:34 - loss: 0.0163 - accuracy: 0.99 - ETA:
 1:33 - loss: 0.0161 - accuracy: 0.99 - ETA: 1:32 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:30 - loss: 0.0192 - accuracy: 0.99 - ETA:
 1:29 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:29 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:28 - loss: 0.0184 - accuracy: 0.99 - ETA:
 1:27 - loss: 0.0182 - accuracy: 0.99 - ETA: 1:27 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:26 - loss: 0.0177 - accuracy: 0.99 - ETA:
 1:25 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:25 - loss: 0.0203 - accuracy: 0.99 - ETA: 1:24 - loss: 0.0200 - accuracy: 0.99 - ETA:
 1:23 - loss: 0.0227 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0224 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0222 - accuracy: 0.99 - ETA:
 1:21 - loss: 0.0220 - accuracy: 0.99 - ETA: 1:21 - loss: 0.0218 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0216 - accuracy: 0.99 - ETA:
 1:19 - loss: 0.0214 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0209 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0203 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0201 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0223 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0221 - accuracy: 0.99 - ETA:
 1:21 - loss: 0.0219 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0217 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0214 - accuracy: 0.99 - ETA:
 1:23 - loss: 0.0212 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0210 - accuracy: 0.99 - ETA: 1:22 - loss: 0.0208 - accuracy: 0.99 - ETA:
 1:21 - loss: 0.0206 - accuracy: 0.99 - ETA: 1:20 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:19 - loss: 0.0202 - accuracy: 0.99 - ETA:
 1:18 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:18 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:17 - loss: 0.0197 - accuracy: 0.99 - ETA:
```

```
 1:17 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:16 - loss: 0.0193 - accuracy: 0.99 - ETA: 1:15 - loss: 0.0191 - accuracy: 0.99 - ETA:
 1:15 - loss: 0.0189 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:14 - loss: 0.0186 - accuracy: 0.99 - ETA:
 1:13 - loss: 0.0207 - accuracy: 0.99 - ETA: 1:13 - loss: 0.0205 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0203 - accuracy: 0.99 - ETA:
 1:12 - loss: 0.0202 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0200 - accuracy: 0.99 - ETA: 1:12 - loss: 0.0198 - accuracy: 0.99 - ETA:
 1:11 - loss: 0.0197 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0195 - accuracy: 0.99 - ETA: 1:11 - loss: 0.0193 - accuracy: 0.99 - ETA:
 1:10 - loss: 0.0192 - accuracy: 0.99 - ETA: 1:10 - loss: 0.0190 - accuracy: 0.99 - ETA: 1:09 - loss: 0.0189 - accuracy: 0.99 - ETA:
 1:08 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:08 - loss: 0.0186 - accuracy: 0.99 - ETA: 1:07 - loss: 0.0184 - accuracy: 0.99 - ETA:
 1:07 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0181 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0180 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0179 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0177 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0176 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0175 - accuracy: 0.99 - ETA: 1:04 - loss: 0.0173 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0190 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0188 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0187 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0186 - accuracy: 0.99 - ETA:
 1:01 - loss: 0.0184 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0183 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0182 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0181 - accuracy: 0.99 - ETA: 59s - loss: 0.0180 - accuracy: 0.9977 - ETA: 59s - loss: 0.0178 - accuracy: 0.997 - ETA:
 58s - loss: 0.0177 - accuracy: 0.997 - ETA: 58s - loss: 0.0176 - accuracy: 0.997 - ETA: 58s - loss: 0.0175 - accuracy: 0.997 - ETA: 5
7s - loss: 0.0174 - accuracy: 0.997 - ETA: 57s - loss: 0.0173 - accuracy: 0.997 - ETA: 56s - loss: 0.0171 - accuracy: 0.997 - ETA: 56s
- loss: 0.0170 - accuracy: 0.997 - ETA: 55s - loss: 0.0169 - accuracy: 0.997 - ETA: 55s - loss: 0.0168 - accuracy: 0.997 - ETA: 55s -
 loss: 0.0183 - accuracy: 0.997 - ETA: 54s - loss: 0.0182 - accuracy: 0.997 - ETA: 54s - loss: 0.0181 - accuracy: 0.997 - ETA: 53s - l
oss: 0.0180 - accuracy: 0.997 - ETA: 53s - loss: 0.0179 - accuracy: 0.997 - ETA: 53s - loss: 0.0178 - accuracy: 0.997 - ETA: 52s - los
s: 0.0177 - accuracy: 0.997 - ETA: 52s - loss: 0.0176 - accuracy: 0.997 - ETA: 51s - loss: 0.0175 - accuracy: 0.997 - ETA: 51s - loss:
0.0174 - accuracy: 0.997 - ETA: 51s - loss: 0.0186 - accuracy: 0.997 - ETA: 50s - loss: 0.0185 - accuracy: 0.997 - ETA: 50s - loss: 0.
0184 - accuracy: 0.997 - ETA: 50s - loss: 0.0183 - accuracy: 0.997 - ETA: 49s - loss: 0.0182 - accuracy: 0.997 - ETA: 49s - loss: 0.01
81 - accuracy: 0.997 - ETA: 49s - loss: 0.0180 - accuracy: 0.997 - ETA: 48s - loss: 0.0179 - accuracy: 0.997 - ETA: 48s - loss: 0.0178
- accuracy: 0.997 - ETA: 48s - loss: 0.0177 - accuracy: 0.997 - ETA: 47s - loss: 0.0176 - accuracy: 0.997 - ETA: 47s - loss: 0.0187 -
 accuracy: 0.997 - ETA: 47s - loss: 0.0186 - accuracy: 0.997 - ETA: 47s - loss: 0.0185 - accuracy: 0.997 - ETA: 47s - loss: 0.0184 - a
ccuracy: 0.997 - ETA: 47s - loss: 0.0183 - accuracy: 0.997 - ETA: 47s - loss: 0.0182 - accuracy: 0.997 - ETA: 46s - loss: 0.0181 - acc
uracy: 0.997 - ETA: 46s - loss: 0.0180 - accuracy: 0.997 - ETA: 46s - loss: 0.0180 - accuracy: 0.997 - ETA: 46s - loss: 0.0179 - accur
acy: 0.997 - ETA: 45s - loss: 0.0178 - accuracy: 0.997 - ETA: 45s - loss: 0.0177 - accuracy: 0.997 - ETA: 45s - loss: 0.0176 - accurac
y: 0.997 - ETA: 45s - loss: 0.0175 - accuracy: 0.997 - ETA: 45s - loss: 0.0175 - accuracy: 0.997 - ETA: 45s - loss: 0.0174 - accuracy:
0.997 - ETA: 45s - loss: 0.0184 - accuracy: 0.997 - ETA: 45s - loss: 0.0183 - accuracy: 0.997 - ETA: 45s - loss: 0.0182 - accuracy: 0.
997 - ETA: 45s - loss: 0.0181 - accuracy: 0.997 - ETA: 45s - loss: 0.0180 - accuracy: 0.997 - ETA: 44s - loss: 0.0180 - accuracy: 0.99
7 - ETA: 44s - loss: 0.0179 - accuracy: 0.997 - ETA: 44s - loss: 0.0178 - accuracy: 0.997 - ETA: 44s - loss: 0.0177 - accuracy: 0.997
 - ETA: 44s - loss: 0.0177 - accuracy: 0.997 - ETA: 44s - loss: 0.0176 - accuracy: 0.997 - ETA: 44s - loss: 0.0175 - accuracy: 0.997 -
ETA: 43s - loss: 0.0184 - accuracy: 0.997 - ETA: 43s - loss: 0.0184 - accuracy: 0.997 - ETA: 44s - loss: 0.0183 - accuracy: 0.9976322/
322 [==============================] - ETA: 44s - loss: 0.0182 - accuracy: 0.997 - ETA: 43s - loss: 0.0181 - accuracy: 0.997 - ETA: 43
s - loss: 0.0181 - accuracy: 0.997 - ETA: 43s - loss: 0.0180 - accuracy: 0.997 - ETA: 42s - loss: 0.0179 - accuracy: 0.997 - ETA: 42s
 - loss: 0.0197 - accuracy: 0.997 - ETA: 42s - loss: 0.0196 - accuracy: 0.997 - ETA: 41s - loss: 0.0195 - accuracy: 0.997 - ETA: 41s -
loss: 0.0195 - accuracy: 0.997 - ETA: 41s - loss: 0.0194 - accuracy: 0.997 - ETA: 40s - loss: 0.0194 - accuracy: 0.997 - ETA: 40s - lo
ss: 0.0193 - accuracy: 0.997 - ETA: 40s - loss: 0.0192 - accuracy: 0.997 - ETA: 40s - loss: 0.0192 - accuracy: 0.997 - ETA: 39s - los
s: 0.0191 - accuracy: 0.997 - ETA: 39s - loss: 0.0190 - accuracy: 0.997 - ETA: 38s - loss: 0.0190 - accuracy: 0.997 - ETA: 38s - loss:
0.0189 - accuracy: 0.997 - ETA: 38s - loss: 0.0188 - accuracy: 0.997 - ETA: 37s - loss: 0.0188 - accuracy: 0.997 - ETA: 37s - loss: 0.
0187 - accuracy: 0.997 - ETA: 37s - loss: 0.0186 - accuracy: 0.997 - ETA: 36s - loss: 0.0186 - accuracy: 0.997 - ETA: 36s - loss: 0.01
85 - accuracy: 0.997 - ETA: 36s - loss: 0.0184 - accuracy: 0.997 - ETA: 35s - loss: 0.0184 - accuracy: 0.997 - ETA: 35s - loss: 0.0183
- accuracy: 0.997 - ETA: 34s - loss: 0.0182 - accuracy: 0.997 - ETA: 34s - loss: 0.0182 - accuracy: 0.997 - ETA: 34s - loss: 0.0181 -
 accuracy: 0.997 - ETA: 33s - loss: 0.0180 - accuracy: 0.997 - ETA: 33s - loss: 0.0180 - accuracy: 0.997 - ETA: 33s - loss: 0.0179 - a
ccuracy: 0.997 - ETA: 32s - loss: 0.0178 - accuracy: 0.997 - ETA: 32s - loss: 0.0177 - accuracy: 0.997 - ETA: 32s - loss: 0.0177 - acc
uracy: 0.997 - ETA: 31s - loss: 0.0176 - accuracy: 0.997 - ETA: 31s - loss: 0.0175 - accuracy: 0.997 - ETA: 31s - loss: 0.0175 - accur
acy: 0.997 - ETA: 31s - loss: 0.0174 - accuracy: 0.997 - ETA: 30s - loss: 0.0173 - accuracy: 0.997 - ETA: 30s - loss: 0.0173 - accurac
y: 0.997 - ETA: 30s - loss: 0.0172 - accuracy: 0.997 - ETA: 29s - loss: 0.0171 - accuracy: 0.997 - ETA: 29s - loss: 0.0171 - accuracy:
0.997 - ETA: 29s - loss: 0.0170 - accuracy: 0.997 - ETA: 28s - loss: 0.0170 - accuracy: 0.997 - ETA: 28s - loss: 0.0169 - accuracy: 0.
997 - ETA: 28s - loss: 0.0168 - accuracy: 0.997 - ETA: 27s - loss: 0.0168 - accuracy: 0.997 - ETA: 27s - loss: 0.0167 - accuracy: 0.99
7 - ETA: 27s - loss: 0.0166 - accuracy: 0.997 - ETA: 27s - loss: 0.0176 - accuracy: 0.997 - ETA: 26s - loss: 0.0175 - accuracy: 0.997
 - ETA: 26s - loss: 0.0174 - accuracy: 0.997 - ETA: 26s - loss: 0.0174 - accuracy: 0.997 - ETA: 25s - loss: 0.0173 - accuracy: 0.997 -
ETA: 25s - loss: 0.0173 - accuracy: 0.997 - ETA: 25s - loss: 0.0172 - accuracy: 0.997 - ETA: 24s - loss: 0.0171 - accuracy: 0.997 - ET
A: 24s - loss: 0.0171 - accuracy: 0.997 - ETA: 24s - loss: 0.0170 - accuracy: 0.997 - ETA: 23s - loss: 0.0170 - accuracy: 0.997 - ETA:
23s - loss: 0.0169 - accuracy: 0.997 - ETA: 23s - loss: 0.0177 - accuracy: 0.997 - ETA: 22s - loss: 0.0176 - accuracy: 0.997 - ETA: 22
s - loss: 0.0176 - accuracy: 0.997 - ETA: 22s - loss: 0.0175 - accuracy: 0.997 - ETA: 21s - loss: 0.0175 - accuracy: 0.997 - ETA: 21s
 - loss: 0.0174 - accuracy: 0.997 - ETA: 21s - loss: 0.0174 - accuracy: 0.997 - ETA: 20s - loss: 0.0173 - accuracy: 0.997 - ETA: 20s -
loss: 0.0172 - accuracy: 0.997 - ETA: 20s - loss: 0.0172 - accuracy: 0.997 - ETA: 19s - loss: 0.0171 - accuracy: 0.997 - ETA: 19s - lo
ss: 0.0178 - accuracy: 0.997 - ETA: 19s - loss: 0.0177 - accuracy: 0.997 - ETA: 18s - loss: 0.0177 - accuracy: 0.997 - ETA: 18s - los
s: 0.0176 - accuracy: 0.997 - ETA: 18s - loss: 0.0176 - accuracy: 0.997 - ETA: 17s - loss: 0.0175 - accuracy: 0.997 - ETA: 17s - loss:
0.0175 - accuracy: 0.997 - ETA: 17s - loss: 0.0174 - accuracy: 0.997 - ETA: 16s - loss: 0.0174 - accuracy: 0.997 - ETA: 16s - loss: 0.
0173 - accuracy: 0.997 - ETA: 16s - loss: 0.0173 - accuracy: 0.997 - ETA: 16s - loss: 0.0172 - accuracy: 0.997 - ETA: 15s - loss: 0.01
72 - accuracy: 0.997 - ETA: 15s - loss: 0.0171 - accuracy: 0.997 - ETA: 15s - loss: 0.0171 - accuracy: 0.997 - ETA: 14s - loss: 0.0170
- accuracy: 0.997 - ETA: 14s - loss: 0.0170 - accuracy: 0.997 - ETA: 14s - loss: 0.0169 - accuracy: 0.997 - ETA: 13s - loss: 0.0169 -
 accuracy: 0.997 - ETA: 13s - loss: 0.0168 - accuracy: 0.997 - ETA: 13s - loss: 0.0168 - accuracy: 0.997 - ETA: 12s - loss: 0.0167 - a
ccuracy: 0.997 - ETA: 12s - loss: 0.0174 - accuracy: 0.997 - ETA: 12s - loss: 0.0173 - accuracy: 0.997 - ETA: 11s - loss: 0.0173 - acc
uracy: 0.997 - ETA: 11s - loss: 0.0173 - accuracy: 0.997 - ETA: 11s - loss: 0.0172 - accuracy: 0.997 - ETA: 10s - loss: 0.0172 - accur
acy: 0.997 - ETA: 10s - loss: 0.0171 - accuracy: 0.997 - ETA: 10s - loss: 0.0177 - accuracy: 0.997 - ETA: 9s - loss: 0.0177 - accurac
y: 0.997 - ETA: 9s - loss: 0.0176 - accuracy: 0.99 - ETA: 9s - loss: 0.0176 - accuracy: 0.99 - ETA: 8s - loss: 0.0176 - accuracy: 0.99
- ETA: 8s - loss: 0.0175 - accuracy: 0.99 - ETA: 8s - loss: 0.0175 - accuracy: 0.99 - ETA: 7s - loss: 0.0174 - accuracy: 0.99 - ETA: 7
s - loss: 0.0174 - accuracy: 0.99 - ETA: 7s - loss: 0.0173 - accuracy: 0.99 - ETA: 6s - loss: 0.0173 - accuracy: 0.99 - ETA: 6s - los
s: 0.0172 - accuracy: 0.99 - ETA: 6s - loss: 0.0172 - accuracy: 0.99 - ETA: 5s - loss: 0.0172 - accuracy: 0.99 - ETA: 5s - loss: 0.017
1 - accuracy: 0.99 - ETA: 5s - loss: 0.0171 - accuracy: 0.99 - ETA: 4s - loss: 0.0170 - accuracy: 0.99 - ETA: 4s - loss: 0.0170 - accu
racy: 0.99 - ETA: 4s - loss: 0.0169 - accuracy: 0.99 - ETA: 3s - loss: 0.0169 - accuracy: 0.99 - ETA: 3s - loss: 0.0181 - accuracy: 0.
99 - ETA: 3s - loss: 0.0181 - accuracy: 0.99 - ETA: 2s - loss: 0.0180 - accuracy: 0.99 - ETA: 2s - loss: 0.0191 - accuracy: 0.99 - ET
A: 2s - loss: 0.0191 - accuracy: 0.99 - ETA: 1s - loss: 0.0190 - accuracy: 0.99 - ETA: 1s - loss: 0.0190 - accuracy: 0.99 - ETA: 1s -
 loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.99 - ETA: 0s - loss:
 0.0195 - accuracy: 0.99 - ETA: 0s - loss: 0.0195 - accuracy: 0.99 - 110s 342ms/step - loss: 0.0195 - accuracy: 0.9975 - val_loss: 0.0
293 - val_accuracy: 0.9968
Epoch 50/50
186/322 [================>.............] - ETA: 0s - loss: 0.0153 - accuracy: 1.00 - ETA: 30s - loss: 0.0147 - accuracy: 1.000 - ETA:
 58s - loss: 0.0145 - accuracy: 1.000 - ETA: 56s - loss: 0.0141 - accuracy: 1.000 - ETA: 1:02 - loss: 0.0136 - accuracy: 1.00 - ETA:
 1:02 - loss: 0.0131 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0126 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0120 - accuracy: 1.00 - ETA:
 1:13 - loss: 0.0116 - accuracy: 1.00 - ETA: 1:10 - loss: 0.0112 - accuracy: 1.00 - ETA: 1:09 - loss: 0.0107 - accuracy: 1.00 - ETA:
 1:07 - loss: 0.0104 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0100 - accuracy: 1.00 - ETA: 1:04 - loss: 0.0097 - accuracy: 1.00 - ETA:
 1:03 - loss: 0.0093 - accuracy: 1.00 - ETA: 1:06 - loss: 0.0090 - accuracy: 1.00 - ETA: 1:05 - loss: 0.0087 - accuracy: 1.00 - ETA:
 1:04 - loss: 0.0085 - accuracy: 1.00 - ETA: 1:03 - loss: 0.0082 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0080 - accuracy: 1.00 - ETA:
 1:01 - loss: 0.0077 - accuracy: 1.00 - ETA: 1:02 - loss: 0.0169 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0163 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0158 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0153 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0149 - accuracy: 0.99 - ETA:
 1:05 - loss: 0.0221 - accuracy: 0.99 - ETA: 1:06 - loss: 0.0215 - accuracy: 0.99 - ETA: 1:05 - loss: 0.0209 - accuracy: 0.99 - ETA:
 1:04 - loss: 0.0204 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0199 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0194 - accuracy: 0.99 - ETA:
```

```
1:02 - loss: 0.0245 - accuracy: 0.99 - ETA: 1:02 - loss: 0.0240 - accuracy: 0.99 - ETA: 1:03 - loss: 0.0234 - accuracy: 0.99 - ETA:
 1:02 - loss: 0.0281 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0276 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0270 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0265 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0260 - accuracy: 0.99 - ETA: 1:01 - loss: 0.0256 - accuracy: 0.99 - ETA:
 1:00 - loss: 0.0251 - accuracy: 0.99 - ETA: 1:00 - loss: 0.0247 - accuracy: 0.99 - ETA: 59s - loss: 0.0243 - accuracy: 0.9972 - ETA:
 59s - loss: 0.0239 - accuracy: 0.997 - ETA: 59s - loss: 0.0235 - accuracy: 0.997 - ETA: 59s - loss: 0.0231 - accuracy: 0.997 - ETA: 5
9s - loss: 0.0265 - accuracy: 0.996 - ETA: 58s - loss: 0.0295 - accuracy: 0.996 - ETA: 58s - loss: 0.0291 - accuracy: 0.996 - ETA: 57s
- loss: 0.0287 - accuracy: 0.996 - ETA: 57s - loss: 0.0283 - accuracy: 0.996 - ETA: 57s - loss: 0.0279 - accuracy: 0.996 - ETA: 57s -
 loss: 0.0275 - accuracy: 0.996 - ETA: 57s - loss: 0.0272 - accuracy: 0.996 - ETA: 56s - loss: 0.0269 - accuracy: 0.996 - ETA: 56s - l
oss: 0.0265 - accuracy: 0.996 - ETA: 56s - loss: 0.0262 - accuracy: 0.996 - ETA: 55s - loss: 0.0259 - accuracy: 0.996 - ETA: 56s - los
s: 0.0256 - accuracy: 0.996 - ETA: 56s - loss: 0.0252 - accuracy: 0.996 - ETA: 56s - loss: 0.0249 - accuracy: 0.997 - ETA: 56s - loss:
0.0246 - accuracy: 0.997 - ETA: 57s - loss: 0.0243 - accuracy: 0.997 - ETA: 58s - loss: 0.0240 - accuracy: 0.997 - ETA: 58s - loss: 0.
0237 - accuracy: 0.997 - ETA: 58s - loss: 0.0234 - accuracy: 0.997 - ETA: 58s - loss: 0.0231 - accuracy: 0.997 - ETA: 59s - loss: 0.02
28 - accuracy: 0.997 - ETA: 58s - loss: 0.0226 - accuracy: 0.997 - ETA: 58s - loss: 0.0223 - accuracy: 0.997 - ETA: 58s - loss: 0.0220
- accuracy: 0.997 - ETA: 58s - loss: 0.0218 - accuracy: 0.997 - ETA: 58s - loss: 0.0242 - accuracy: 0.997 - ETA: 58s - loss: 0.0239 -
 accuracy: 0.997 - ETA: 57s - loss: 0.0237 - accuracy: 0.997 - ETA: 57s - loss: 0.0234 - accuracy: 0.997 - ETA: 57s - loss: 0.0232 - a
ccuracy: 0.997 - ETA: 57s - loss: 0.0229 - accuracy: 0.997 - ETA: 57s - loss: 0.0253 - accuracy: 0.996 - ETA: 57s - loss: 0.0250 - acc
uracy: 0.996 - ETA: 56s - loss: 0.0247 - accuracy: 0.997 - ETA: 56s - loss: 0.0245 - accuracy: 0.997 - ETA: 56s - loss: 0.0243 - accur
acy: 0.997 - ETA: 56s - loss: 0.0241 - accuracy: 0.997 - ETA: 56s - loss: 0.0238 - accuracy: 0.997 - ETA: 56s - loss: 0.0236 - accurac
y: 0.997 - ETA: 55s - loss: 0.0276 - accuracy: 0.996 - ETA: 55s - loss: 0.0294 - accuracy: 0.996 - ETA: 55s - loss: 0.0310 - accuracy:
0.995 - ETA: 55s - loss: 0.0307 - accuracy: 0.995 - ETA: 55s - loss: 0.0305 - accuracy: 0.995 - ETA: 54s - loss: 0.0319 - accuracy: 0.
995 - ETA: 54s - loss: 0.0331 - accuracy: 0.995 - ETA: 54s - loss: 0.0330 - accuracy: 0.995 - ETA: 53s - loss: 0.0330 - accuracy: 0.99
5 - ETA: 53s - loss: 0.0329 - accuracy: 0.995 - ETA: 53s - loss: 0.0328 - accuracy: 0.995 - ETA: 53s - loss: 0.0327 - accuracy: 0.995
 - ETA: 52s - loss: 0.0326 - accuracy: 0.995 - ETA: 52s - loss: 0.0325 - accuracy: 0.995 - ETA: 52s - loss: 0.0323 - accuracy: 0.995 -
ETA: 52s - loss: 0.0321 - accuracy: 0.995 - ETA: 51s - loss: 0.0320 - accuracy: 0.995 - ETA: 51s - loss: 0.0318 - accuracy: 0.995 - ET
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s - loss: 0.0303 - accuracy: 0.996 - ETA: 50s - loss: 0.0300 - accuracy: 0.996 - ETA: 50s - loss: 0.0298 - accuracy: 0.996 - ETA: 50s
 - loss: 0.0296 - accuracy: 0.996 - ETA: 49s - loss: 0.0294 - accuracy: 0.996 - ETA: 49s - loss: 0.0292 - accuracy: 0.996 - ETA: 48s -
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0265 - accuracy: 0.996 - ETA: 45s - loss: 0.0263 - accuracy: 0.996 - ETA: 44s - loss: 0.0262 - accuracy: 0.996 - ETA: 44s - loss: 0.02
60 - accuracy: 0.996 - ETA: 44s - loss: 0.0258 - accuracy: 0.996 - ETA: 44s - loss: 0.0256 - accuracy: 0.996 - ETA: 44s - loss: 0.0255
- accuracy: 0.996 - ETA: 43s - loss: 0.0253 - accuracy: 0.996 - ETA: 43s - loss: 0.0251 - accuracy: 0.996 - ETA: 43s - loss: 0.0250 -
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ccuracy: 0.996 - ETA: 42s - loss: 0.0243 - accuracy: 0.996 - ETA: 41s - loss: 0.0242 - accuracy: 0.997 - ETA: 41s - loss: 0.0240 - acc
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996 - ETA: 39s - loss: 0.0265 - accuracy: 0.996 - ETA: 38s - loss: 0.0264 - accuracy: 0.996 - ETA: 38s - loss: 0.0263 - accuracy: 0.99
6 - ETA: 38s - loss: 0.0262 - accuracy: 0.996 - ETA: 37s - loss: 0.0261 - accuracy: 0.996 - ETA: 37s - loss: 0.0260 - accuracy: 0.996
 - ETA: 37s - loss: 0.0258 - accuracy: 0.996 - ETA: 37s - loss: 0.0257 - accuracy: 0.996 - ETA: 36s - loss: 0.0256 - accuracy: 0.996 -
ETA: 36s - loss: 0.0255 - accuracy: 0.996 - ETA: 36s - loss: 0.0254 - accuracy: 0.996 - ETA: 36s - loss: 0.0252 - accuracy: 0.996 - ET
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 0.0229 - accuracy: 0.997 - ETA: 16s - loss: 0.0228 - accuracy: 0.997 - ETA: 16s - loss: 0.0228 - accuracy: 0.997 - ETA: 16s - loss:
 0.0227 - accuracy: 0.997 - ETA: 15s - loss: 0.0226 - accuracy: 0.997 - ETA: 15s - loss: 0.0226 - accuracy: 0.997 - ETA: 15s - loss:
 0.0225 - accuracy: 0.997 - ETA: 15s - loss: 0.0225 - accuracy: 0.997 - ETA: 14s - loss: 0.0224 - accuracy: 0.997 - ETA: 14s - loss:
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 0.0221 - accuracy: 0.997 - ETA: 13s - loss: 0.0221 - accuracy: 0.997 - ETA: 13s - loss: 0.0220 - accuracy: 0.997 - ETA: 13s - loss:
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 0.0217 - accuracy: 0.997 - ETA: 12s - loss: 0.0217 - accuracy: 0.997 - ETA: 11s - loss: 0.0216 - accuracy: 0.997 - ETA: 11s - loss:
 0.0215 - accuracy: 0.997 - ETA: 11s - loss: 0.0215 - accuracy: 0.997 - ETA: 10s - loss: 0.0214 - accuracy: 0.997 - ETA: 10s - loss:
 0.0213 - accuracy: 0.997 - ETA: 10s - loss: 0.0221 - accuracy: 0.997 - ETA: 10s - loss: 0.0220 - accuracy: 0.997 - ETA: 9s - loss: 0.
0219 - accuracy: 0.997 - ETA: 9s - loss: 0.0225 - accuracy: 0.99 - ETA: 9s - loss: 0.0225 - accuracy: 0.99 - ETA: 8s - loss: 0.0224 -
 accuracy: 0.99 - ETA: 8s - loss: 0.0224 - accuracy: 0.99 - ETA: 8s - loss: 0.0223 - accuracy: 0.99 - ETA: 8s - loss: 0.0222 - accurac
y: 0.99 - ETA: 7s - loss: 0.0222 - accuracy: 0.99 - ETA: 7s - loss: 0.0221 - accuracy: 0.99 - ETA: 7s - loss: 0.0221 - accuracy: 0.99
 - ETA: 7s - loss: 0.0220 - accuracy: 0.99 - ETA: 6s - loss: 0.0219 - accuracy: 0.99 - ETA: 6s - loss: 0.0219 - accuracy: 0.99 - ETA:
 6s - loss: 0.0218 - accuracy: 0.99 - ETA: 5s - loss: 0.0218 - accuracy: 0.99 - ETA: 5s - loss: 0.0217 - accuracy: 0.99 - ETA: 5s - lo
ss: 0.0216 - accuracy: 0.99 - ETA: 5s - loss: 0.0216 - accuracy: 0.99 - ETA: 4s - loss: 0.0215 - accuracy: 0.99 - ETA: 4s - loss: 0.02
15 - accuracy: 0.99 - ETA: 4s - loss: 0.0214 - accuracy: 0.99 - ETA: 4s - loss: 0.0214 - accuracy: 0.99 - ETA: 3s - loss: 0.0213 - acc
```
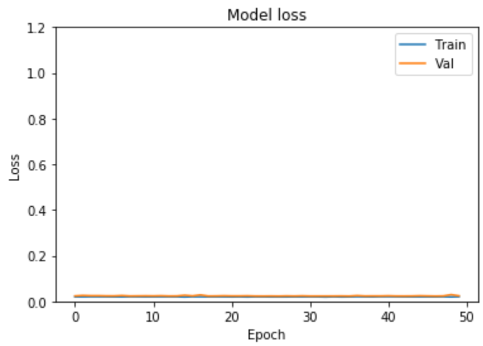

```
uracy: 0.99 - ETA: 3s - loss: 0.0212 - accuracy: 0.99 - ETA: 3s - loss: 0.0212 - accuracy: 0.99 - ETA: 2s - loss: 0.0211 - accuracy:
 0.99 - ETA: 2s - loss: 0.0211 - accuracy: 0.99 - ETA: 2s - loss: 0.0210 - accuracy: 0.99 - ETA: 2s - loss: 0.0209 - accuracy: 0.99 -
 ETA: 1s - loss: 0.0209 - accuracy: 0.99 - ETA: 1s - loss: 0.0208 - accuracy: 0.99 - ETA: 1s - loss: 0.0208 - accuracy: 0.99 - ETA: 1s
- loss: 0.0207 - accuracy: 0.99 - ETA: 0s - loss: 0.0207 - accuracy: 0.99 - ETA: 0s - loss: 0.0206 - accuracy: 0.99 - ETA: 0s - loss:
 0.0205 - accuracy: 0.99 - ETA: 0s - loss: 0.0205 - accuracy: 0.99 - 90s 281ms/step - loss: 0.0205 - accuracy: 0.9975 - val_loss: 0.02
39 - val_accuracy: 0.9968
```

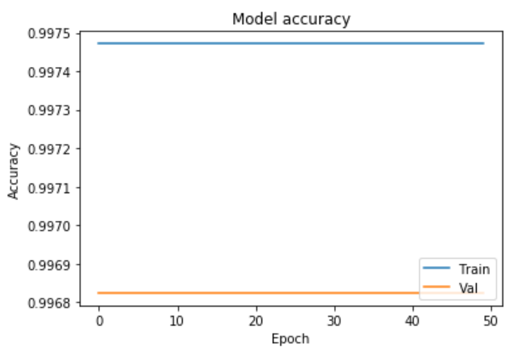
In [14]:

```python
plt.plot(hist_out.history['loss'])
plt.plot(hist_out.history['val_loss'])
plt.title('Model loss')
plt.ylabel('Loss')
plt.xlabel('Epoch')
plt.legend(['Train', 'Val'], loc='upper right')
plt.ylim(top=1.2, bottom=0)
plt.show()
```



In [15]:

```python
plt.plot(hist_out.history['accuracy'])
plt.plot(hist_out.history['val_accuracy'])
plt.title('Model accuracy')
plt.ylabel('Accuracy')
plt.xlabel('Epoch')
plt.legend(['Train', 'Val'], loc='lower right')
plt.show()
```



In [58]:
```
ftd = train_data[(train_data['Label'] == 'Normal') |
                              ((train_data['Label'] == 'Pnemonia') & (train_data['Label_2_Virus_category'] == 'COVID-19'))]


# Create a target attribute where value = positive if 'Pnemonia + COVID-19' or value = negative if 'Normal'
ftd['target'] = ['negative' if holder == 'Normal' else 'positive' for holder in ftd['Label']]

ftd= shuffle(ftd, random_state=1)

final_validation_data = ftd.iloc[1000:, :]
ftd = ftd.iloc[:1000, :]

print(f"Final train data shape : {ftd.shape}")
ftd.sample(10)
```

```
C:\Users\Micky\Anaconda3\lib\site-packages\ipykernel_launcher.py:6: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-c
opy


Final train data shape : (1000, 7)
```

Out[58]:

	Unnamed: 0	X_ray_image_name	Label	Dataset_type	Label_2_Virus_category	Label_1_Virus_category	target
719	719	NORMAL2-IM-0564-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
164	164	IM-0349-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
561	561	IM-0722-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
169	169	IM-0343-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
1170	1170	NORMAL2-IM-1149-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
558	558	IM-0728-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
611	611	IM-0752-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
256	256	IM-0467-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
1286	1286	NORMAL2-IM-1311-0001.jpeg	Normal	TRAIN	NaN	NaN	negative
1102	1102	NORMAL2-IM-1064-0001.jpeg	Normal	TRAIN	NaN	NaN	negative

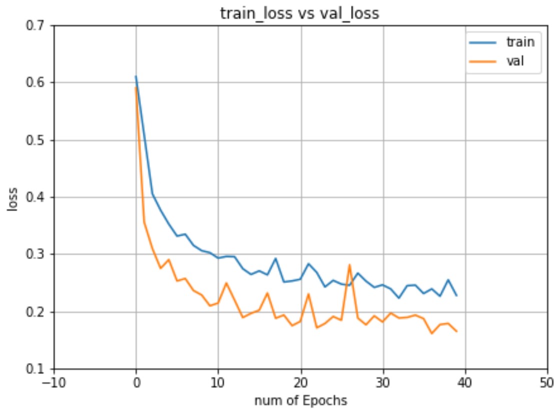
In [12]:
```
model.compile(loss='categorical_crossentropy', optimizer='rmsprop',metrics=["accuracy"])
```

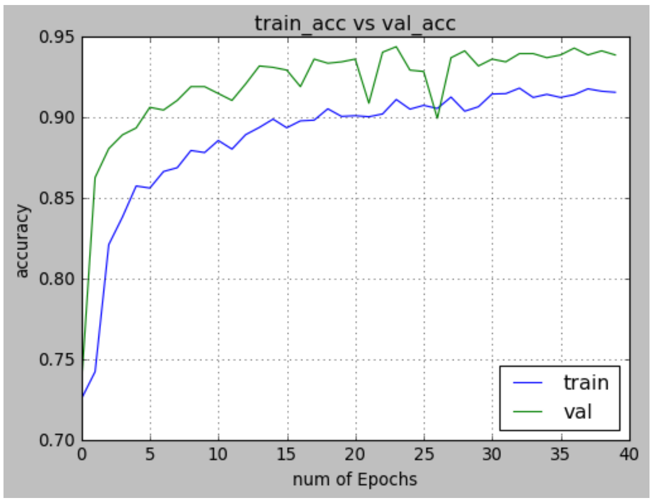
In [14]:
```
hist = model.fit(X_train, y_train, batch_size=16, epochs=num_epoch, verbose=1, validation_data=(X_test, y_test))
```

```
Epoch 1/40
293/293 [==============================] - 4s 14ms/step - loss: 0.6097 - accuracy: 0.7254 - val_loss: 0.5900 - val_accuracy: 0.7338
Epoch 2/40
293/293 [==============================] - 4s 13ms/step - loss: 0.5076 - accuracy: 0.7423 - val_loss: 0.3554 - val_accuracy: 0.8626
Epoch 3/40
293/293 [==============================] - 4s 14ms/step - loss: 0.4049 - accuracy: 0.8211 - val_loss: 0.3092 - val_accuracy: 0.8805
Epoch 4/40
293/293 [==============================] - 4s 13ms/step - loss: 0.3763 - accuracy: 0.8382 - val_loss: 0.2746 - val_accuracy: 0.8891
Epoch 5/40
293/293 [==============================] - 4s 13ms/step - loss: 0.3520 - accuracy: 0.8574 - val_loss: 0.2899 - val_accuracy: 0.8933
Epoch 6/40
293/293 [==============================] - 4s 14ms/step - loss: 0.3311 - accuracy: 0.8561 - val_loss: 0.2526 - val_accuracy: 0.9061
Epoch 7/40
293/293 [==============================] - 4s 14ms/step - loss: 0.3344 - accuracy: 0.8664 - val_loss: 0.2569 - val_accuracy: 0.9044
Epoch 8/40
293/293 [==============================] - 4s 13ms/step - loss: 0.3148 - accuracy: 0.8687 - val_loss: 0.2359 - val_accuracy: 0.9104
Epoch 9/40
293/293 [==============================] - 4s 13ms/step - loss: 0.3055 - accuracy: 0.8794 - val_loss: 0.2280 - val_accuracy: 0.9189
Epoch 10/40
293/293 [==============================] - 4s 13ms/step - loss: 0.3021 - accuracy: 0.8781 - val_loss: 0.2092 - val_accuracy: 0.9189
Epoch 11/40
293/293 [==============================] - 4s 14ms/step - loss: 0.2926 - accuracy: 0.8856 - val_loss: 0.2140 - val_accuracy: 0.9147
Epoch 12/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2955 - accuracy: 0.8802 - val_loss: 0.2491 - val_accuracy: 0.9104
Epoch 13/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2951 - accuracy: 0.8892 - val_loss: 0.2191 - val_accuracy: 0.9206
Epoch 14/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2740 - accuracy: 0.8937 - val_loss: 0.1886 - val_accuracy: 0.9317
Epoch 15/40
293/293 [==============================] - 4s 14ms/step - loss: 0.2640 - accuracy: 0.8988 - val_loss: 0.1960 - val_accuracy: 0.9309
Epoch 16/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2702 - accuracy: 0.8935 - val_loss: 0.2015 - val_accuracy: 0.9292
Epoch 17/40
293/293 [==============================] - 4s 14ms/step - loss: 0.2633 - accuracy: 0.8977 - val_loss: 0.2315 - val_accuracy: 0.9189
Epoch 18/40
293/293 [==============================] - 4s 14ms/step - loss: 0.2920 - accuracy: 0.8982 - val_loss: 0.1874 - val_accuracy: 0.9360 -
accuracy - ETA
Epoch 19/40
293/293 [==============================] - 4s 14ms/step - loss: 0.2508 - accuracy: 0.9052 - val_loss: 0.1931 - val_accuracy: 0.9334
Epoch 20/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2526 - accuracy: 0.9005 - val_loss: 0.1745 - val_accuracy: 0.9343
Epoch 21/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2556 - accuracy: 0.9009 - val_loss: 0.1819 - val_accuracy: 0.9360
Epoch 22/40
293/293 [==============================] - 4s 14ms/step - loss: 0.2827 - accuracy: 0.9003 - val_loss: 0.2299 - val_accuracy: 0.9087
Epoch 23/40
293/293 [==============================] - 4s 14ms/step - loss: 0.2675 - accuracy: 0.9020 - val_loss: 0.1707 - val_accuracy: 0.9403
Epoch 24/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2422 - accuracy: 0.9110 - val_loss: 0.1782 - val_accuracy: 0.9437
Epoch 25/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2536 - accuracy: 0.9050 - val_loss: 0.1905 - val_accuracy: 0.9292
Epoch 26/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2471 - accuracy: 0.9073 - val_loss: 0.1840 - val_accuracy: 0.9283
Epoch 27/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2450 - accuracy: 0.9054 - val_loss: 0.2809 - val_accuracy: 0.8993
Epoch 28/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2663 - accuracy: 0.9125 - val_loss: 0.1877 - val_accuracy: 0.9369
Epoch 29/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2523 - accuracy: 0.9037 - val_loss: 0.1760 - val_accuracy: 0.9411
Epoch 30/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2414 - accuracy: 0.9065 - val_loss: 0.1916 - val_accuracy: 0.9317
Epoch 31/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2458 - accuracy: 0.9144 - val_loss: 0.1810 - val_accuracy: 0.9360
Epoch 32/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2387 - accuracy: 0.9146 - val_loss: 0.1965 - val_accuracy: 0.9343
Epoch 33/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2226 - accuracy: 0.9180 - val_loss: 0.1879 - val_accuracy: 0.9394
Epoch 34/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2443 - accuracy: 0.9123 - val_loss: 0.1889 - val_accuracy: 0.9394
Epoch 35/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2453 - accuracy: 0.9142 - val_loss: 0.1929 - val_accuracy: 0.9369
Epoch 36/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2307 - accuracy: 0.9123 - val_loss: 0.1868 - val_accuracy: 0.9386
Epoch 37/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2388 - accuracy: 0.9140 - val_loss: 0.1607 - val_accuracy: 0.9428
Epoch 38/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2259 - accuracy: 0.9176 - val_loss: 0.1764 - val_accuracy: 0.9386
Epoch 39/40
293/293 [==============================] - 4s 14ms/step - loss: 0.2546 - accuracy: 0.9161 - val_loss: 0.1783 - val_accuracy: 0.9411
Epoch 40/40
293/293 [==============================] - 4s 13ms/step - loss: 0.2274 - accuracy: 0.9155 - val_loss: 0.1648 - val_accuracy: 0.9386
```

In [ ]:
```
hist = model.fit(X_train, y_train, batch_size=16, epochs=num_epoch, verbose=1, validation_data=(X_test, y_test))
```

In [15]:
```
display_loss_accuracy(hist)
```





Effective Net80 Training and testing

In [11]:

```
image_input = Input(shape=(224, 224, 3))
model = EfficientNetB0(input_tensor=image_input, include_top=True,weights='imagenet')
model.summary()
last_layer = model.get_layer('avg_pool').output
x= Flatten(name='flatten')(last_layer)
out = Dense(num_classes, activation='softmax', name='output_layer')(x)
custom_resnet_model = Model(inputs=image_input,outputs= out)
custom_resnet_model.summary()
```

```
Model: "efficientnetb0"
__________________________________________________________________________________________________
Layer (type)                    Output Shape         Param #     Connected to
==================================================================================================
input_1 (InputLayer)            [(None, 224, 224, 3) 0
__________________________________________________________________________________________________
rescaling (Rescaling)           (None, 224, 224, 3)  0           input_1[0][0]
__________________________________________________________________________________________________
normalization (Normalization)   (None, 224, 224, 3)  7           rescaling[0][0]
__________________________________________________________________________________________________
stem_conv_pad (ZeroPadding2D)   (None, 225, 225, 3)  0           normalization[0][0]
__________________________________________________________________________________________________
stem_conv (Conv2D)              (None, 112, 112, 32) 864         stem_conv_pad[0][0]
__________________________________________________________________________________________________
stem_bn (BatchNormalization)    (None, 112, 112, 32) 128         stem_conv[0][0]
__________________________________________________________________________________________________
stem_activation (Activation)    (None, 112, 112, 32) 0           stem_bn[0][0]
__________________________________________________________________________________________________
block1a_dwconv (DepthwiseConv2D (None, 112, 112, 32) 288         stem_activation[0][0]
__________________________________________________________________________________________________
block1a_bn (BatchNormalization) (None, 112, 112, 32) 128         block1a_dwconv[0][0]
__________________________________________________________________________________________________
block1a_activation (Activation) (None, 112, 112, 32) 0           block1a_bn[0][0]
__________________________________________________________________________________________________
block1a_se_squeeze (GlobalAvera (None, 32)           0           block1a_activation[0][0]
__________________________________________________________________________________________________
block1a_se_reshape (Reshape)    (None, 1, 1, 32)     0           block1a_se_squeeze[0][0]
__________________________________________________________________________________________________
block1a_se_reduce (Conv2D)      (None, 1, 1, 8)      264         block1a_se_reshape[0][0]
__________________________________________________________________________________________________
block1a_se_expand (Conv2D)      (None, 1, 1, 32)     288         block1a_se_reduce[0][0]
__________________________________________________________________________________________________
block1a_se_excite (Multiply)    (None, 112, 112, 32) 0           block1a_activation[0][0]
                                                                 block1a_se_expand[0][0]
__________________________________________________________________________________________________
block1a_project_conv (Conv2D)   (None, 112, 112, 16) 512         block1a_se_excite[0][0]
__________________________________________________________________________________________________
block1a_project_bn (BatchNormal (None, 112, 112, 16) 64          block1a_project_conv[0][0]
__________________________________________________________________________________________________
block2a_expand_conv (Conv2D)    (None, 112, 112, 96) 1536        block1a_project_bn[0][0]
__________________________________________________________________________________________________
block2a_expand_bn (BatchNormali (None, 112, 112, 96) 384         block2a_expand_conv[0][0]
__________________________________________________________________________________________________
block2a_expand_activation (Acti (None, 112, 112, 96) 0           block2a_expand_bn[0][0]
__________________________________________________________________________________________________
block2a_dwconv_pad (ZeroPadding (None, 113, 113, 96) 0           block2a_expand_activation[0][0]
__________________________________________________________________________________________________
block2a_dwconv (DepthwiseConv2D (None, 56, 56, 96)   864         block2a_dwconv_pad[0][0]
__________________________________________________________________________________________________
block2a_bn (BatchNormalization) (None, 56, 56, 96)   384         block2a_dwconv[0][0]
__________________________________________________________________________________________________
block2a_activation (Activation) (None, 56, 56, 96)   0           block2a_bn[0][0]
__________________________________________________________________________________________________
block2a_se_squeeze (GlobalAvera (None, 96)           0           block2a_activation[0][0]
__________________________________________________________________________________________________
block2a_se_reshape (Reshape)    (None, 1, 1, 96)     0           block2a_se_squeeze[0][0]
__________________________________________________________________________________________________
block2a_se_reduce (Conv2D)      (None, 1, 1, 4)      388         block2a_se_reshape[0][0]
__________________________________________________________________________________________________
block2a_se_expand (Conv2D)      (None, 1, 1, 96)     480         block2a_se_reduce[0][0]
__________________________________________________________________________________________________
block2a_se_excite (Multiply)    (None, 56, 56, 96)   0           block2a_activation[0][0]
                                                                 block2a_se_expand[0][0]
__________________________________________________________________________________________________
block2a_project_conv (Conv2D)   (None, 56, 56, 24)   2304        block2a_se_excite[0][0]
__________________________________________________________________________________________________
block2a_project_bn (BatchNormal (None, 56, 56, 24)   96          block2a_project_conv[0][0]
__________________________________________________________________________________________________
block2b_expand_conv (Conv2D)    (None, 56, 56, 144)  3456        block2a_project_bn[0][0]
__________________________________________________________________________________________________
block2b_expand_bn (BatchNormali (None, 56, 56, 144)  576         block2b_expand_conv[0][0]
__________________________________________________________________________________________________
block2b_expand_activation (Acti (None, 56, 56, 144)  0           block2b_expand_bn[0][0]
__________________________________________________________________________________________________
block2b_dwconv (DepthwiseConv2D (None, 56, 56, 144)  1296        block2b_expand_activation[0][0]
__________________________________________________________________________________________________
block2b_bn (BatchNormalization) (None, 56, 56, 144)  576         block2b_dwconv[0][0]
__________________________________________________________________________________________________
block2b_activation (Activation) (None, 56, 56, 144)  0           block2b_bn[0][0]
__________________________________________________________________________________________________
block2b_se_squeeze (GlobalAvera (None, 144)          0           block2b_activation[0][0]
__________________________________________________________________________________________________
block2b_se_reshape (Reshape)    (None, 1, 1, 144)    0           block2b_se_squeeze[0][0]
__________________________________________________________________________________________________
block2b_se_reduce (Conv2D)      (None, 1, 1, 6)      870         block2b_se_reshape[0][0]
__________________________________________________________________________________________________
block2b_se_expand (Conv2D)      (None, 1, 1, 144)    1008        block2b_se_reduce[0][0]
__________________________________________________________________________________________________
block2b_se_excite (Multiply)    (None, 56, 56, 144)  0           block2b_activation[0][0]
                                                                 block2b_se_expand[0][0]
__________________________________________________________________________________________________
```

block2b_project_conv (Conv2D)	(None, 56, 56, 24)	3456	block2b_se_excite[0][0]
block2b_project_bn (BatchNormal	(None, 56, 56, 24)	96	block2b_project_conv[0][0]
block2b_drop (Dropout)	(None, 56, 56, 24)	0	block2b_project_bn[0][0]
block2b_add (Add)	(None, 56, 56, 24)	0	block2b_drop[0][0] block2a_project_bn[0][0]
block3a_expand_conv (Conv2D)	(None, 56, 56, 144)	3456	block2b_add[0][0]
block3a_expand_bn (BatchNormali	(None, 56, 56, 144)	576	block3a_expand_conv[0][0]
block3a_expand_activation (Acti	(None, 56, 56, 144)	0	block3a_expand_bn[0][0]
block3a_dwconv_pad (ZeroPadding	(None, 59, 59, 144)	0	block3a_expand_activation[0][0]
block3a_dwconv (DepthwiseConv2D	(None, 28, 28, 144)	3600	block3a_dwconv_pad[0][0]
block3a_bn (BatchNormalization)	(None, 28, 28, 144)	576	block3a_dwconv[0][0]
block3a_activation (Activation)	(None, 28, 28, 144)	0	block3a_bn[0][0]
block3a_se_squeeze (GlobalAvera	(None, 144)	0	block3a_activation[0][0]
block3a_se_reshape (Reshape)	(None, 1, 1, 144)	0	block3a_se_squeeze[0][0]
block3a_se_reduce (Conv2D)	(None, 1, 1, 6)	870	block3a_se_reshape[0][0]
block3a_se_expand (Conv2D)	(None, 1, 1, 144)	1008	block3a_se_reduce[0][0]
block3a_se_excite (Multiply)	(None, 28, 28, 144)	0	block3a_activation[0][0] block3a_se_expand[0][0]
block3a_project_conv (Conv2D)	(None, 28, 28, 40)	5760	block3a_se_excite[0][0]
block3a_project_bn (BatchNormal	(None, 28, 28, 40)	160	block3a_project_conv[0][0]
block3b_expand_conv (Conv2D)	(None, 28, 28, 240)	9600	block3a_project_bn[0][0]
block3b_expand_bn (BatchNormali	(None, 28, 28, 240)	960	block3b_expand_conv[0][0]
block3b_expand_activation (Acti	(None, 28, 28, 240)	0	block3b_expand_bn[0][0]
block3b_dwconv (DepthwiseConv2D	(None, 28, 28, 240)	6000	block3b_expand_activation[0][0]
block3b_bn (BatchNormalization)	(None, 28, 28, 240)	960	block3b_dwconv[0][0]
block3b_activation (Activation)	(None, 28, 28, 240)	0	block3b_bn[0][0]
block3b_se_squeeze (GlobalAvera	(None, 240)	0	block3b_activation[0][0]
block3b_se_reshape (Reshape)	(None, 1, 1, 240)	0	block3b_se_squeeze[0][0]
block3b_se_reduce (Conv2D)	(None, 1, 1, 10)	2410	block3b_se_reshape[0][0]
block3b_se_expand (Conv2D)	(None, 1, 1, 240)	2640	block3b_se_reduce[0][0]
block3b_se_excite (Multiply)	(None, 28, 28, 240)	0	block3b_activation[0][0] block3b_se_expand[0][0]
block3b_project_conv (Conv2D)	(None, 28, 28, 40)	9600	block3b_se_excite[0][0]
block3b_project_bn (BatchNormal	(None, 28, 28, 40)	160	block3b_project_conv[0][0]
block3b_drop (Dropout)	(None, 28, 28, 40)	0	block3b_project_bn[0][0]
block3b_add (Add)	(None, 28, 28, 40)	0	block3b_drop[0][0] block3a_project_bn[0][0]
block4a_expand_conv (Conv2D)	(None, 28, 28, 240)	9600	block3b_add[0][0]
block4a_expand_bn (BatchNormali	(None, 28, 28, 240)	960	block4a_expand_conv[0][0]
block4a_expand_activation (Acti	(None, 28, 28, 240)	0	block4a_expand_bn[0][0]
block4a_dwconv_pad (ZeroPadding	(None, 29, 29, 240)	0	block4a_expand_activation[0][0]
block4a_dwconv (DepthwiseConv2D	(None, 14, 14, 240)	2160	block4a_dwconv_pad[0][0]
block4a_bn (BatchNormalization)	(None, 14, 14, 240)	960	block4a_dwconv[0][0]
block4a_activation (Activation)	(None, 14, 14, 240)	0	block4a_bn[0][0]
block4a_se_squeeze (GlobalAvera	(None, 240)	0	block4a_activation[0][0]
block4a_se_reshape (Reshape)	(None, 1, 1, 240)	0	block4a_se_squeeze[0][0]
block4a_se_reduce (Conv2D)	(None, 1, 1, 10)	2410	block4a_se_reshape[0][0]
block4a_se_expand (Conv2D)	(None, 1, 1, 240)	2640	block4a_se_reduce[0][0]

block4a_se_excite (Multiply)	(None, 14, 14, 240)	0	block4a_activation[0][0] block4a_se_expand[0][0]
block4a_project_conv (Conv2D)	(None, 14, 14, 80)	19200	block4a_se_excite[0][0]
block4a_project_bn (BatchNormal	(None, 14, 14, 80)	320	block4a_project_conv[0][0]
block4b_expand_conv (Conv2D)	(None, 14, 14, 480)	38400	block4a_project_bn[0][0]
block4b_expand_bn (BatchNormali	(None, 14, 14, 480)	1920	block4b_expand_conv[0][0]
block4b_expand_activation (Acti	(None, 14, 14, 480)	0	block4b_expand_bn[0][0]
block4b_dwconv (DepthwiseConv2D	(None, 14, 14, 480)	4320	block4b_expand_activation[0][0]
block4b_bn (BatchNormalization)	(None, 14, 14, 480)	1920	block4b_dwconv[0][0]
block4b_activation (Activation)	(None, 14, 14, 480)	0	block4b_bn[0][0]
block4b_se_squeeze (GlobalAvera	(None, 480)	0	block4b_activation[0][0]
block4b_se_reshape (Reshape)	(None, 1, 1, 480)	0	block4b_se_squeeze[0][0]
block4b_se_reduce (Conv2D)	(None, 1, 1, 20)	9620	block4b_se_reshape[0][0]
block4b_se_expand (Conv2D)	(None, 1, 1, 480)	10080	block4b_se_reduce[0][0]
block4b_se_excite (Multiply)	(None, 14, 14, 480)	0	block4b_activation[0][0] block4b_se_expand[0][0]
block4b_project_conv (Conv2D)	(None, 14, 14, 80)	38400	block4b_se_excite[0][0]
block4b_project_bn (BatchNormal	(None, 14, 14, 80)	320	block4b_project_conv[0][0]
block4b_drop (Dropout)	(None, 14, 14, 80)	0	block4b_project_bn[0][0]
block4b_add (Add)	(None, 14, 14, 80)	0	block4b_drop[0][0] block4a_project_bn[0][0]
block4c_expand_conv (Conv2D)	(None, 14, 14, 480)	38400	block4b_add[0][0]
block4c_expand_bn (BatchNormali	(None, 14, 14, 480)	1920	block4c_expand_conv[0][0]
block4c_expand_activation (Acti	(None, 14, 14, 480)	0	block4c_expand_bn[0][0]
block4c_dwconv (DepthwiseConv2D	(None, 14, 14, 480)	4320	block4c_expand_activation[0][0]
block4c_bn (BatchNormalization)	(None, 14, 14, 480)	1920	block4c_dwconv[0][0]
block4c_activation (Activation)	(None, 14, 14, 480)	0	block4c_bn[0][0]
block4c_se_squeeze (GlobalAvera	(None, 480)	0	block4c_activation[0][0]
block4c_se_reshape (Reshape)	(None, 1, 1, 480)	0	block4c_se_squeeze[0][0]
block4c_se_reduce (Conv2D)	(None, 1, 1, 20)	9620	block4c_se_reshape[0][0]
block4c_se_expand (Conv2D)	(None, 1, 1, 480)	10080	block4c_se_reduce[0][0]
block4c_se_excite (Multiply)	(None, 14, 14, 480)	0	block4c_activation[0][0] block4c_se_expand[0][0]
block4c_project_conv (Conv2D)	(None, 14, 14, 80)	38400	block4c_se_excite[0][0]
block4c_project_bn (BatchNormal	(None, 14, 14, 80)	320	block4c_project_conv[0][0]
block4c_drop (Dropout)	(None, 14, 14, 80)	0	block4c_project_bn[0][0]
block4c_add (Add)	(None, 14, 14, 80)	0	block4c_drop[0][0] block4b_add[0][0]
block5a_expand_conv (Conv2D)	(None, 14, 14, 480)	38400	block4c_add[0][0]
block5a_expand_bn (BatchNormali	(None, 14, 14, 480)	1920	block5a_expand_conv[0][0]
block5a_expand_activation (Acti	(None, 14, 14, 480)	0	block5a_expand_bn[0][0]
block5a_dwconv (DepthwiseConv2D	(None, 14, 14, 480)	12000	block5a_expand_activation[0][0]
block5a_bn (BatchNormalization)	(None, 14, 14, 480)	1920	block5a_dwconv[0][0]
block5a_activation (Activation)	(None, 14, 14, 480)	0	block5a_bn[0][0]
block5a_se_squeeze (GlobalAvera	(None, 480)	0	block5a_activation[0][0]
block5a_se_reshape (Reshape)	(None, 1, 1, 480)	0	block5a_se_squeeze[0][0]
block5a_se_reduce (Conv2D)	(None, 1, 1, 20)	9620	block5a_se_reshape[0][0]
block5a_se_expand (Conv2D)	(None, 1, 1, 480)	10080	block5a_se_reduce[0][0]

block5a_se_excite (Multiply)	(None, 14, 14, 480)	0	block5a_activation[0][0] block5a_se_expand[0][0]
block5a_project_conv (Conv2D)	(None, 14, 14, 112)	53760	block5a_se_excite[0][0]
block5a_project_bn (BatchNormal	(None, 14, 14, 112)	448	block5a_project_conv[0][0]
block5b_expand_conv (Conv2D)	(None, 14, 14, 672)	75264	block5a_project_bn[0][0]
block5b_expand_bn (BatchNormali	(None, 14, 14, 672)	2688	block5b_expand_conv[0][0]
block5b_expand_activation (Acti	(None, 14, 14, 672)	0	block5b_expand_bn[0][0]
block5b_dwconv (DepthwiseConv2D	(None, 14, 14, 672)	16800	block5b_expand_activation[0][0]
block5b_bn (BatchNormalization)	(None, 14, 14, 672)	2688	block5b_dwconv[0][0]
block5b_activation (Activation)	(None, 14, 14, 672)	0	block5b_bn[0][0]
block5b_se_squeeze (GlobalAvera	(None, 672)	0	block5b_activation[0][0]
block5b_se_reshape (Reshape)	(None, 1, 1, 672)	0	block5b_se_squeeze[0][0]
block5b_se_reduce (Conv2D)	(None, 1, 1, 28)	18844	block5b_se_reshape[0][0]
block5b_se_expand (Conv2D)	(None, 1, 1, 672)	19488	block5b_se_reduce[0][0]
block5b_se_excite (Multiply)	(None, 14, 14, 672)	0	block5b_activation[0][0] block5b_se_expand[0][0]
block5b_project_conv (Conv2D)	(None, 14, 14, 112)	75264	block5b_se_excite[0][0]
block5b_project_bn (BatchNormal	(None, 14, 14, 112)	448	block5b_project_conv[0][0]
block5b_drop (Dropout)	(None, 14, 14, 112)	0	block5b_project_bn[0][0]
block5b_add (Add)	(None, 14, 14, 112)	0	block5b_drop[0][0] block5a_project_bn[0][0]
block5c_expand_conv (Conv2D)	(None, 14, 14, 672)	75264	block5b_add[0][0]
block5c_expand_bn (BatchNormali	(None, 14, 14, 672)	2688	block5c_expand_conv[0][0]
block5c_expand_activation (Acti	(None, 14, 14, 672)	0	block5c_expand_bn[0][0]
block5c_dwconv (DepthwiseConv2D	(None, 14, 14, 672)	16800	block5c_expand_activation[0][0]
block5c_bn (BatchNormalization)	(None, 14, 14, 672)	2688	block5c_dwconv[0][0]
block5c_activation (Activation)	(None, 14, 14, 672)	0	block5c_bn[0][0]
block5c_se_squeeze (GlobalAvera	(None, 672)	0	block5c_activation[0][0]
block5c_se_reshape (Reshape)	(None, 1, 1, 672)	0	block5c_se_squeeze[0][0]
block5c_se_reduce (Conv2D)	(None, 1, 1, 28)	18844	block5c_se_reshape[0][0]
block5c_se_expand (Conv2D)	(None, 1, 1, 672)	19488	block5c_se_reduce[0][0]
block5c_se_excite (Multiply)	(None, 14, 14, 672)	0	block5c_activation[0][0] block5c_se_expand[0][0]
block5c_project_conv (Conv2D)	(None, 14, 14, 112)	75264	block5c_se_excite[0][0]
block5c_project_bn (BatchNormal	(None, 14, 14, 112)	448	block5c_project_conv[0][0]
block5c_drop (Dropout)	(None, 14, 14, 112)	0	block5c_project_bn[0][0]
block5c_add (Add)	(None, 14, 14, 112)	0	block5c_drop[0][0] block5b_add[0][0]
block6a_expand_conv (Conv2D)	(None, 14, 14, 672)	75264	block5c_add[0][0]
block6a_expand_bn (BatchNormali	(None, 14, 14, 672)	2688	block6a_expand_conv[0][0]
block6a_expand_activation (Acti	(None, 14, 14, 672)	0	block6a_expand_bn[0][0]
block6a_dwconv_pad (ZeroPadding	(None, 17, 17, 672)	0	block6a_expand_activation[0][0]
block6a_dwconv (DepthwiseConv2D	(None, 7, 7, 672)	16800	block6a_dwconv_pad[0][0]
block6a_bn (BatchNormalization)	(None, 7, 7, 672)	2688	block6a_dwconv[0][0]
block6a_activation (Activation)	(None, 7, 7, 672)	0	block6a_bn[0][0]
block6a_se_squeeze (GlobalAvera	(None, 672)	0	block6a_activation[0][0]
block6a_se_reshape (Reshape)	(None, 1, 1, 672)	0	block6a_se_squeeze[0][0]
block6a_se_reduce (Conv2D)	(None, 1, 1, 28)	18844	block6a_se_reshape[0][0]

block6a_se_expand (Conv2D)	(None, 1, 1, 672)	19488	block6a_se_reduce[0][0]
block6a_se_excite (Multiply)	(None, 7, 7, 672)	0	block6a_activation[0][0] block6a_se_expand[0][0]
block6a_project_conv (Conv2D)	(None, 7, 7, 192)	129024	block6a_se_excite[0][0]
block6a_project_bn (BatchNormal	(None, 7, 7, 192)	768	block6a_project_conv[0][0]
block6b_expand_conv (Conv2D)	(None, 7, 7, 1152)	221184	block6a_project_bn[0][0]
block6b_expand_bn (BatchNormali	(None, 7, 7, 1152)	4608	block6b_expand_conv[0][0]
block6b_expand_activation (Acti	(None, 7, 7, 1152)	0	block6b_expand_bn[0][0]
block6b_dwconv (DepthwiseConv2D	(None, 7, 7, 1152)	28800	block6b_expand_activation[0][0]
block6b_bn (BatchNormalization)	(None, 7, 7, 1152)	4608	block6b_dwconv[0][0]
block6b_activation (Activation)	(None, 7, 7, 1152)	0	block6b_bn[0][0]
block6b_se_squeeze (GlobalAvera	(None, 1152)	0	block6b_activation[0][0]
block6b_se_reshape (Reshape)	(None, 1, 1, 1152)	0	block6b_se_squeeze[0][0]
block6b_se_reduce (Conv2D)	(None, 1, 1, 48)	55344	block6b_se_reshape[0][0]
block6b_se_expand (Conv2D)	(None, 1, 1, 1152)	56448	block6b_se_reduce[0][0]
block6b_se_excite (Multiply)	(None, 7, 7, 1152)	0	block6b_activation[0][0] block6b_se_expand[0][0]
block6b_project_conv (Conv2D)	(None, 7, 7, 192)	221184	block6b_se_excite[0][0]
block6b_project_bn (BatchNormal	(None, 7, 7, 192)	768	block6b_project_conv[0][0]
block6b_drop (Dropout)	(None, 7, 7, 192)	0	block6b_project_bn[0][0]
block6b_add (Add)	(None, 7, 7, 192)	0	block6b_drop[0][0] block6a_project_bn[0][0]
block6c_expand_conv (Conv2D)	(None, 7, 7, 1152)	221184	block6b_add[0][0]
block6c_expand_bn (BatchNormali	(None, 7, 7, 1152)	4608	block6c_expand_conv[0][0]
block6c_expand_activation (Acti	(None, 7, 7, 1152)	0	block6c_expand_bn[0][0]
block6c_dwconv (DepthwiseConv2D	(None, 7, 7, 1152)	28800	block6c_expand_activation[0][0]
block6c_bn (BatchNormalization)	(None, 7, 7, 1152)	4608	block6c_dwconv[0][0]
block6c_activation (Activation)	(None, 7, 7, 1152)	0	block6c_bn[0][0]
block6c_se_squeeze (GlobalAvera	(None, 1152)	0	block6c_activation[0][0]
block6c_se_reshape (Reshape)	(None, 1, 1, 1152)	0	block6c_se_squeeze[0][0]
block6c_se_reduce (Conv2D)	(None, 1, 1, 48)	55344	block6c_se_reshape[0][0]
block6c_se_expand (Conv2D)	(None, 1, 1, 1152)	56448	block6c_se_reduce[0][0]
block6c_se_excite (Multiply)	(None, 7, 7, 1152)	0	block6c_activation[0][0] block6c_se_expand[0][0]
block6c_project_conv (Conv2D)	(None, 7, 7, 192)	221184	block6c_se_excite[0][0]
block6c_project_bn (BatchNormal	(None, 7, 7, 192)	768	block6c_project_conv[0][0]
block6c_drop (Dropout)	(None, 7, 7, 192)	0	block6c_project_bn[0][0]
block6c_add (Add)	(None, 7, 7, 192)	0	block6c_drop[0][0] block6b_add[0][0]
block6d_expand_conv (Conv2D)	(None, 7, 7, 1152)	221184	block6c_add[0][0]
block6d_expand_bn (BatchNormali	(None, 7, 7, 1152)	4608	block6d_expand_conv[0][0]
block6d_expand_activation (Acti	(None, 7, 7, 1152)	0	block6d_expand_bn[0][0]
block6d_dwconv (DepthwiseConv2D	(None, 7, 7, 1152)	28800	block6d_expand_activation[0][0]
block6d_bn (BatchNormalization)	(None, 7, 7, 1152)	4608	block6d_dwconv[0][0]
block6d_activation (Activation)	(None, 7, 7, 1152)	0	block6d_bn[0][0]
block6d_se_squeeze (GlobalAvera	(None, 1152)	0	block6d_activation[0][0]
block6d_se_reshape (Reshape)	(None, 1, 1, 1152)	0	block6d_se_squeeze[0][0]
block6d_se_reduce (Conv2D)	(None, 1, 1, 48)	55344	block6d_se_reshape[0][0]

```
________________________________________________________________________________________________
block6d_se_expand (Conv2D)      (None, 1, 1, 1152)   56448       block6d_se_reduce[0][0]
________________________________________________________________________________________________
block6d_se_excite (Multiply)    (None, 7, 7, 1152)   0           block6d_activation[0][0]
                                                                 block6d_se_expand[0][0]
________________________________________________________________________________________________
block6d_project_conv (Conv2D)   (None, 7, 7, 192)    221184      block6d_se_excite[0][0]
________________________________________________________________________________________________
block6d_project_bn (BatchNormal (None, 7, 7, 192)    768         block6d_project_conv[0][0]
________________________________________________________________________________________________
block6d_drop (Dropout)          (None, 7, 7, 192)    0           block6d_project_bn[0][0]
________________________________________________________________________________________________
block6d_add (Add)               (None, 7, 7, 192)    0           block6d_drop[0][0]
                                                                 block6c_add[0][0]
________________________________________________________________________________________________
block7a_expand_conv (Conv2D)    (None, 7, 7, 1152)   221184      block6d_add[0][0]
________________________________________________________________________________________________
block7a_expand_bn (BatchNormali (None, 7, 7, 1152)   4608        block7a_expand_conv[0][0]
________________________________________________________________________________________________
block7a_expand_activation (Acti (None, 7, 7, 1152)   0           block7a_expand_bn[0][0]
________________________________________________________________________________________________
block7a_dwconv (DepthwiseConv2D (None, 7, 7, 1152)   10368       block7a_expand_activation[0][0]
________________________________________________________________________________________________
block7a_bn (BatchNormalization) (None, 7, 7, 1152)   4608        block7a_dwconv[0][0]
________________________________________________________________________________________________
block7a_activation (Activation) (None, 7, 7, 1152)   0           block7a_bn[0][0]
________________________________________________________________________________________________
block7a_se_squeeze (GlobalAvera (None, 1152)         0           block7a_activation[0][0]
________________________________________________________________________________________________
block7a_se_reshape (Reshape)    (None, 1, 1, 1152)   0           block7a_se_squeeze[0][0]
________________________________________________________________________________________________
block7a_se_reduce (Conv2D)      (None, 1, 1, 48)     55344       block7a_se_reshape[0][0]
________________________________________________________________________________________________
block7a_se_expand (Conv2D)      (None, 1, 1, 1152)   56448       block7a_se_reduce[0][0]
________________________________________________________________________________________________
block7a_se_excite (Multiply)    (None, 7, 7, 1152)   0           block7a_activation[0][0]
                                                                 block7a_se_expand[0][0]
________________________________________________________________________________________________
block7a_project_conv (Conv2D)   (None, 7, 7, 320)    368640      block7a_se_excite[0][0]
________________________________________________________________________________________________
block7a_project_bn (BatchNormal (None, 7, 7, 320)    1280        block7a_project_conv[0][0]
________________________________________________________________________________________________
top_conv (Conv2D)               (None, 7, 7, 1280)   409600      block7a_project_bn[0][0]
________________________________________________________________________________________________
top_bn (BatchNormalization)     (None, 7, 7, 1280)   5120        top_conv[0][0]
________________________________________________________________________________________________
top_activation (Activation)     (None, 7, 7, 1280)   0           top_bn[0][0]
________________________________________________________________________________________________
avg_pool (GlobalAveragePooling2 (None, 1280)         0           top_activation[0][0]
________________________________________________________________________________________________
top_dropout (Dropout)           (None, 1280)         0           avg_pool[0][0]
________________________________________________________________________________________________
predictions (Dense)             (None, 1000)         1281000     top_dropout[0][0]
================================================================================================
Total params: 5,330,571
Trainable params: 5,288,548
Non-trainable params: 42,023
________________________________________________________________________________________________
Model: "functional_1"
________________________________________________________________________________________________
Layer (type)                    Output Shape         Param #     Connected to
================================================================================================
input_1 (InputLayer)            [(None, 224, 224, 3) 0
________________________________________________________________________________________________
rescaling (Rescaling)           (None, 224, 224, 3)  0           input_1[0][0]
________________________________________________________________________________________________
normalization (Normalization)   (None, 224, 224, 3)  7           rescaling[0][0]
________________________________________________________________________________________________
stem_conv_pad (ZeroPadding2D)   (None, 225, 225, 3)  0           normalization[0][0]
________________________________________________________________________________________________
stem_conv (Conv2D)              (None, 112, 112, 32) 864         stem_conv_pad[0][0]
________________________________________________________________________________________________
stem_bn (BatchNormalization)    (None, 112, 112, 32) 128         stem_conv[0][0]
________________________________________________________________________________________________
stem_activation (Activation)    (None, 112, 112, 32) 0           stem_bn[0][0]
________________________________________________________________________________________________
block1a_dwconv (DepthwiseConv2D (None, 112, 112, 32) 288         stem_activation[0][0]
________________________________________________________________________________________________
block1a_bn (BatchNormalization) (None, 112, 112, 32) 128         block1a_dwconv[0][0]
________________________________________________________________________________________________
block1a_activation (Activation) (None, 112, 112, 32) 0           block1a_bn[0][0]
________________________________________________________________________________________________
block1a_se_squeeze (GlobalAvera (None, 32)           0           block1a_activation[0][0]
________________________________________________________________________________________________
block1a_se_reshape (Reshape)    (None, 1, 1, 32)     0           block1a_se_squeeze[0][0]
________________________________________________________________________________________________
block1a_se_reduce (Conv2D)      (None, 1, 1, 8)      264         block1a_se_reshape[0][0]
________________________________________________________________________________________________
block1a_se_expand (Conv2D)      (None, 1, 1, 32)     288         block1a_se_reduce[0][0]
________________________________________________________________________________________________
block1a_se_excite (Multiply)    (None, 112, 112, 32) 0           block1a_activation[0][0]
```

			block1a_se_expand[0][0]
block1a_project_conv (Conv2D)	(None, 112, 112, 16)	512	block1a_se_excite[0][0]
block1a_project_bn (BatchNormal	(None, 112, 112, 16)	64	block1a_project_conv[0][0]
block2a_expand_conv (Conv2D)	(None, 112, 112, 96)	1536	block1a_project_bn[0][0]
block2a_expand_bn (BatchNormali	(None, 112, 112, 96)	384	block2a_expand_conv[0][0]
block2a_expand_activation (Acti	(None, 112, 112, 96)	0	block2a_expand_bn[0][0]
block2a_dwconv_pad (ZeroPadding	(None, 113, 113, 96)	0	block2a_expand_activation[0][0]
block2a_dwconv (DepthwiseConv2D	(None, 56, 56, 96)	864	block2a_dwconv_pad[0][0]
block2a_bn (BatchNormalization)	(None, 56, 56, 96)	384	block2a_dwconv[0][0]
block2a_activation (Activation)	(None, 56, 56, 96)	0	block2a_bn[0][0]
block2a_se_squeeze (GlobalAvera	(None, 96)	0	block2a_activation[0][0]
block2a_se_reshape (Reshape)	(None, 1, 1, 96)	0	block2a_se_squeeze[0][0]
block2a_se_reduce (Conv2D)	(None, 1, 1, 4)	388	block2a_se_reshape[0][0]
block2a_se_expand (Conv2D)	(None, 1, 1, 96)	480	block2a_se_reduce[0][0]
block2a_se_excite (Multiply)	(None, 56, 56, 96)	0	block2a_activation[0][0] block2a_se_expand[0][0]
block2a_project_conv (Conv2D)	(None, 56, 56, 24)	2304	block2a_se_excite[0][0]
block2a_project_bn (BatchNormal	(None, 56, 56, 24)	96	block2a_project_conv[0][0]
block2b_expand_conv (Conv2D)	(None, 56, 56, 144)	3456	block2a_project_bn[0][0]
block2b_expand_bn (BatchNormali	(None, 56, 56, 144)	576	block2b_expand_conv[0][0]
block2b_expand_activation (Acti	(None, 56, 56, 144)	0	block2b_expand_bn[0][0]
block2b_dwconv (DepthwiseConv2D	(None, 56, 56, 144)	1296	block2b_expand_activation[0][0]
block2b_bn (BatchNormalization)	(None, 56, 56, 144)	576	block2b_dwconv[0][0]
block2b_activation (Activation)	(None, 56, 56, 144)	0	block2b_bn[0][0]
block2b_se_squeeze (GlobalAvera	(None, 144)	0	block2b_activation[0][0]
block2b_se_reshape (Reshape)	(None, 1, 1, 144)	0	block2b_se_squeeze[0][0]
block2b_se_reduce (Conv2D)	(None, 1, 1, 6)	870	block2b_se_reshape[0][0]
block2b_se_expand (Conv2D)	(None, 1, 1, 144)	1008	block2b_se_reduce[0][0]
block2b_se_excite (Multiply)	(None, 56, 56, 144)	0	block2b_activation[0][0] block2b_se_expand[0][0]
block2b_project_conv (Conv2D)	(None, 56, 56, 24)	3456	block2b_se_excite[0][0]
block2b_project_bn (BatchNormal	(None, 56, 56, 24)	96	block2b_project_conv[0][0]
block2b_drop (Dropout)	(None, 56, 56, 24)	0	block2b_project_bn[0][0]
block2b_add (Add)	(None, 56, 56, 24)	0	block2b_drop[0][0] block2a_project_bn[0][0]
block3a_expand_conv (Conv2D)	(None, 56, 56, 144)	3456	block2b_add[0][0]
block3a_expand_bn (BatchNormali	(None, 56, 56, 144)	576	block3a_expand_conv[0][0]
block3a_expand_activation (Acti	(None, 56, 56, 144)	0	block3a_expand_bn[0][0]
block3a_dwconv_pad (ZeroPadding	(None, 59, 59, 144)	0	block3a_expand_activation[0][0]
block3a_dwconv (DepthwiseConv2D	(None, 28, 28, 144)	3600	block3a_dwconv_pad[0][0]
block3a_bn (BatchNormalization)	(None, 28, 28, 144)	576	block3a_dwconv[0][0]
block3a_activation (Activation)	(None, 28, 28, 144)	0	block3a_bn[0][0]
block3a_se_squeeze (GlobalAvera	(None, 144)	0	block3a_activation[0][0]
block3a_se_reshape (Reshape)	(None, 1, 1, 144)	0	block3a_se_squeeze[0][0]
block3a_se_reduce (Conv2D)	(None, 1, 1, 6)	870	block3a_se_reshape[0][0]
block3a_se_expand (Conv2D)	(None, 1, 1, 144)	1008	block3a_se_reduce[0][0]
block3a_se_excite (Multiply)	(None, 28, 28, 144)	0	block3a_activation[0][0] block3a_se_expand[0][0]

block3a_project_conv (Conv2D)	(None, 28, 28, 40)	5760	block3a_se_excite[0][0]
block3a_project_bn (BatchNormal	(None, 28, 28, 40)	160	block3a_project_conv[0][0]
block3b_expand_conv (Conv2D)	(None, 28, 28, 240)	9600	block3a_project_bn[0][0]
block3b_expand_bn (BatchNormali	(None, 28, 28, 240)	960	block3b_expand_conv[0][0]
block3b_expand_activation (Acti	(None, 28, 28, 240)	0	block3b_expand_bn[0][0]
block3b_dwconv (DepthwiseConv2D	(None, 28, 28, 240)	6000	block3b_expand_activation[0][0]
block3b_bn (BatchNormalization)	(None, 28, 28, 240)	960	block3b_dwconv[0][0]
block3b_activation (Activation)	(None, 28, 28, 240)	0	block3b_bn[0][0]
block3b_se_squeeze (GlobalAvera	(None, 240)	0	block3b_activation[0][0]
block3b_se_reshape (Reshape)	(None, 1, 1, 240)	0	block3b_se_squeeze[0][0]
block3b_se_reduce (Conv2D)	(None, 1, 1, 10)	2410	block3b_se_reshape[0][0]
block3b_se_expand (Conv2D)	(None, 1, 1, 240)	2640	block3b_se_reduce[0][0]
block3b_se_excite (Multiply)	(None, 28, 28, 240)	0	block3b_activation[0][0] block3b_se_expand[0][0]
block3b_project_conv (Conv2D)	(None, 28, 28, 40)	9600	block3b_se_excite[0][0]
block3b_project_bn (BatchNormal	(None, 28, 28, 40)	160	block3b_project_conv[0][0]
block3b_drop (Dropout)	(None, 28, 28, 40)	0	block3b_project_bn[0][0]
block3b_add (Add)	(None, 28, 28, 40)	0	block3b_drop[0][0] block3a_project_bn[0][0]
block4a_expand_conv (Conv2D)	(None, 28, 28, 240)	9600	block3b_add[0][0]
block4a_expand_bn (BatchNormali	(None, 28, 28, 240)	960	block4a_expand_conv[0][0]
block4a_expand_activation (Acti	(None, 28, 28, 240)	0	block4a_expand_bn[0][0]
block4a_dwconv_pad (ZeroPadding	(None, 29, 29, 240)	0	block4a_expand_activation[0][0]
block4a_dwconv (DepthwiseConv2D	(None, 14, 14, 240)	2160	block4a_dwconv_pad[0][0]
block4a_bn (BatchNormalization)	(None, 14, 14, 240)	960	block4a_dwconv[0][0]
block4a_activation (Activation)	(None, 14, 14, 240)	0	block4a_bn[0][0]
block4a_se_squeeze (GlobalAvera	(None, 240)	0	block4a_activation[0][0]
block4a_se_reshape (Reshape)	(None, 1, 1, 240)	0	block4a_se_squeeze[0][0]
block4a_se_reduce (Conv2D)	(None, 1, 1, 10)	2410	block4a_se_reshape[0][0]
block4a_se_expand (Conv2D)	(None, 1, 1, 240)	2640	block4a_se_reduce[0][0]
block4a_se_excite (Multiply)	(None, 14, 14, 240)	0	block4a_activation[0][0] block4a_se_expand[0][0]
block4a_project_conv (Conv2D)	(None, 14, 14, 80)	19200	block4a_se_excite[0][0]
block4a_project_bn (BatchNormal	(None, 14, 14, 80)	320	block4a_project_conv[0][0]
block4b_expand_conv (Conv2D)	(None, 14, 14, 480)	38400	block4a_project_bn[0][0]
block4b_expand_bn (BatchNormali	(None, 14, 14, 480)	1920	block4b_expand_conv[0][0]
block4b_expand_activation (Acti	(None, 14, 14, 480)	0	block4b_expand_bn[0][0]
block4b_dwconv (DepthwiseConv2D	(None, 14, 14, 480)	4320	block4b_expand_activation[0][0]
block4b_bn (BatchNormalization)	(None, 14, 14, 480)	1920	block4b_dwconv[0][0]
block4b_activation (Activation)	(None, 14, 14, 480)	0	block4b_bn[0][0]
block4b_se_squeeze (GlobalAvera	(None, 480)	0	block4b_activation[0][0]
block4b_se_reshape (Reshape)	(None, 1, 1, 480)	0	block4b_se_squeeze[0][0]
block4b_se_reduce (Conv2D)	(None, 1, 1, 20)	9620	block4b_se_reshape[0][0]
block4b_se_expand (Conv2D)	(None, 1, 1, 480)	10080	block4b_se_reduce[0][0]
block4b_se_excite (Multiply)	(None, 14, 14, 480)	0	block4b_activation[0][0] block4b_se_expand[0][0]
block4b_project_conv (Conv2D)	(None, 14, 14, 80)	38400	block4b_se_excite[0][0]

block4b_project_bn (BatchNormal	(None, 14, 14, 80)	320	block4b_project_conv[0][0]
block4b_drop (Dropout)	(None, 14, 14, 80)	0	block4b_project_bn[0][0]
block4b_add (Add)	(None, 14, 14, 80)	0	block4b_drop[0][0] block4a_project_bn[0][0]
block4c_expand_conv (Conv2D)	(None, 14, 14, 480)	38400	block4b_add[0][0]
block4c_expand_bn (BatchNormali	(None, 14, 14, 480)	1920	block4c_expand_conv[0][0]
block4c_expand_activation (Acti	(None, 14, 14, 480)	0	block4c_expand_bn[0][0]
block4c_dwconv (DepthwiseConv2D	(None, 14, 14, 480)	4320	block4c_expand_activation[0][0]
block4c_bn (BatchNormalization)	(None, 14, 14, 480)	1920	block4c_dwconv[0][0]
block4c_activation (Activation)	(None, 14, 14, 480)	0	block4c_bn[0][0]
block4c_se_squeeze (GlobalAvera	(None, 480)	0	block4c_activation[0][0]
block4c_se_reshape (Reshape)	(None, 1, 1, 480)	0	block4c_se_squeeze[0][0]
block4c_se_reduce (Conv2D)	(None, 1, 1, 20)	9620	block4c_se_reshape[0][0]
block4c_se_expand (Conv2D)	(None, 1, 1, 480)	10080	block4c_se_reduce[0][0]
block4c_se_excite (Multiply)	(None, 14, 14, 480)	0	block4c_activation[0][0] block4c_se_expand[0][0]
block4c_project_conv (Conv2D)	(None, 14, 14, 80)	38400	block4c_se_excite[0][0]
block4c_project_bn (BatchNormal	(None, 14, 14, 80)	320	block4c_project_conv[0][0]
block4c_drop (Dropout)	(None, 14, 14, 80)	0	block4c_project_bn[0][0]
block4c_add (Add)	(None, 14, 14, 80)	0	block4c_drop[0][0] block4b_add[0][0]
block5a_expand_conv (Conv2D)	(None, 14, 14, 480)	38400	block4c_add[0][0]
block5a_expand_bn (BatchNormali	(None, 14, 14, 480)	1920	block5a_expand_conv[0][0]
block5a_expand_activation (Acti	(None, 14, 14, 480)	0	block5a_expand_bn[0][0]
block5a_dwconv (DepthwiseConv2D	(None, 14, 14, 480)	12000	block5a_expand_activation[0][0]
block5a_bn (BatchNormalization)	(None, 14, 14, 480)	1920	block5a_dwconv[0][0]
block5a_activation (Activation)	(None, 14, 14, 480)	0	block5a_bn[0][0]
block5a_se_squeeze (GlobalAvera	(None, 480)	0	block5a_activation[0][0]
block5a_se_reshape (Reshape)	(None, 1, 1, 480)	0	block5a_se_squeeze[0][0]
block5a_se_reduce (Conv2D)	(None, 1, 1, 20)	9620	block5a_se_reshape[0][0]
block5a_se_expand (Conv2D)	(None, 1, 1, 480)	10080	block5a_se_reduce[0][0]
block5a_se_excite (Multiply)	(None, 14, 14, 480)	0	block5a_activation[0][0] block5a_se_expand[0][0]
block5a_project_conv (Conv2D)	(None, 14, 14, 112)	53760	block5a_se_excite[0][0]
block5a_project_bn (BatchNormal	(None, 14, 14, 112)	448	block5a_project_conv[0][0]
block5b_expand_conv (Conv2D)	(None, 14, 14, 672)	75264	block5a_project_bn[0][0]
block5b_expand_bn (BatchNormali	(None, 14, 14, 672)	2688	block5b_expand_conv[0][0]
block5b_expand_activation (Acti	(None, 14, 14, 672)	0	block5b_expand_bn[0][0]
block5b_dwconv (DepthwiseConv2D	(None, 14, 14, 672)	16800	block5b_expand_activation[0][0]
block5b_bn (BatchNormalization)	(None, 14, 14, 672)	2688	block5b_dwconv[0][0]
block5b_activation (Activation)	(None, 14, 14, 672)	0	block5b_bn[0][0]
block5b_se_squeeze (GlobalAvera	(None, 672)	0	block5b_activation[0][0]
block5b_se_reshape (Reshape)	(None, 1, 1, 672)	0	block5b_se_squeeze[0][0]
block5b_se_reduce (Conv2D)	(None, 1, 1, 28)	18844	block5b_se_reshape[0][0]
block5b_se_expand (Conv2D)	(None, 1, 1, 672)	19488	block5b_se_reduce[0][0]
block5b_se_excite (Multiply)	(None, 14, 14, 672)	0	block5b_activation[0][0] block5b_se_expand[0][0]
block5b_project_conv (Conv2D)	(None, 14, 14, 112)	75264	block5b_se_excite[0][0]

block5b_project_bn (BatchNormal	(None, 14, 14, 112)	448	block5b_project_conv[0][0]
block5b_drop (Dropout)	(None, 14, 14, 112)	0	block5b_project_bn[0][0]
block5b_add (Add)	(None, 14, 14, 112)	0	block5b_drop[0][0] block5a_project_bn[0][0]
block5c_expand_conv (Conv2D)	(None, 14, 14, 672)	75264	block5b_add[0][0]
block5c_expand_bn (BatchNormali	(None, 14, 14, 672)	2688	block5c_expand_conv[0][0]
block5c_expand_activation (Acti	(None, 14, 14, 672)	0	block5c_expand_bn[0][0]
block5c_dwconv (DepthwiseConv2D	(None, 14, 14, 672)	16800	block5c_expand_activation[0][0]
block5c_bn (BatchNormalization)	(None, 14, 14, 672)	2688	block5c_dwconv[0][0]
block5c_activation (Activation)	(None, 14, 14, 672)	0	block5c_bn[0][0]
block5c_se_squeeze (GlobalAvera	(None, 672)	0	block5c_activation[0][0]
block5c_se_reshape (Reshape)	(None, 1, 1, 672)	0	block5c_se_squeeze[0][0]
block5c_se_reduce (Conv2D)	(None, 1, 1, 28)	18844	block5c_se_reshape[0][0]
block5c_se_expand (Conv2D)	(None, 1, 1, 672)	19488	block5c_se_reduce[0][0]
block5c_se_excite (Multiply)	(None, 14, 14, 672)	0	block5c_activation[0][0] block5c_se_expand[0][0]
block5c_project_conv (Conv2D)	(None, 14, 14, 112)	75264	block5c_se_excite[0][0]
block5c_project_bn (BatchNormal	(None, 14, 14, 112)	448	block5c_project_conv[0][0]
block5c_drop (Dropout)	(None, 14, 14, 112)	0	block5c_project_bn[0][0]
block5c_add (Add)	(None, 14, 14, 112)	0	block5c_drop[0][0] block5b_add[0][0]
block6a_expand_conv (Conv2D)	(None, 14, 14, 672)	75264	block5c_add[0][0]
block6a_expand_bn (BatchNormali	(None, 14, 14, 672)	2688	block6a_expand_conv[0][0]
block6a_expand_activation (Acti	(None, 14, 14, 672)	0	block6a_expand_bn[0][0]
block6a_dwconv_pad (ZeroPadding	(None, 17, 17, 672)	0	block6a_expand_activation[0][0]
block6a_dwconv (DepthwiseConv2D	(None, 7, 7, 672)	16800	block6a_dwconv_pad[0][0]
block6a_bn (BatchNormalization)	(None, 7, 7, 672)	2688	block6a_dwconv[0][0]
block6a_activation (Activation)	(None, 7, 7, 672)	0	block6a_bn[0][0]
block6a_se_squeeze (GlobalAvera	(None, 672)	0	block6a_activation[0][0]
block6a_se_reshape (Reshape)	(None, 1, 1, 672)	0	block6a_se_squeeze[0][0]
block6a_se_reduce (Conv2D)	(None, 1, 1, 28)	18844	block6a_se_reshape[0][0]
block6a_se_expand (Conv2D)	(None, 1, 1, 672)	19488	block6a_se_reduce[0][0]
block6a_se_excite (Multiply)	(None, 7, 7, 672)	0	block6a_activation[0][0] block6a_se_expand[0][0]
block6a_project_conv (Conv2D)	(None, 7, 7, 192)	129024	block6a_se_excite[0][0]
block6a_project_bn (BatchNormal	(None, 7, 7, 192)	768	block6a_project_conv[0][0]
block6b_expand_conv (Conv2D)	(None, 7, 7, 1152)	221184	block6a_project_bn[0][0]
block6b_expand_bn (BatchNormali	(None, 7, 7, 1152)	4608	block6b_expand_conv[0][0]
block6b_expand_activation (Acti	(None, 7, 7, 1152)	0	block6b_expand_bn[0][0]
block6b_dwconv (DepthwiseConv2D	(None, 7, 7, 1152)	28800	block6b_expand_activation[0][0]
block6b_bn (BatchNormalization)	(None, 7, 7, 1152)	4608	block6b_dwconv[0][0]
block6b_activation (Activation)	(None, 7, 7, 1152)	0	block6b_bn[0][0]
block6b_se_squeeze (GlobalAvera	(None, 1152)	0	block6b_activation[0][0]
block6b_se_reshape (Reshape)	(None, 1, 1, 1152)	0	block6b_se_squeeze[0][0]
block6b_se_reduce (Conv2D)	(None, 1, 1, 48)	55344	block6b_se_reshape[0][0]
block6b_se_expand (Conv2D)	(None, 1, 1, 1152)	56448	block6b_se_reduce[0][0]
block6b_se_excite (Multiply)	(None, 7, 7, 1152)	0	block6b_activation[0][0] block6b_se_expand[0][0]

block6b_project_conv (Conv2D)	(None, 7, 7, 192)	221184	block6b_se_excite[0][0]
block6b_project_bn (BatchNormal	(None, 7, 7, 192)	768	block6b_project_conv[0][0]
block6b_drop (Dropout)	(None, 7, 7, 192)	0	block6b_project_bn[0][0]
block6b_add (Add)	(None, 7, 7, 192)	0	block6b_drop[0][0] block6a_project_bn[0][0]
block6c_expand_conv (Conv2D)	(None, 7, 7, 1152)	221184	block6b_add[0][0]
block6c_expand_bn (BatchNormali	(None, 7, 7, 1152)	4608	block6c_expand_conv[0][0]
block6c_expand_activation (Acti	(None, 7, 7, 1152)	0	block6c_expand_bn[0][0]
block6c_dwconv (DepthwiseConv2D	(None, 7, 7, 1152)	28800	block6c_expand_activation[0][0]
block6c_bn (BatchNormalization)	(None, 7, 7, 1152)	4608	block6c_dwconv[0][0]
block6c_activation (Activation)	(None, 7, 7, 1152)	0	block6c_bn[0][0]
block6c_se_squeeze (GlobalAvera	(None, 1152)	0	block6c_activation[0][0]
block6c_se_reshape (Reshape)	(None, 1, 1, 1152)	0	block6c_se_squeeze[0][0]
block6c_se_reduce (Conv2D)	(None, 1, 1, 48)	55344	block6c_se_reshape[0][0]
block6c_se_expand (Conv2D)	(None, 1, 1, 1152)	56448	block6c_se_reduce[0][0]
block6c_se_excite (Multiply)	(None, 7, 7, 1152)	0	block6c_activation[0][0] block6c_se_expand[0][0]
block6c_project_conv (Conv2D)	(None, 7, 7, 192)	221184	block6c_se_excite[0][0]
block6c_project_bn (BatchNormal	(None, 7, 7, 192)	768	block6c_project_conv[0][0]
block6c_drop (Dropout)	(None, 7, 7, 192)	0	block6c_project_bn[0][0]
block6c_add (Add)	(None, 7, 7, 192)	0	block6c_drop[0][0] block6b_add[0][0]
block6d_expand_conv (Conv2D)	(None, 7, 7, 1152)	221184	block6c_add[0][0]
block6d_expand_bn (BatchNormali	(None, 7, 7, 1152)	4608	block6d_expand_conv[0][0]
block6d_expand_activation (Acti	(None, 7, 7, 1152)	0	block6d_expand_bn[0][0]
block6d_dwconv (DepthwiseConv2D	(None, 7, 7, 1152)	28800	block6d_expand_activation[0][0]
block6d_bn (BatchNormalization)	(None, 7, 7, 1152)	4608	block6d_dwconv[0][0]
block6d_activation (Activation)	(None, 7, 7, 1152)	0	block6d_bn[0][0]
block6d_se_squeeze (GlobalAvera	(None, 1152)	0	block6d_activation[0][0]
block6d_se_reshape (Reshape)	(None, 1, 1, 1152)	0	block6d_se_squeeze[0][0]
block6d_se_reduce (Conv2D)	(None, 1, 1, 48)	55344	block6d_se_reshape[0][0]
block6d_se_expand (Conv2D)	(None, 1, 1, 1152)	56448	block6d_se_reduce[0][0]
block6d_se_excite (Multiply)	(None, 7, 7, 1152)	0	block6d_activation[0][0] block6d_se_expand[0][0]
block6d_project_conv (Conv2D)	(None, 7, 7, 192)	221184	block6d_se_excite[0][0]
block6d_project_bn (BatchNormal	(None, 7, 7, 192)	768	block6d_project_conv[0][0]
block6d_drop (Dropout)	(None, 7, 7, 192)	0	block6d_project_bn[0][0]
block6d_add (Add)	(None, 7, 7, 192)	0	block6d_drop[0][0] block6c_add[0][0]
block7a_expand_conv (Conv2D)	(None, 7, 7, 1152)	221184	block6d_add[0][0]
block7a_expand_bn (BatchNormali	(None, 7, 7, 1152)	4608	block7a_expand_conv[0][0]
block7a_expand_activation (Acti	(None, 7, 7, 1152)	0	block7a_expand_bn[0][0]
block7a_dwconv (DepthwiseConv2D	(None, 7, 7, 1152)	10368	block7a_expand_activation[0][0]
block7a_bn (BatchNormalization)	(None, 7, 7, 1152)	4608	block7a_dwconv[0][0]
block7a_activation (Activation)	(None, 7, 7, 1152)	0	block7a_bn[0][0]
block7a_se_squeeze (GlobalAvera	(None, 1152)	0	block7a_activation[0][0]
block7a_se_reshape (Reshape)	(None, 1, 1, 1152)	0	block7a_se_squeeze[0][0]
block7a_se_reduce (Conv2D)	(None, 1, 1, 48)	55344	block7a_se_reshape[0][0]

```
block7a_se_expand (Conv2D)      (None, 1, 1, 1152)   56448       block7a_se_reduce[0][0]
__________________________________________________________________________________________________
block7a_se_excite (Multiply)    (None, 7, 7, 1152)   0           block7a_activation[0][0]
                                                                 block7a_se_expand[0][0]
__________________________________________________________________________________________________
block7a_project_conv (Conv2D)   (None, 7, 7, 320)    368640      block7a_se_excite[0][0]
__________________________________________________________________________________________________
block7a_project_bn (BatchNormal (None, 7, 7, 320)    1280        block7a_project_conv[0][0]
__________________________________________________________________________________________________
top_conv (Conv2D)               (None, 7, 7, 1280)   409600      block7a_project_bn[0][0]
__________________________________________________________________________________________________
top_bn (BatchNormalization)     (None, 7, 7, 1280)   5120        top_conv[0][0]
__________________________________________________________________________________________________
top_activation (Activation)     (None, 7, 7, 1280)   0           top_bn[0][0]
__________________________________________________________________________________________________
avg_pool (GlobalAveragePooling2 (None, 1280)         0           top_activation[0][0]
__________________________________________________________________________________________________
flatten (Flatten)               (None, 1280)         0           avg_pool[0][0]
__________________________________________________________________________________________________
output_layer (Dense)            (None, 2)            2562        flatten[0][0]
==================================================================================================
Total params: 4,052,133
Trainable params: 4,010,110
Non-trainable params: 42,023
__________________________________________________________________________________________________
```

In [12]:

```python
for layer in custom_resnet_model.layers[:-1]:
    layer.trainable = False

custom_resnet_model.layers[-1].trainable
```

Out[12]:

```
True
```

In [13]:

```python
custom_resnet_model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['accuracy'])
```

In [14]:
```
t=time.time()
hist = custom_resnet_model.fit(X_train, y_train, batch_size=32, epochs=num_epoch, verbose=1, validation_data=(X_test, y_test))
print('Training time: %s' % (t - time.time()))
(loss, accuracy) = custom_resnet_model.evaluate(X_test, y_test, batch_size=10, verbose=1)
print("[INFO] loss={:.4f}, accuracy: {:.4f}%".format(loss,accuracy * 100))
```

```
Epoch 1/100
147/147 [==============================] - 10s 67ms/step - loss: 0.2773 - accuracy: 0.8845 - val_loss: 0.1604 - val_accuracy: 0.9403
Epoch 2/100
147/147 [==============================] - 8s 56ms/step - loss: 0.1834 - accuracy: 0.9313 - val_loss: 0.1341 - val_accuracy: 0.9497
Epoch 3/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1541 - accuracy: 0.9443 - val_loss: 0.1338 - val_accuracy: 0.9514
Epoch 4/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1407 - accuracy: 0.9498 - val_loss: 0.1146 - val_accuracy: 0.9548
Epoch 5/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1303 - accuracy: 0.9522 - val_loss: 0.1142 - val_accuracy: 0.9590
Epoch 6/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1272 - accuracy: 0.9537 - val_loss: 0.1158 - val_accuracy: 0.9608
Epoch 7/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1209 - accuracy: 0.9573 - val_loss: 0.1075 - val_accuracy: 0.9608
Epoch 8/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1171 - accuracy: 0.9586 - val_loss: 0.1077 - val_accuracy: 0.9616
Epoch 9/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1102 - accuracy: 0.9571 - val_loss: 0.1019 - val_accuracy: 0.9616
Epoch 10/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1122 - accuracy: 0.9582 - val_loss: 0.1016 - val_accuracy: 0.9616
Epoch 11/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1082 - accuracy: 0.9596 - val_loss: 0.1034 - val_accuracy: 0.9625
Epoch 12/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1036 - accuracy: 0.9643 - val_loss: 0.0983 - val_accuracy: 0.9642
Epoch 13/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1028 - accuracy: 0.9607 - val_loss: 0.1088 - val_accuracy: 0.9573
Epoch 14/100
147/147 [==============================] - 8s 57ms/step - loss: 0.1038 - accuracy: 0.9637 - val_loss: 0.1113 - val_accuracy: 0.9582
Epoch 15/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0960 - accuracy: 0.9667 - val_loss: 0.0955 - val_accuracy: 0.9650
Epoch 16/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0958 - accuracy: 0.9654 - val_loss: 0.0941 - val_accuracy: 0.96670.0
966 - accura
Epoch 17/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0946 - accuracy: 0.9654 - val_loss: 0.0990 - val_accuracy: 0.9616
Epoch 18/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0953 - accuracy: 0.9661 - val_loss: 0.0937 - val_accuracy: 0.9659
Epoch 19/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0896 - accuracy: 0.9686 - val_loss: 0.0941 - val_accuracy: 0.9684
Epoch 20/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0922 - accuracy: 0.9637 - val_loss: 0.0929 - val_accuracy: 0.9667
Epoch 21/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0914 - accuracy: 0.9641 - val_loss: 0.0918 - val_accuracy: 0.9684
Epoch 22/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0900 - accuracy: 0.9690 - val_loss: 0.0917 - val_accuracy: 0.9684
Epoch 23/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0860 - accuracy: 0.9673 - val_loss: 0.0922 - val_accuracy: 0.9676
Epoch 24/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0893 - accuracy: 0.9673 - val_loss: 0.0908 - val_accuracy: 0.9659
Epoch 25/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0885 - accuracy: 0.9684 - val_loss: 0.0911 - val_accuracy: 0.9676
Epoch 26/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0859 - accuracy: 0.9675 - val_loss: 0.0901 - val_accuracy: 0.9659
Epoch 27/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0849 - accuracy: 0.9695 - val_loss: 0.0925 - val_accuracy: 0.9676
Epoch 28/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0816 - accuracy: 0.9695 - val_loss: 0.0898 - val_accuracy: 0.9701
Epoch 29/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0813 - accuracy: 0.9688 - val_loss: 0.0890 - val_accuracy: 0.9650
Epoch 30/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0780 - accuracy: 0.9725 - val_loss: 0.0886 - val_accuracy: 0.9684
Epoch 31/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0832 - accuracy: 0.9684 - val_loss: 0.0878 - val_accuracy: 0.9676
Epoch 32/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0806 - accuracy: 0.9729 - val_loss: 0.0886 - val_accuracy: 0.9667
Epoch 33/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0810 - accuracy: 0.9699 - val_loss: 0.0874 - val_accuracy: 0.9676
Epoch 34/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0794 - accuracy: 0.9686 - val_loss: 0.0884 - val_accuracy: 0.9667
Epoch 35/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0787 - accuracy: 0.9701 - val_loss: 0.0955 - val_accuracy: 0.9667
Epoch 36/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0741 - accuracy: 0.9729 - val_loss: 0.0895 - val_accuracy: 0.9684
Epoch 37/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0763 - accuracy: 0.9688 - val_loss: 0.0881 - val_accuracy: 0.9693
Epoch 38/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0788 - accuracy: 0.9720 - val_loss: 0.0945 - val_accuracy: 0.9676
Epoch 39/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0775 - accuracy: 0.9725 - val_loss: 0.0891 - val_accuracy: 0.9693
Epoch 40/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0775 - accuracy: 0.9708 - val_loss: 0.0882 - val_accuracy: 0.9684
Epoch 41/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0786 - accuracy: 0.9710 - val_loss: 0.0867 - val_accuracy: 0.9667
Epoch 42/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0738 - accuracy: 0.9752 - val_loss: 0.0855 - val_accuracy: 0.9676
Epoch 43/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0762 - accuracy: 0.9714 - val_loss: 0.0879 - val_accuracy: 0.9693
Epoch 44/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0764 - accuracy: 0.9710 - val_loss: 0.0871 - val_accuracy: 0.9667
Epoch 45/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0710 - accuracy: 0.9761 - val_loss: 0.0897 - val_accuracy: 0.9710
```

```
Epoch 46/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0732 - accuracy: 0.9725 - val_loss: 0.0878 - val_accuracy: 0.9676
Epoch 47/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0690 - accuracy: 0.9720 - val_loss: 0.0878 - val_accuracy: 0.9676
Epoch 48/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0708 - accuracy: 0.9746 - val_loss: 0.0866 - val_accuracy: 0.9676
Epoch 49/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0711 - accuracy: 0.9746 - val_loss: 0.0878 - val_accuracy: 0.9684
Epoch 50/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0692 - accuracy: 0.9754 - val_loss: 0.0878 - val_accuracy: 0.9667
Epoch 51/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0705 - accuracy: 0.9765 - val_loss: 0.0877 - val_accuracy: 0.9684
Epoch 52/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0695 - accuracy: 0.9729 - val_loss: 0.0917 - val_accuracy: 0.9684
Epoch 53/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0711 - accuracy: 0.9740 - val_loss: 0.0931 - val_accuracy: 0.9676
Epoch 54/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0681 - accuracy: 0.9735 - val_loss: 0.0887 - val_accuracy: 0.9693
Epoch 55/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0703 - accuracy: 0.9733 - val_loss: 0.0948 - val_accuracy: 0.9667
Epoch 56/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0659 - accuracy: 0.9750 - val_loss: 0.0872 - val_accuracy: 0.9676
Epoch 57/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0700 - accuracy: 0.9740 - val_loss: 0.0922 - val_accuracy: 0.9676
Epoch 58/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0691 - accuracy: 0.9735 - val_loss: 0.0884 - val_accuracy: 0.9676
Epoch 59/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0685 - accuracy: 0.9737 - val_loss: 0.0883 - val_accuracy: 0.9693
Epoch 60/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0670 - accuracy: 0.9761 - val_loss: 0.0884 - val_accuracy: 0.9693
Epoch 61/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0713 - accuracy: 0.9750 - val_loss: 0.0867 - val_accuracy: 0.9693
Epoch 62/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0664 - accuracy: 0.9750 - val_loss: 0.0859 - val_accuracy: 0.9693
Epoch 63/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0686 - accuracy: 0.9744 - val_loss: 0.0912 - val_accuracy: 0.9693
Epoch 64/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0666 - accuracy: 0.9737 - val_loss: 0.0882 - val_accuracy: 0.9693
Epoch 65/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0654 - accuracy: 0.9767 - val_loss: 0.0869 - val_accuracy: 0.9693
Epoch 66/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0653 - accuracy: 0.9757 - val_loss: 0.0887 - val_accuracy: 0.9676
Epoch 67/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0650 - accuracy: 0.9761 - val_loss: 0.0861 - val_accuracy: 0.9693
Epoch 68/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0632 - accuracy: 0.9754 - val_loss: 0.0858 - val_accuracy: 0.9693
Epoch 69/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0640 - accuracy: 0.9763 - val_loss: 0.0855 - val_accuracy: 0.9693
Epoch 70/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0638 - accuracy: 0.9787 - val_loss: 0.0867 - val_accuracy: 0.9693
Epoch 71/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0659 - accuracy: 0.9757 - val_loss: 0.0881 - val_accuracy: 0.9701
Epoch 72/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0646 - accuracy: 0.9765 - val_loss: 0.0877 - val_accuracy: 0.9676
Epoch 73/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0662 - accuracy: 0.9759 - val_loss: 0.0867 - val_accuracy: 0.9676
Epoch 74/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0638 - accuracy: 0.9767 - val_loss: 0.0866 - val_accuracy: 0.9684
Epoch 75/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0615 - accuracy: 0.9776 - val_loss: 0.0862 - val_accuracy: 0.9701
Epoch 76/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0630 - accuracy: 0.9761 - val_loss: 0.0871 - val_accuracy: 0.9693
Epoch 77/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0627 - accuracy: 0.9757 - val_loss: 0.0865 - val_accuracy: 0.9710
Epoch 78/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0596 - accuracy: 0.9784 - val_loss: 0.0871 - val_accuracy: 0.9693
Epoch 79/100
147/147 [==============================] - 8s 56ms/step - loss: 0.0629 - accuracy: 0.9776 - val_loss: 0.0907 - val_accuracy: 0.9710
Epoch 80/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0580 - accuracy: 0.9784 - val_loss: 0.0882 - val_accuracy: 0.9684
Epoch 81/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0616 - accuracy: 0.9778 - val_loss: 0.0867 - val_accuracy: 0.9693
Epoch 82/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0600 - accuracy: 0.9791 - val_loss: 0.0879 - val_accuracy: 0.9701
Epoch 83/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0642 - accuracy: 0.9746 - val_loss: 0.0984 - val_accuracy: 0.9693
Epoch 84/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0605 - accuracy: 0.9772 - val_loss: 0.0921 - val_accuracy: 0.9676
Epoch 85/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0628 - accuracy: 0.9744 - val_loss: 0.0873 - val_accuracy: 0.9701
Epoch 86/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0612 - accuracy: 0.9759 - val_loss: 0.0881 - val_accuracy: 0.9701
Epoch 87/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0602 - accuracy: 0.9784 - val_loss: 0.0871 - val_accuracy: 0.9684
Epoch 88/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0629 - accuracy: 0.9754 - val_loss: 0.0866 - val_accuracy: 0.9693
Epoch 89/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0575 - accuracy: 0.9793 - val_loss: 0.0867 - val_accuracy: 0.9701
Epoch 90/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0597 - accuracy: 0.9782 - val_loss: 0.0901 - val_accuracy: 0.9710
Epoch 91/100
```

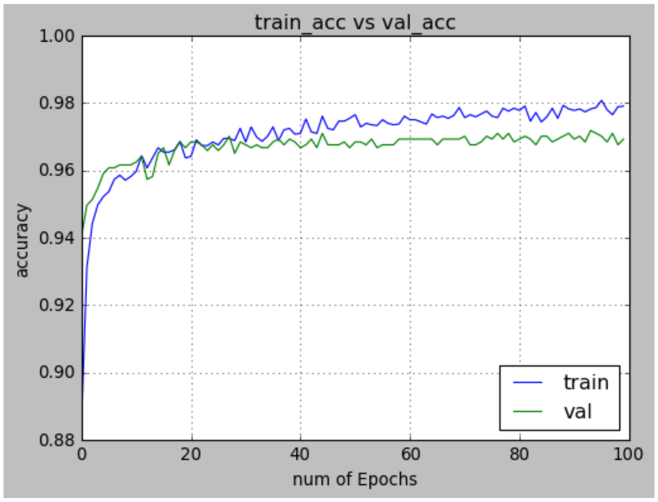
```
147/147 [==============================] - 8s 57ms/step - loss: 0.0622 - accuracy: 0.9778 - val_loss: 0.0878 - val_accuracy: 0.9693
Epoch 92/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0613 - accuracy: 0.9782 - val_loss: 0.0872 - val_accuracy: 0.9701
Epoch 93/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0587 - accuracy: 0.9774 - val_loss: 0.0872 - val_accuracy: 0.9684
Epoch 94/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0577 - accuracy: 0.9782 - val_loss: 0.0911 - val_accuracy: 0.9718
Epoch 95/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0626 - accuracy: 0.9787 - val_loss: 0.0897 - val_accuracy: 0.9710
Epoch 96/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0537 - accuracy: 0.9808 - val_loss: 0.0885 - val_accuracy: 0.9701
Epoch 97/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0577 - accuracy: 0.9780 - val_loss: 0.0902 - val_accuracy: 0.9684
Epoch 98/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0599 - accuracy: 0.9765 - val_loss: 0.0895 - val_accuracy: 0.9710
Epoch 99/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0576 - accuracy: 0.9789 - val_loss: 0.0933 - val_accuracy: 0.9676
Epoch 100/100
147/147 [==============================] - 8s 57ms/step - loss: 0.0555 - accuracy: 0.9791 - val_loss: 0.0901 - val_accuracy: 0.9693
Training time: -848.8196833133698
118/118 [==============================] - 3s 25ms/step - loss: 0.0901 - accuracy: 0.9693
[INFO] loss=0.0901, accuracy: 96.9283%
```

In [15]:
```python
(loss, accuracy) = custom_resnet_model.evaluate(X_test, y_test, batch_size=10, verbose=1)

print("[INFO] loss={:.4f}, accuracy: {:.4f}%".format(loss,accuracy * 100))
```

```
118/118 [==============================] - 3s 22ms/step - loss: 0.0901 - accuracy: 0.9693
[INFO] loss=0.0901, accuracy: 96.9283%
```

visualizing losses and accuracy

In [16]:
```python
display_loss_accuracy(hist)
```



Mobile Netv2

In [11]:
```
image_input = Input(shape=(224, 224, 3))
model = MobileNetV2(input_tensor=image_input, include_top=True,weights='imagenet')
model.summary()
output_layer = model(image_input)

# last_layer = model.get_layer('avg_pool').output
x= Flatten(name='flatten')(output_layer)
out = Dense(num_classes, activation='softmax', name='output_layer')(x)
custom_resnet_model = Model(inputs=image_input,outputs= out)
custom_resnet_model.summary()
```

```
Downloading data from https://storage.googleapis.com/tensorflow/keras-applications/mobilenet_v2/mobilenet_v2_weights_tf_dim_ordering_t
f_kernels_1.0_224.h5
14540800/14536120 [==============================] - 1s 0us/step
Model: "mobilenetv2_1.00_224"
__________________________________________________________________________________________________
Layer (type)                    Output Shape         Param #     Connected to
==================================================================================================
input_1 (InputLayer)            [(None, 224, 224, 3) 0
__________________________________________________________________________________________________
Conv1_pad (ZeroPadding2D)       (None, 225, 225, 3)  0           input_1[0][0]
__________________________________________________________________________________________________
Conv1 (Conv2D)                  (None, 112, 112, 32) 864         Conv1_pad[0][0]
__________________________________________________________________________________________________
bn_Conv1 (BatchNormalization)   (None, 112, 112, 32) 128         Conv1[0][0]
__________________________________________________________________________________________________
Conv1_relu (ReLU)               (None, 112, 112, 32) 0           bn_Conv1[0][0]
__________________________________________________________________________________________________
expanded_conv_depthwise (Depthw (None, 112, 112, 32) 288         Conv1_relu[0][0]
__________________________________________________________________________________________________
expanded_conv_depthwise_BN (Bat (None, 112, 112, 32) 128         expanded_conv_depthwise[0][0]
__________________________________________________________________________________________________
expanded_conv_depthwise_relu (R (None, 112, 112, 32) 0           expanded_conv_depthwise_BN[0][0]
__________________________________________________________________________________________________
expanded_conv_project (Conv2D)  (None, 112, 112, 16) 512         expanded_conv_depthwise_relu[0][0
__________________________________________________________________________________________________
expanded_conv_project_BN (Batch (None, 112, 112, 16) 64          expanded_conv_project[0][0]
__________________________________________________________________________________________________
block_1_expand (Conv2D)         (None, 112, 112, 96) 1536        expanded_conv_project_BN[0][0]
__________________________________________________________________________________________________
block_1_expand_BN (BatchNormali (None, 112, 112, 96) 384         block_1_expand[0][0]
__________________________________________________________________________________________________
block_1_expand_relu (ReLU)      (None, 112, 112, 96) 0           block_1_expand_BN[0][0]
__________________________________________________________________________________________________
block_1_pad (ZeroPadding2D)     (None, 113, 113, 96) 0           block_1_expand_relu[0][0]
__________________________________________________________________________________________________
block_1_depthwise (DepthwiseCon (None, 56, 56, 96)   864         block_1_pad[0][0]
__________________________________________________________________________________________________
block_1_depthwise_BN (BatchNorm (None, 56, 56, 96)   384         block_1_depthwise[0][0]
__________________________________________________________________________________________________
block_1_depthwise_relu (ReLU)   (None, 56, 56, 96)   0           block_1_depthwise_BN[0][0]
__________________________________________________________________________________________________
block_1_project (Conv2D)        (None, 56, 56, 24)   2304        block_1_depthwise_relu[0][0]
__________________________________________________________________________________________________
block_1_project_BN (BatchNormal (None, 56, 56, 24)   96          block_1_project[0][0]
__________________________________________________________________________________________________
block_2_expand (Conv2D)         (None, 56, 56, 144)  3456        block_1_project_BN[0][0]
__________________________________________________________________________________________________
block_2_expand_BN (BatchNormali (None, 56, 56, 144)  576         block_2_expand[0][0]
__________________________________________________________________________________________________
block_2_expand_relu (ReLU)      (None, 56, 56, 144)  0           block_2_expand_BN[0][0]
__________________________________________________________________________________________________
block_2_depthwise (DepthwiseCon (None, 56, 56, 144)  1296        block_2_expand_relu[0][0]
__________________________________________________________________________________________________
block_2_depthwise_BN (BatchNorm (None, 56, 56, 144)  576         block_2_depthwise[0][0]
__________________________________________________________________________________________________
block_2_depthwise_relu (ReLU)   (None, 56, 56, 144)  0           block_2_depthwise_BN[0][0]
__________________________________________________________________________________________________
block_2_project (Conv2D)        (None, 56, 56, 24)   3456        block_2_depthwise_relu[0][0]
__________________________________________________________________________________________________
block_2_project_BN (BatchNormal (None, 56, 56, 24)   96          block_2_project[0][0]
__________________________________________________________________________________________________
block_2_add (Add)               (None, 56, 56, 24)   0           block_1_project_BN[0][0]
                                                                 block_2_project_BN[0][0]
__________________________________________________________________________________________________
block_3_expand (Conv2D)         (None, 56, 56, 144)  3456        block_2_add[0][0]
__________________________________________________________________________________________________
block_3_expand_BN (BatchNormali (None, 56, 56, 144)  576         block_3_expand[0][0]
__________________________________________________________________________________________________
block_3_expand_relu (ReLU)      (None, 56, 56, 144)  0           block_3_expand_BN[0][0]
__________________________________________________________________________________________________
block_3_pad (ZeroPadding2D)     (None, 57, 57, 144)  0           block_3_expand_relu[0][0]
__________________________________________________________________________________________________
block_3_depthwise (DepthwiseCon (None, 28, 28, 144)  1296        block_3_pad[0][0]
__________________________________________________________________________________________________
block_3_depthwise_BN (BatchNorm (None, 28, 28, 144)  576         block_3_depthwise[0][0]
__________________________________________________________________________________________________
block_3_depthwise_relu (ReLU)   (None, 28, 28, 144)  0           block_3_depthwise_BN[0][0]
__________________________________________________________________________________________________
block_3_project (Conv2D)        (None, 28, 28, 32)   4608        block_3_depthwise_relu[0][0]
__________________________________________________________________________________________________
block_3_project_BN (BatchNormal (None, 28, 28, 32)   128         block_3_project[0][0]
__________________________________________________________________________________________________
block_4_expand (Conv2D)         (None, 28, 28, 192)  6144        block_3_project_BN[0][0]
__________________________________________________________________________________________________
block_4_expand_BN (BatchNormali (None, 28, 28, 192)  768         block_4_expand[0][0]
__________________________________________________________________________________________________
block_4_expand_relu (ReLU)      (None, 28, 28, 192)  0           block_4_expand_BN[0][0]
__________________________________________________________________________________________________
block_4_depthwise (DepthwiseCon (None, 28, 28, 192)  1728        block_4_expand_relu[0][0]
__________________________________________________________________________________________________
block_4_depthwise_BN (BatchNorm (None, 28, 28, 192)  768         block_4_depthwise[0][0]
```

block_4_depthwise_relu (ReLU)	(None, 28, 28, 192)	0	block_4_depthwise_BN[0][0]
block_4_project (Conv2D)	(None, 28, 28, 32)	6144	block_4_depthwise_relu[0][0]
block_4_project_BN (BatchNormal	(None, 28, 28, 32)	128	block_4_project[0][0]
block_4_add (Add)	(None, 28, 28, 32)	0	block_3_project_BN[0][0] block_4_project_BN[0][0]
block_5_expand (Conv2D)	(None, 28, 28, 192)	6144	block_4_add[0][0]
block_5_expand_BN (BatchNormali	(None, 28, 28, 192)	768	block_5_expand[0][0]
block_5_expand_relu (ReLU)	(None, 28, 28, 192)	0	block_5_expand_BN[0][0]
block_5_depthwise (DepthwiseCon	(None, 28, 28, 192)	1728	block_5_expand_relu[0][0]
block_5_depthwise_BN (BatchNorm	(None, 28, 28, 192)	768	block_5_depthwise[0][0]
block_5_depthwise_relu (ReLU)	(None, 28, 28, 192)	0	block_5_depthwise_BN[0][0]
block_5_project (Conv2D)	(None, 28, 28, 32)	6144	block_5_depthwise_relu[0][0]
block_5_project_BN (BatchNormal	(None, 28, 28, 32)	128	block_5_project[0][0]
block_5_add (Add)	(None, 28, 28, 32)	0	block_4_add[0][0] block_5_project_BN[0][0]
block_6_expand (Conv2D)	(None, 28, 28, 192)	6144	block_5_add[0][0]
block_6_expand_BN (BatchNormali	(None, 28, 28, 192)	768	block_6_expand[0][0]
block_6_expand_relu (ReLU)	(None, 28, 28, 192)	0	block_6_expand_BN[0][0]
block_6_pad (ZeroPadding2D)	(None, 29, 29, 192)	0	block_6_expand_relu[0][0]
block_6_depthwise (DepthwiseCon	(None, 14, 14, 192)	1728	block_6_pad[0][0]
block_6_depthwise_BN (BatchNorm	(None, 14, 14, 192)	768	block_6_depthwise[0][0]
block_6_depthwise_relu (ReLU)	(None, 14, 14, 192)	0	block_6_depthwise_BN[0][0]
block_6_project (Conv2D)	(None, 14, 14, 64)	12288	block_6_depthwise_relu[0][0]
block_6_project_BN (BatchNormal	(None, 14, 14, 64)	256	block_6_project[0][0]
block_7_expand (Conv2D)	(None, 14, 14, 384)	24576	block_6_project_BN[0][0]
block_7_expand_BN (BatchNormali	(None, 14, 14, 384)	1536	block_7_expand[0][0]
block_7_expand_relu (ReLU)	(None, 14, 14, 384)	0	block_7_expand_BN[0][0]
block_7_depthwise (DepthwiseCon	(None, 14, 14, 384)	3456	block_7_expand_relu[0][0]
block_7_depthwise_BN (BatchNorm	(None, 14, 14, 384)	1536	block_7_depthwise[0][0]
block_7_depthwise_relu (ReLU)	(None, 14, 14, 384)	0	block_7_depthwise_BN[0][0]
block_7_project (Conv2D)	(None, 14, 14, 64)	24576	block_7_depthwise_relu[0][0]
block_7_project_BN (BatchNormal	(None, 14, 14, 64)	256	block_7_project[0][0]
block_7_add (Add)	(None, 14, 14, 64)	0	block_6_project_BN[0][0] block_7_project_BN[0][0]
block_8_expand (Conv2D)	(None, 14, 14, 384)	24576	block_7_add[0][0]
block_8_expand_BN (BatchNormali	(None, 14, 14, 384)	1536	block_8_expand[0][0]
block_8_expand_relu (ReLU)	(None, 14, 14, 384)	0	block_8_expand_BN[0][0]
block_8_depthwise (DepthwiseCon	(None, 14, 14, 384)	3456	block_8_expand_relu[0][0]
block_8_depthwise_BN (BatchNorm	(None, 14, 14, 384)	1536	block_8_depthwise[0][0]
block_8_depthwise_relu (ReLU)	(None, 14, 14, 384)	0	block_8_depthwise_BN[0][0]
block_8_project (Conv2D)	(None, 14, 14, 64)	24576	block_8_depthwise_relu[0][0]
block_8_project_BN (BatchNormal	(None, 14, 14, 64)	256	block_8_project[0][0]
block_8_add (Add)	(None, 14, 14, 64)	0	block_7_add[0][0] block_8_project_BN[0][0]
block_9_expand (Conv2D)	(None, 14, 14, 384)	24576	block_8_add[0][0]
block_9_expand_BN (BatchNormali	(None, 14, 14, 384)	1536	block_9_expand[0][0]
block_9_expand_relu (ReLU)	(None, 14, 14, 384)	0	block_9_expand_BN[0][0]

block_9_depthwise (DepthwiseCon	(None, 14, 14, 384)	3456	block_9_expand_relu[0][0]
block_9_depthwise_BN (BatchNorm	(None, 14, 14, 384)	1536	block_9_depthwise[0][0]
block_9_depthwise_relu (ReLU)	(None, 14, 14, 384)	0	block_9_depthwise_BN[0][0]
block_9_project (Conv2D)	(None, 14, 14, 64)	24576	block_9_depthwise_relu[0][0]
block_9_project_BN (BatchNormal	(None, 14, 14, 64)	256	block_9_project[0][0]
block_9_add (Add)	(None, 14, 14, 64)	0	block_8_add[0][0] block_9_project_BN[0][0]
block_10_expand (Conv2D)	(None, 14, 14, 384)	24576	block_9_add[0][0]
block_10_expand_BN (BatchNormal	(None, 14, 14, 384)	1536	block_10_expand[0][0]
block_10_expand_relu (ReLU)	(None, 14, 14, 384)	0	block_10_expand_BN[0][0]
block_10_depthwise (DepthwiseCo	(None, 14, 14, 384)	3456	block_10_expand_relu[0][0]
block_10_depthwise_BN (BatchNor	(None, 14, 14, 384)	1536	block_10_depthwise[0][0]
block_10_depthwise_relu (ReLU)	(None, 14, 14, 384)	0	block_10_depthwise_BN[0][0]
block_10_project (Conv2D)	(None, 14, 14, 96)	36864	block_10_depthwise_relu[0][0]
block_10_project_BN (BatchNorma	(None, 14, 14, 96)	384	block_10_project[0][0]
block_11_expand (Conv2D)	(None, 14, 14, 576)	55296	block_10_project_BN[0][0]
block_11_expand_BN (BatchNormal	(None, 14, 14, 576)	2304	block_11_expand[0][0]
block_11_expand_relu (ReLU)	(None, 14, 14, 576)	0	block_11_expand_BN[0][0]
block_11_depthwise (DepthwiseCo	(None, 14, 14, 576)	5184	block_11_expand_relu[0][0]
block_11_depthwise_BN (BatchNor	(None, 14, 14, 576)	2304	block_11_depthwise[0][0]
block_11_depthwise_relu (ReLU)	(None, 14, 14, 576)	0	block_11_depthwise_BN[0][0]
block_11_project (Conv2D)	(None, 14, 14, 96)	55296	block_11_depthwise_relu[0][0]
block_11_project_BN (BatchNorma	(None, 14, 14, 96)	384	block_11_project[0][0]
block_11_add (Add)	(None, 14, 14, 96)	0	block_10_project_BN[0][0] block_11_project_BN[0][0]
block_12_expand (Conv2D)	(None, 14, 14, 576)	55296	block_11_add[0][0]
block_12_expand_BN (BatchNormal	(None, 14, 14, 576)	2304	block_12_expand[0][0]
block_12_expand_relu (ReLU)	(None, 14, 14, 576)	0	block_12_expand_BN[0][0]
block_12_depthwise (DepthwiseCo	(None, 14, 14, 576)	5184	block_12_expand_relu[0][0]
block_12_depthwise_BN (BatchNor	(None, 14, 14, 576)	2304	block_12_depthwise[0][0]
block_12_depthwise_relu (ReLU)	(None, 14, 14, 576)	0	block_12_depthwise_BN[0][0]
block_12_project (Conv2D)	(None, 14, 14, 96)	55296	block_12_depthwise_relu[0][0]
block_12_project_BN (BatchNorma	(None, 14, 14, 96)	384	block_12_project[0][0]
block_12_add (Add)	(None, 14, 14, 96)	0	block_11_add[0][0] block_12_project_BN[0][0]
block_13_expand (Conv2D)	(None, 14, 14, 576)	55296	block_12_add[0][0]
block_13_expand_BN (BatchNormal	(None, 14, 14, 576)	2304	block_13_expand[0][0]
block_13_expand_relu (ReLU)	(None, 14, 14, 576)	0	block_13_expand_BN[0][0]
block_13_pad (ZeroPadding2D)	(None, 15, 15, 576)	0	block_13_expand_relu[0][0]
block_13_depthwise (DepthwiseCo	(None, 7, 7, 576)	5184	block_13_pad[0][0]
block_13_depthwise_BN (BatchNor	(None, 7, 7, 576)	2304	block_13_depthwise[0][0]
block_13_depthwise_relu (ReLU)	(None, 7, 7, 576)	0	block_13_depthwise_BN[0][0]
block_13_project (Conv2D)	(None, 7, 7, 160)	92160	block_13_depthwise_relu[0][0]
block_13_project_BN (BatchNorma	(None, 7, 7, 160)	640	block_13_project[0][0]
block_14_expand (Conv2D)	(None, 7, 7, 960)	153600	block_13_project_BN[0][0]
block_14_expand_BN (BatchNormal	(None, 7, 7, 960)	3840	block_14_expand[0][0]
block_14_expand_relu (ReLU)	(None, 7, 7, 960)	0	block_14_expand_BN[0][0]

```
block_14_depthwise (DepthwiseCo (None, 7, 7, 960)    8640        block_14_expand_relu[0][0]
__________________________________________________________________________________________________
block_14_depthwise_BN (BatchNor (None, 7, 7, 960)    3840        block_14_depthwise[0][0]
__________________________________________________________________________________________________
block_14_depthwise_relu (ReLU)  (None, 7, 7, 960)    0           block_14_depthwise_BN[0][0]
__________________________________________________________________________________________________
block_14_project (Conv2D)       (None, 7, 7, 160)    153600      block_14_depthwise_relu[0][0]
__________________________________________________________________________________________________
block_14_project_BN (BatchNorma (None, 7, 7, 160)    640         block_14_project[0][0]
__________________________________________________________________________________________________
block_14_add (Add)              (None, 7, 7, 160)    0           block_13_project_BN[0][0]
                                                                 block_14_project_BN[0][0]
__________________________________________________________________________________________________
block_15_expand (Conv2D)        (None, 7, 7, 960)    153600      block_14_add[0][0]
__________________________________________________________________________________________________
block_15_expand_BN (BatchNormal (None, 7, 7, 960)    3840        block_15_expand[0][0]
__________________________________________________________________________________________________
block_15_expand_relu (ReLU)     (None, 7, 7, 960)    0           block_15_expand_BN[0][0]
__________________________________________________________________________________________________
block_15_depthwise (DepthwiseCo (None, 7, 7, 960)    8640        block_15_expand_relu[0][0]
__________________________________________________________________________________________________
block_15_depthwise_BN (BatchNor (None, 7, 7, 960)    3840        block_15_depthwise[0][0]
__________________________________________________________________________________________________
block_15_depthwise_relu (ReLU)  (None, 7, 7, 960)    0           block_15_depthwise_BN[0][0]
__________________________________________________________________________________________________
block_15_project (Conv2D)       (None, 7, 7, 160)    153600      block_15_depthwise_relu[0][0]
__________________________________________________________________________________________________
block_15_project_BN (BatchNorma (None, 7, 7, 160)    640         block_15_project[0][0]
__________________________________________________________________________________________________
block_15_add (Add)              (None, 7, 7, 160)    0           block_14_add[0][0]
                                                                 block_15_project_BN[0][0]
__________________________________________________________________________________________________
block_16_expand (Conv2D)        (None, 7, 7, 960)    153600      block_15_add[0][0]
__________________________________________________________________________________________________
block_16_expand_BN (BatchNormal (None, 7, 7, 960)    3840        block_16_expand[0][0]
__________________________________________________________________________________________________
block_16_expand_relu (ReLU)     (None, 7, 7, 960)    0           block_16_expand_BN[0][0]
__________________________________________________________________________________________________
block_16_depthwise (DepthwiseCo (None, 7, 7, 960)    8640        block_16_expand_relu[0][0]
__________________________________________________________________________________________________
block_16_depthwise_BN (BatchNor (None, 7, 7, 960)    3840        block_16_depthwise[0][0]
__________________________________________________________________________________________________
block_16_depthwise_relu (ReLU)  (None, 7, 7, 960)    0           block_16_depthwise_BN[0][0]
__________________________________________________________________________________________________
block_16_project (Conv2D)       (None, 7, 7, 320)    307200      block_16_depthwise_relu[0][0]
__________________________________________________________________________________________________
block_16_project_BN (BatchNorma (None, 7, 7, 320)    1280        block_16_project[0][0]
__________________________________________________________________________________________________
Conv_1 (Conv2D)                 (None, 7, 7, 1280)   409600      block_16_project_BN[0][0]
__________________________________________________________________________________________________
Conv_1_bn (BatchNormalization)  (None, 7, 7, 1280)   5120        Conv_1[0][0]
__________________________________________________________________________________________________
out_relu (ReLU)                 (None, 7, 7, 1280)   0           Conv_1_bn[0][0]
__________________________________________________________________________________________________
global_average_pooling2d (Globa (None, 1280)         0           out_relu[0][0]
__________________________________________________________________________________________________
predictions (Dense)             (None, 1000)         1281000     global_average_pooling2d[0][0]
==================================================================================================
Total params: 3,538,984
Trainable params: 3,504,872
Non-trainable params: 34,112
__________________________________________________________________________________________________
Model: "functional_1"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
input_1 (InputLayer)         [(None, 224, 224, 3)]     0
_________________________________________________________________
mobilenetv2_1.00_224 (Functi (None, 1000)              3538984
_________________________________________________________________
flatten (Flatten)            (None, 1000)              0
_________________________________________________________________
output_layer (Dense)         (None, 2)                 2002
=================================================================
Total params: 3,540,986
Trainable params: 3,506,874
Non-trainable params: 34,112
_________________________________________________________________
```

In [12]:
```python
for layer in custom_resnet_model.layers[:-1]:
    layer.trainable = False

custom_resnet_model.layers[-1].trainable
```

Out[12]:
```
True
```

In [13]:
```python
custom_resnet_model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['accuracy'])
```

In [14]:
```
t = time.time()
hist = custom_resnet_model.fit(X_train, y_train, batch_size=32, epochs=num_epoch, verbose=1, validation_data=(X_test, y_test))
print('Training time: %s' % (t - time.time()))
(loss, accuracy) = custom_resnet_model.evaluate(X_test, y_test, batch_size=10, verbose=1)
print("[INFO] loss={:.4f}, accuracy: {:.4f}%".format(loss,accuracy * 100))
```

```
Epoch 1/100
147/147 [==============================] - 7s 48ms/step - loss: 0.6437 - accuracy: 0.7252 - val_loss: 0.6028 - val_accuracy: 0.7338
Epoch 2/100
147/147 [==============================] - 6s 41ms/step - loss: 0.5841 - accuracy: 0.7289 - val_loss: 0.5623 - val_accuracy: 0.7338
Epoch 3/100
147/147 [==============================] - 6s 41ms/step - loss: 0.5552 - accuracy: 0.7289 - val_loss: 0.5391 - val_accuracy: 0.7338
Epoch 4/100
147/147 [==============================] - 6s 41ms/step - loss: 0.5367 - accuracy: 0.7293 - val_loss: 0.5222 - val_accuracy: 0.7338
Epoch 5/100
147/147 [==============================] - 6s 41ms/step - loss: 0.5217 - accuracy: 0.7312 - val_loss: 0.5073 - val_accuracy: 0.7398
Epoch 6/100
147/147 [==============================] - 6s 41ms/step - loss: 0.5084 - accuracy: 0.7340 - val_loss: 0.4940 - val_accuracy: 0.7406
Epoch 7/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4961 - accuracy: 0.7376 - val_loss: 0.4815 - val_accuracy: 0.7449
Epoch 8/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4846 - accuracy: 0.7427 - val_loss: 0.4699 - val_accuracy: 0.7517
Epoch 9/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4740 - accuracy: 0.7487 - val_loss: 0.4591 - val_accuracy: 0.7568
Epoch 10/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4642 - accuracy: 0.7556 - val_loss: 0.4488 - val_accuracy: 0.7568
Epoch 11/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4549 - accuracy: 0.7626 - val_loss: 0.4394 - val_accuracy: 0.7619
Epoch 12/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4463 - accuracy: 0.7690 - val_loss: 0.4305 - val_accuracy: 0.7628
Epoch 13/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4381 - accuracy: 0.7763 - val_loss: 0.4221 - val_accuracy: 0.7713
Epoch 14/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4306 - accuracy: 0.7835 - val_loss: 0.4143 - val_accuracy: 0.7807
Epoch 15/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4235 - accuracy: 0.7912 - val_loss: 0.4069 - val_accuracy: 0.7850
Epoch 16/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4169 - accuracy: 0.7965 - val_loss: 0.4000 - val_accuracy: 0.7884
Epoch 17/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4106 - accuracy: 0.8019 - val_loss: 0.3934 - val_accuracy: 0.7986
Epoch 18/100
147/147 [==============================] - 6s 41ms/step - loss: 0.4046 - accuracy: 0.8104 - val_loss: 0.3872 - val_accuracy: 0.8063
Epoch 19/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3991 - accuracy: 0.8164 - val_loss: 0.3813 - val_accuracy: 0.8217
Epoch 20/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3939 - accuracy: 0.8228 - val_loss: 0.3758 - val_accuracy: 0.8294
Epoch 21/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3888 - accuracy: 0.8256 - val_loss: 0.3705 - val_accuracy: 0.8345
Epoch 22/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3842 - accuracy: 0.8309 - val_loss: 0.3656 - val_accuracy: 0.8370
Epoch 23/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3797 - accuracy: 0.8373 - val_loss: 0.3608 - val_accuracy: 0.8413
Epoch 24/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3755 - accuracy: 0.8407 - val_loss: 0.3563 - val_accuracy: 0.8456
Epoch 25/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3715 - accuracy: 0.8448 - val_loss: 0.3520 - val_accuracy: 0.8473
Epoch 26/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3676 - accuracy: 0.8486 - val_loss: 0.3480 - val_accuracy: 0.8549
Epoch 27/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3639 - accuracy: 0.8499 - val_loss: 0.3441 - val_accuracy: 0.8592
Epoch 28/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3605 - accuracy: 0.8540 - val_loss: 0.3403 - val_accuracy: 0.8601
Epoch 29/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3572 - accuracy: 0.8559 - val_loss: 0.3368 - val_accuracy: 0.8626
Epoch 30/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3540 - accuracy: 0.8589 - val_loss: 0.3334 - val_accuracy: 0.8686
Epoch 31/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3509 - accuracy: 0.8610 - val_loss: 0.3301 - val_accuracy: 0.8712
Epoch 32/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3480 - accuracy: 0.8649 - val_loss: 0.3270 - val_accuracy: 0.8754
Epoch 33/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3452 - accuracy: 0.8678 - val_loss: 0.3240 - val_accuracy: 0.8763
Epoch 34/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3425 - accuracy: 0.8706 - val_loss: 0.3211 - val_accuracy: 0.8788
Epoch 35/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3399 - accuracy: 0.8711 - val_loss: 0.3183 - val_accuracy: 0.8823
Epoch 36/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3375 - accuracy: 0.8723 - val_loss: 0.3157 - val_accuracy: 0.8848
Epoch 37/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3351 - accuracy: 0.8762 - val_loss: 0.3131 - val_accuracy: 0.8874
Epoch 38/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3328 - accuracy: 0.8772 - val_loss: 0.3106 - val_accuracy: 0.8865
Epoch 39/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3306 - accuracy: 0.8787 - val_loss: 0.3083 - val_accuracy: 0.8891
Epoch 40/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3284 - accuracy: 0.8796 - val_loss: 0.3060 - val_accuracy: 0.8916
Epoch 41/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3264 - accuracy: 0.8798 - val_loss: 0.3038 - val_accuracy: 0.8916
Epoch 42/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3244 - accuracy: 0.8813 - val_loss: 0.3017 - val_accuracy: 0.8925
Epoch 43/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3225 - accuracy: 0.8817 - val_loss: 0.2996 - val_accuracy: 0.8933
Epoch 44/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3206 - accuracy: 0.8826 - val_loss: 0.2977 - val_accuracy: 0.8933
Epoch 45/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3188 - accuracy: 0.8830 - val_loss: 0.2958 - val_accuracy: 0.8951
Epoch 46/100
```

```
147/147 [==============================] - 6s 41ms/step - loss: 0.3170 - accuracy: 0.8847 - val_loss: 0.2939 - val_accuracy: 0.8951
Epoch 47/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3154 - accuracy: 0.8854 - val_loss: 0.2921 - val_accuracy: 0.8942
Epoch 48/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3137 - accuracy: 0.8875 - val_loss: 0.2903 - val_accuracy: 0.8951
Epoch 49/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3121 - accuracy: 0.8871 - val_loss: 0.2886 - val_accuracy: 0.8959
Epoch 50/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3106 - accuracy: 0.8881 - val_loss: 0.2870 - val_accuracy: 0.8968
Epoch 51/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3090 - accuracy: 0.8890 - val_loss: 0.2854 - val_accuracy: 0.8976
Epoch 52/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3076 - accuracy: 0.8894 - val_loss: 0.2838 - val_accuracy: 0.8976
Epoch 53/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3062 - accuracy: 0.8898 - val_loss: 0.2823 - val_accuracy: 0.8976
Epoch 54/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3048 - accuracy: 0.8911 - val_loss: 0.2809 - val_accuracy: 0.8985
Epoch 55/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3034 - accuracy: 0.8907 - val_loss: 0.2795 - val_accuracy: 0.8985
Epoch 56/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3021 - accuracy: 0.8915 - val_loss: 0.2781 - val_accuracy: 0.9019
Epoch 57/100
147/147 [==============================] - 6s 41ms/step - loss: 0.3008 - accuracy: 0.8920 - val_loss: 0.2768 - val_accuracy: 0.9019
Epoch 58/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2995 - accuracy: 0.8922 - val_loss: 0.2755 - val_accuracy: 0.9019
Epoch 59/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2984 - accuracy: 0.8924 - val_loss: 0.2742 - val_accuracy: 0.9027
Epoch 60/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2971 - accuracy: 0.8930 - val_loss: 0.2730 - val_accuracy: 0.9036
Epoch 61/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2960 - accuracy: 0.8928 - val_loss: 0.2718 - val_accuracy: 0.9053
Epoch 62/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2949 - accuracy: 0.8922 - val_loss: 0.2706 - val_accuracy: 0.9061
Epoch 63/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2937 - accuracy: 0.8943 - val_loss: 0.2695 - val_accuracy: 0.9070
Epoch 64/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2927 - accuracy: 0.8950 - val_loss: 0.2684 - val_accuracy: 0.9070
Epoch 65/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2916 - accuracy: 0.8950 - val_loss: 0.2673 - val_accuracy: 0.9078
Epoch 66/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2906 - accuracy: 0.8952 - val_loss: 0.2663 - val_accuracy: 0.9078
Epoch 67/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2897 - accuracy: 0.8960 - val_loss: 0.2652 - val_accuracy: 0.9087
Epoch 68/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2887 - accuracy: 0.8954 - val_loss: 0.2642 - val_accuracy: 0.9096
Epoch 69/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2877 - accuracy: 0.8975 - val_loss: 0.2633 - val_accuracy: 0.9096
Epoch 70/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2867 - accuracy: 0.8975 - val_loss: 0.2623 - val_accuracy: 0.9096
Epoch 71/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2858 - accuracy: 0.8986 - val_loss: 0.2614 - val_accuracy: 0.9113
Epoch 72/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2849 - accuracy: 0.8986 - val_loss: 0.2605 - val_accuracy: 0.9104
Epoch 73/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2841 - accuracy: 0.8984 - val_loss: 0.2596 - val_accuracy: 0.9113
Epoch 74/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2832 - accuracy: 0.8984 - val_loss: 0.2588 - val_accuracy: 0.9113
Epoch 75/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2823 - accuracy: 0.8982 - val_loss: 0.2579 - val_accuracy: 0.9113
Epoch 76/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2815 - accuracy: 0.8990 - val_loss: 0.2571 - val_accuracy: 0.9113
Epoch 77/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2807 - accuracy: 0.8997 - val_loss: 0.2563 - val_accuracy: 0.9121
Epoch 78/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2799 - accuracy: 0.8999 - val_loss: 0.2555 - val_accuracy: 0.9104
Epoch 79/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2792 - accuracy: 0.9005 - val_loss: 0.2548 - val_accuracy: 0.9113
Epoch 80/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2784 - accuracy: 0.9005 - val_loss: 0.2540 - val_accuracy: 0.9113
Epoch 81/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2776 - accuracy: 0.9007 - val_loss: 0.2533 - val_accuracy: 0.9113
Epoch 82/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2769 - accuracy: 0.9016 - val_loss: 0.2525 - val_accuracy: 0.9121
Epoch 83/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2762 - accuracy: 0.9018 - val_loss: 0.2518 - val_accuracy: 0.9130
Epoch 84/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2755 - accuracy: 0.9022 - val_loss: 0.2512 - val_accuracy: 0.9121
Epoch 85/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2748 - accuracy: 0.9014 - val_loss: 0.2505 - val_accuracy: 0.9130
Epoch 86/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2741 - accuracy: 0.9022 - val_loss: 0.2498 - val_accuracy: 0.9138
Epoch 87/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2734 - accuracy: 0.9014 - val_loss: 0.2492 - val_accuracy: 0.9138
Epoch 88/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2727 - accuracy: 0.9024 - val_loss: 0.2485 - val_accuracy: 0.9138
Epoch 89/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2721 - accuracy: 0.9024 - val_loss: 0.2479 - val_accuracy: 0.9130
Epoch 90/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2714 - accuracy: 0.9029 - val_loss: 0.2473 - val_accuracy: 0.9130
Epoch 91/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2708 - accuracy: 0.9024 - val_loss: 0.2466 - val_accuracy: 0.9130
```

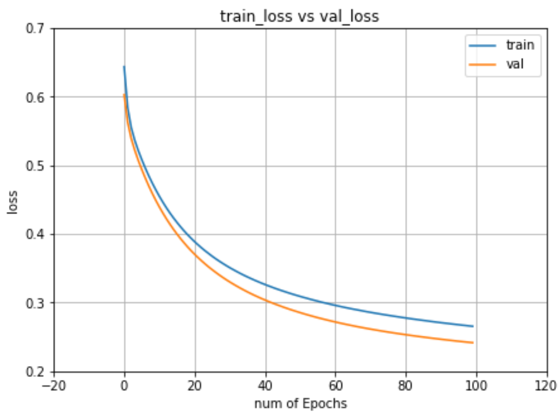
```
Epoch 92/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2702 - accuracy: 0.9029 - val_loss: 0.2460 - val_accuracy: 0.9121
Epoch 93/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2696 - accuracy: 0.9026 - val_loss: 0.2454 - val_accuracy: 0.9121
Epoch 94/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2690 - accuracy: 0.9026 - val_loss: 0.2449 - val_accuracy: 0.9121
Epoch 95/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2684 - accuracy: 0.9033 - val_loss: 0.2443 - val_accuracy: 0.9121
Epoch 96/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2678 - accuracy: 0.9035 - val_loss: 0.2437 - val_accuracy: 0.9130
Epoch 97/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2672 - accuracy: 0.9033 - val_loss: 0.2432 - val_accuracy: 0.9130
Epoch 98/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2667 - accuracy: 0.9037 - val_loss: 0.2426 - val_accuracy: 0.9138
Epoch 99/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2661 - accuracy: 0.9037 - val_loss: 0.2421 - val_accuracy: 0.9138
Epoch 100/100
147/147 [==============================] - 6s 41ms/step - loss: 0.2655 - accuracy: 0.9039 - val_loss: 0.2416 - val_accuracy: 0.9147
Training time: -609.8109776973724
118/118 [==============================] - 2s 17ms/step - loss: 0.2416 - accuracy: 0.9147
[INFO] loss=0.2416, accuracy: 91.4676%
```

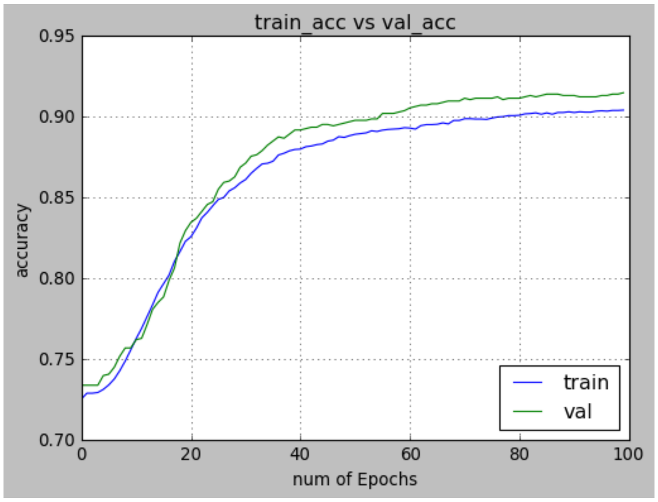
In [15]:
```
(loss, accuracy) = custom_resnet_model.evaluate(X_test, y_test, batch_size=10, verbose=1)

print("[INFO] loss={:.4f}, accuracy: {:.4f}%".format(loss,accuracy * 100))
```

```
118/118 [==============================] - 2s 15ms/step - loss: 0.2416 - accuracy: 0.9147
[INFO] loss=0.2416, accuracy: 91.4676%
```

visualizing losses and accuracy

In [16]:
```
display_loss_accuracy(hist)
```





Resnet50

In [11]:
```
image_input = Input(shape=(224, 224, 3))
model = ResNet50(input_tensor=image_input, include_top=True,weights='imagenet')
model.summary()
last_layer = model.get_layer('avg_pool').output
x= Flatten(name='flatten')(last_layer)
out = Dense(num_classes, activation='softmax', name='output_layer')(x)
custom_resnet_model = Model(inputs=image_input,outputs= out)
custom_resnet_model.summary()
```

```
Model: "resnet50"
__________________________________________________________________________________________________
Layer (type)                    Output Shape         Param #     Connected to
==================================================================================================
input_1 (InputLayer)            [(None, 224, 224, 3) 0
__________________________________________________________________________________________________
conv1_pad (ZeroPadding2D)       (None, 230, 230, 3)  0           input_1[0][0]
__________________________________________________________________________________________________
conv1_conv (Conv2D)             (None, 112, 112, 64) 9472        conv1_pad[0][0]
__________________________________________________________________________________________________
conv1_bn (BatchNormalization)   (None, 112, 112, 64) 256         conv1_conv[0][0]
__________________________________________________________________________________________________
conv1_relu (Activation)         (None, 112, 112, 64) 0           conv1_bn[0][0]
__________________________________________________________________________________________________
pool1_pad (ZeroPadding2D)       (None, 114, 114, 64) 0           conv1_relu[0][0]
__________________________________________________________________________________________________
pool1_pool (MaxPooling2D)       (None, 56, 56, 64)   0           pool1_pad[0][0]
__________________________________________________________________________________________________
conv2_block1_1_conv (Conv2D)    (None, 56, 56, 64)   4160        pool1_pool[0][0]
__________________________________________________________________________________________________
conv2_block1_1_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block1_1_conv[0][0]
__________________________________________________________________________________________________
conv2_block1_1_relu (Activation (None, 56, 56, 64)   0           conv2_block1_1_bn[0][0]
__________________________________________________________________________________________________
conv2_block1_2_conv (Conv2D)    (None, 56, 56, 64)   36928       conv2_block1_1_relu[0][0]
__________________________________________________________________________________________________
conv2_block1_2_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block1_2_conv[0][0]
__________________________________________________________________________________________________
conv2_block1_2_relu (Activation (None, 56, 56, 64)   0           conv2_block1_2_bn[0][0]
__________________________________________________________________________________________________
conv2_block1_0_conv (Conv2D)    (None, 56, 56, 256)  16640       pool1_pool[0][0]
__________________________________________________________________________________________________
conv2_block1_3_conv (Conv2D)    (None, 56, 56, 256)  16640       conv2_block1_2_relu[0][0]
__________________________________________________________________________________________________
conv2_block1_0_bn (BatchNormali (None, 56, 56, 256)  1024        conv2_block1_0_conv[0][0]
__________________________________________________________________________________________________
conv2_block1_3_bn (BatchNormali (None, 56, 56, 256)  1024        conv2_block1_3_conv[0][0]
__________________________________________________________________________________________________
conv2_block1_add (Add)          (None, 56, 56, 256)  0           conv2_block1_0_bn[0][0]
                                                                 conv2_block1_3_bn[0][0]
__________________________________________________________________________________________________
conv2_block1_out (Activation)   (None, 56, 56, 256)  0           conv2_block1_add[0][0]
__________________________________________________________________________________________________
conv2_block2_1_conv (Conv2D)    (None, 56, 56, 64)   16448       conv2_block1_out[0][0]
__________________________________________________________________________________________________
conv2_block2_1_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block2_1_conv[0][0]
__________________________________________________________________________________________________
conv2_block2_1_relu (Activation (None, 56, 56, 64)   0           conv2_block2_1_bn[0][0]
__________________________________________________________________________________________________
conv2_block2_2_conv (Conv2D)    (None, 56, 56, 64)   36928       conv2_block2_1_relu[0][0]
__________________________________________________________________________________________________
conv2_block2_2_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block2_2_conv[0][0]
__________________________________________________________________________________________________
conv2_block2_2_relu (Activation (None, 56, 56, 64)   0           conv2_block2_2_bn[0][0]
__________________________________________________________________________________________________
conv2_block2_3_conv (Conv2D)    (None, 56, 56, 256)  16640       conv2_block2_2_relu[0][0]
__________________________________________________________________________________________________
conv2_block2_3_bn (BatchNormali (None, 56, 56, 256)  1024        conv2_block2_3_conv[0][0]
__________________________________________________________________________________________________
conv2_block2_add (Add)          (None, 56, 56, 256)  0           conv2_block1_out[0][0]
                                                                 conv2_block2_3_bn[0][0]
__________________________________________________________________________________________________
conv2_block2_out (Activation)   (None, 56, 56, 256)  0           conv2_block2_add[0][0]
__________________________________________________________________________________________________
conv2_block3_1_conv (Conv2D)    (None, 56, 56, 64)   16448       conv2_block2_out[0][0]
__________________________________________________________________________________________________
conv2_block3_1_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block3_1_conv[0][0]
__________________________________________________________________________________________________
conv2_block3_1_relu (Activation (None, 56, 56, 64)   0           conv2_block3_1_bn[0][0]
__________________________________________________________________________________________________
conv2_block3_2_conv (Conv2D)    (None, 56, 56, 64)   36928       conv2_block3_1_relu[0][0]
__________________________________________________________________________________________________
conv2_block3_2_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block3_2_conv[0][0]
__________________________________________________________________________________________________
conv2_block3_2_relu (Activation (None, 56, 56, 64)   0           conv2_block3_2_bn[0][0]
__________________________________________________________________________________________________
conv2_block3_3_conv (Conv2D)    (None, 56, 56, 256)  16640       conv2_block3_2_relu[0][0]
__________________________________________________________________________________________________
conv2_block3_3_bn (BatchNormali (None, 56, 56, 256)  1024        conv2_block3_3_conv[0][0]
__________________________________________________________________________________________________
conv2_block3_add (Add)          (None, 56, 56, 256)  0           conv2_block2_out[0][0]
                                                                 conv2_block3_3_bn[0][0]
__________________________________________________________________________________________________
conv2_block3_out (Activation)   (None, 56, 56, 256)  0           conv2_block3_add[0][0]
__________________________________________________________________________________________________
conv3_block1_1_conv (Conv2D)    (None, 28, 28, 128)  32896       conv2_block3_out[0][0]
__________________________________________________________________________________________________
conv3_block1_1_bn (BatchNormali (None, 28, 28, 128)  512         conv3_block1_1_conv[0][0]
__________________________________________________________________________________________________
conv3_block1_1_relu (Activation (None, 28, 28, 128)  0           conv3_block1_1_bn[0][0]
__________________________________________________________________________________________________
```

conv3_block1_2_conv (Conv2D)	(None, 28, 28, 128)	147584	conv3_block1_1_relu[0][0]
conv3_block1_2_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block1_2_conv[0][0]
conv3_block1_2_relu (Activation	(None, 28, 28, 128)	0	conv3_block1_2_bn[0][0]
conv3_block1_0_conv (Conv2D)	(None, 28, 28, 512)	131584	conv2_block3_out[0][0]
conv3_block1_3_conv (Conv2D)	(None, 28, 28, 512)	66048	conv3_block1_2_relu[0][0]
conv3_block1_0_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block1_0_conv[0][0]
conv3_block1_3_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block1_3_conv[0][0]
conv3_block1_add (Add)	(None, 28, 28, 512)	0	conv3_block1_0_bn[0][0] conv3_block1_3_bn[0][0]
conv3_block1_out (Activation)	(None, 28, 28, 512)	0	conv3_block1_add[0][0]
conv3_block2_1_conv (Conv2D)	(None, 28, 28, 128)	65664	conv3_block1_out[0][0]
conv3_block2_1_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block2_1_conv[0][0]
conv3_block2_1_relu (Activation	(None, 28, 28, 128)	0	conv3_block2_1_bn[0][0]
conv3_block2_2_conv (Conv2D)	(None, 28, 28, 128)	147584	conv3_block2_1_relu[0][0]
conv3_block2_2_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block2_2_conv[0][0]
conv3_block2_2_relu (Activation	(None, 28, 28, 128)	0	conv3_block2_2_bn[0][0]
conv3_block2_3_conv (Conv2D)	(None, 28, 28, 512)	66048	conv3_block2_2_relu[0][0]
conv3_block2_3_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block2_3_conv[0][0]
conv3_block2_add (Add)	(None, 28, 28, 512)	0	conv3_block1_out[0][0] conv3_block2_3_bn[0][0]
conv3_block2_out (Activation)	(None, 28, 28, 512)	0	conv3_block2_add[0][0]
conv3_block3_1_conv (Conv2D)	(None, 28, 28, 128)	65664	conv3_block2_out[0][0]
conv3_block3_1_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block3_1_conv[0][0]
conv3_block3_1_relu (Activation	(None, 28, 28, 128)	0	conv3_block3_1_bn[0][0]
conv3_block3_2_conv (Conv2D)	(None, 28, 28, 128)	147584	conv3_block3_1_relu[0][0]
conv3_block3_2_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block3_2_conv[0][0]
conv3_block3_2_relu (Activation	(None, 28, 28, 128)	0	conv3_block3_2_bn[0][0]
conv3_block3_3_conv (Conv2D)	(None, 28, 28, 512)	66048	conv3_block3_2_relu[0][0]
conv3_block3_3_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block3_3_conv[0][0]
conv3_block3_add (Add)	(None, 28, 28, 512)	0	conv3_block2_out[0][0] conv3_block3_3_bn[0][0]
conv3_block3_out (Activation)	(None, 28, 28, 512)	0	conv3_block3_add[0][0]
conv3_block4_1_conv (Conv2D)	(None, 28, 28, 128)	65664	conv3_block3_out[0][0]
conv3_block4_1_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block4_1_conv[0][0]
conv3_block4_1_relu (Activation	(None, 28, 28, 128)	0	conv3_block4_1_bn[0][0]
conv3_block4_2_conv (Conv2D)	(None, 28, 28, 128)	147584	conv3_block4_1_relu[0][0]
conv3_block4_2_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block4_2_conv[0][0]
conv3_block4_2_relu (Activation	(None, 28, 28, 128)	0	conv3_block4_2_bn[0][0]
conv3_block4_3_conv (Conv2D)	(None, 28, 28, 512)	66048	conv3_block4_2_relu[0][0]
conv3_block4_3_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block4_3_conv[0][0]
conv3_block4_add (Add)	(None, 28, 28, 512)	0	conv3_block3_out[0][0] conv3_block4_3_bn[0][0]
conv3_block4_out (Activation)	(None, 28, 28, 512)	0	conv3_block4_add[0][0]
conv4_block1_1_conv (Conv2D)	(None, 14, 14, 256)	131328	conv3_block4_out[0][0]
conv4_block1_1_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block1_1_conv[0][0]
conv4_block1_1_relu (Activation	(None, 14, 14, 256)	0	conv4_block1_1_bn[0][0]
conv4_block1_2_conv (Conv2D)	(None, 14, 14, 256)	590080	conv4_block1_1_relu[0][0]
conv4_block1_2_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block1_2_conv[0][0]

conv4_block1_2_relu (Activation	(None, 14, 14, 256)	0	conv4_block1_2_bn[0][0]
conv4_block1_0_conv (Conv2D)	(None, 14, 14, 1024)	525312	conv3_block4_out[0][0]
conv4_block1_3_conv (Conv2D)	(None, 14, 14, 1024)	263168	conv4_block1_2_relu[0][0]
conv4_block1_0_bn (BatchNormali	(None, 14, 14, 1024)	4096	conv4_block1_0_conv[0][0]
conv4_block1_3_bn (BatchNormali	(None, 14, 14, 1024)	4096	conv4_block1_3_conv[0][0]
conv4_block1_add (Add)	(None, 14, 14, 1024)	0	conv4_block1_0_bn[0][0] conv4_block1_3_bn[0][0]
conv4_block1_out (Activation)	(None, 14, 14, 1024)	0	conv4_block1_add[0][0]
conv4_block2_1_conv (Conv2D)	(None, 14, 14, 256)	262400	conv4_block1_out[0][0]
conv4_block2_1_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block2_1_conv[0][0]
conv4_block2_1_relu (Activation	(None, 14, 14, 256)	0	conv4_block2_1_bn[0][0]
conv4_block2_2_conv (Conv2D)	(None, 14, 14, 256)	590080	conv4_block2_1_relu[0][0]
conv4_block2_2_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block2_2_conv[0][0]
conv4_block2_2_relu (Activation	(None, 14, 14, 256)	0	conv4_block2_2_bn[0][0]
conv4_block2_3_conv (Conv2D)	(None, 14, 14, 1024)	263168	conv4_block2_2_relu[0][0]
conv4_block2_3_bn (BatchNormali	(None, 14, 14, 1024)	4096	conv4_block2_3_conv[0][0]
conv4_block2_add (Add)	(None, 14, 14, 1024)	0	conv4_block1_out[0][0] conv4_block2_3_bn[0][0]
conv4_block2_out (Activation)	(None, 14, 14, 1024)	0	conv4_block2_add[0][0]
conv4_block3_1_conv (Conv2D)	(None, 14, 14, 256)	262400	conv4_block2_out[0][0]
conv4_block3_1_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block3_1_conv[0][0]
conv4_block3_1_relu (Activation	(None, 14, 14, 256)	0	conv4_block3_1_bn[0][0]
conv4_block3_2_conv (Conv2D)	(None, 14, 14, 256)	590080	conv4_block3_1_relu[0][0]
conv4_block3_2_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block3_2_conv[0][0]
conv4_block3_2_relu (Activation	(None, 14, 14, 256)	0	conv4_block3_2_bn[0][0]
conv4_block3_3_conv (Conv2D)	(None, 14, 14, 1024)	263168	conv4_block3_2_relu[0][0]
conv4_block3_3_bn (BatchNormali	(None, 14, 14, 1024)	4096	conv4_block3_3_conv[0][0]
conv4_block3_add (Add)	(None, 14, 14, 1024)	0	conv4_block2_out[0][0] conv4_block3_3_bn[0][0]
conv4_block3_out (Activation)	(None, 14, 14, 1024)	0	conv4_block3_add[0][0]
conv4_block4_1_conv (Conv2D)	(None, 14, 14, 256)	262400	conv4_block3_out[0][0]
conv4_block4_1_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block4_1_conv[0][0]
conv4_block4_1_relu (Activation	(None, 14, 14, 256)	0	conv4_block4_1_bn[0][0]
conv4_block4_2_conv (Conv2D)	(None, 14, 14, 256)	590080	conv4_block4_1_relu[0][0]
conv4_block4_2_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block4_2_conv[0][0]
conv4_block4_2_relu (Activation	(None, 14, 14, 256)	0	conv4_block4_2_bn[0][0]
conv4_block4_3_conv (Conv2D)	(None, 14, 14, 1024)	263168	conv4_block4_2_relu[0][0]
conv4_block4_3_bn (BatchNormali	(None, 14, 14, 1024)	4096	conv4_block4_3_conv[0][0]
conv4_block4_add (Add)	(None, 14, 14, 1024)	0	conv4_block3_out[0][0] conv4_block4_3_bn[0][0]
conv4_block4_out (Activation)	(None, 14, 14, 1024)	0	conv4_block4_add[0][0]
conv4_block5_1_conv (Conv2D)	(None, 14, 14, 256)	262400	conv4_block4_out[0][0]
conv4_block5_1_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block5_1_conv[0][0]
conv4_block5_1_relu (Activation	(None, 14, 14, 256)	0	conv4_block5_1_bn[0][0]
conv4_block5_2_conv (Conv2D)	(None, 14, 14, 256)	590080	conv4_block5_1_relu[0][0]
conv4_block5_2_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block5_2_conv[0][0]
conv4_block5_2_relu (Activation	(None, 14, 14, 256)	0	conv4_block5_2_bn[0][0]

conv4_block5_3_conv (Conv2D)	(None, 14, 14, 1024)	263168	conv4_block5_2_relu[0][0]
conv4_block5_3_bn (BatchNormali	(None, 14, 14, 1024)	4096	conv4_block5_3_conv[0][0]
conv4_block5_add (Add)	(None, 14, 14, 1024)	0	conv4_block4_out[0][0] conv4_block5_3_bn[0][0]
conv4_block5_out (Activation)	(None, 14, 14, 1024)	0	conv4_block5_add[0][0]
conv4_block6_1_conv (Conv2D)	(None, 14, 14, 256)	262400	conv4_block5_out[0][0]
conv4_block6_1_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block6_1_conv[0][0]
conv4_block6_1_relu (Activation	(None, 14, 14, 256)	0	conv4_block6_1_bn[0][0]
conv4_block6_2_conv (Conv2D)	(None, 14, 14, 256)	590080	conv4_block6_1_relu[0][0]
conv4_block6_2_bn (BatchNormali	(None, 14, 14, 256)	1024	conv4_block6_2_conv[0][0]
conv4_block6_2_relu (Activation	(None, 14, 14, 256)	0	conv4_block6_2_bn[0][0]
conv4_block6_3_conv (Conv2D)	(None, 14, 14, 1024)	263168	conv4_block6_2_relu[0][0]
conv4_block6_3_bn (BatchNormali	(None, 14, 14, 1024)	4096	conv4_block6_3_conv[0][0]
conv4_block6_add (Add)	(None, 14, 14, 1024)	0	conv4_block5_out[0][0] conv4_block6_3_bn[0][0]
conv4_block6_out (Activation)	(None, 14, 14, 1024)	0	conv4_block6_add[0][0]
conv5_block1_1_conv (Conv2D)	(None, 7, 7, 512)	524800	conv4_block6_out[0][0]
conv5_block1_1_bn (BatchNormali	(None, 7, 7, 512)	2048	conv5_block1_1_conv[0][0]
conv5_block1_1_relu (Activation	(None, 7, 7, 512)	0	conv5_block1_1_bn[0][0]
conv5_block1_2_conv (Conv2D)	(None, 7, 7, 512)	2359808	conv5_block1_1_relu[0][0]
conv5_block1_2_bn (BatchNormali	(None, 7, 7, 512)	2048	conv5_block1_2_conv[0][0]
conv5_block1_2_relu (Activation	(None, 7, 7, 512)	0	conv5_block1_2_bn[0][0]
conv5_block1_0_conv (Conv2D)	(None, 7, 7, 2048)	2099200	conv4_block6_out[0][0]
conv5_block1_3_conv (Conv2D)	(None, 7, 7, 2048)	1050624	conv5_block1_2_relu[0][0]
conv5_block1_0_bn (BatchNormali	(None, 7, 7, 2048)	8192	conv5_block1_0_conv[0][0]
conv5_block1_3_bn (BatchNormali	(None, 7, 7, 2048)	8192	conv5_block1_3_conv[0][0]
conv5_block1_add (Add)	(None, 7, 7, 2048)	0	conv5_block1_0_bn[0][0] conv5_block1_3_bn[0][0]
conv5_block1_out (Activation)	(None, 7, 7, 2048)	0	conv5_block1_add[0][0]
conv5_block2_1_conv (Conv2D)	(None, 7, 7, 512)	1049088	conv5_block1_out[0][0]
conv5_block2_1_bn (BatchNormali	(None, 7, 7, 512)	2048	conv5_block2_1_conv[0][0]
conv5_block2_1_relu (Activation	(None, 7, 7, 512)	0	conv5_block2_1_bn[0][0]
conv5_block2_2_conv (Conv2D)	(None, 7, 7, 512)	2359808	conv5_block2_1_relu[0][0]
conv5_block2_2_bn (BatchNormali	(None, 7, 7, 512)	2048	conv5_block2_2_conv[0][0]
conv5_block2_2_relu (Activation	(None, 7, 7, 512)	0	conv5_block2_2_bn[0][0]
conv5_block2_3_conv (Conv2D)	(None, 7, 7, 2048)	1050624	conv5_block2_2_relu[0][0]
conv5_block2_3_bn (BatchNormali	(None, 7, 7, 2048)	8192	conv5_block2_3_conv[0][0]
conv5_block2_add (Add)	(None, 7, 7, 2048)	0	conv5_block1_out[0][0] conv5_block2_3_bn[0][0]
conv5_block2_out (Activation)	(None, 7, 7, 2048)	0	conv5_block2_add[0][0]
conv5_block3_1_conv (Conv2D)	(None, 7, 7, 512)	1049088	conv5_block2_out[0][0]
conv5_block3_1_bn (BatchNormali	(None, 7, 7, 512)	2048	conv5_block3_1_conv[0][0]
conv5_block3_1_relu (Activation	(None, 7, 7, 512)	0	conv5_block3_1_bn[0][0]
conv5_block3_2_conv (Conv2D)	(None, 7, 7, 512)	2359808	conv5_block3_1_relu[0][0]
conv5_block3_2_bn (BatchNormali	(None, 7, 7, 512)	2048	conv5_block3_2_conv[0][0]
conv5_block3_2_relu (Activation	(None, 7, 7, 512)	0	conv5_block3_2_bn[0][0]
conv5_block3_3_conv (Conv2D)	(None, 7, 7, 2048)	1050624	conv5_block3_2_relu[0][0]
conv5_block3_3_bn (BatchNormali	(None, 7, 7, 2048)	8192	conv5_block3_3_conv[0][0]

```
__________________________________________________________________________________________________
conv5_block3_add (Add)          (None, 7, 7, 2048)   0           conv5_block2_out[0][0]
                                                                 conv5_block3_3_bn[0][0]
__________________________________________________________________________________________________
conv5_block3_out (Activation)   (None, 7, 7, 2048)   0           conv5_block3_add[0][0]
__________________________________________________________________________________________________
avg_pool (GlobalAveragePooling2 (None, 2048)         0           conv5_block3_out[0][0]
__________________________________________________________________________________________________
predictions (Dense)             (None, 1000)         2049000     avg_pool[0][0]
==================================================================================================
Total params: 25,636,712
Trainable params: 25,583,592
Non-trainable params: 53,120
__________________________________________________________________________________________________
Model: "functional_1"
__________________________________________________________________________________________________
Layer (type)                    Output Shape         Param #     Connected to
==================================================================================================
input_1 (InputLayer)            [(None, 224, 224, 3) 0
__________________________________________________________________________________________________
conv1_pad (ZeroPadding2D)       (None, 230, 230, 3)  0           input_1[0][0]
__________________________________________________________________________________________________
conv1_conv (Conv2D)             (None, 112, 112, 64) 9472        conv1_pad[0][0]
__________________________________________________________________________________________________
conv1_bn (BatchNormalization)   (None, 112, 112, 64) 256         conv1_conv[0][0]
__________________________________________________________________________________________________
conv1_relu (Activation)         (None, 112, 112, 64) 0           conv1_bn[0][0]
__________________________________________________________________________________________________
pool1_pad (ZeroPadding2D)       (None, 114, 114, 64) 0           conv1_relu[0][0]
__________________________________________________________________________________________________
pool1_pool (MaxPooling2D)       (None, 56, 56, 64)   0           pool1_pad[0][0]
__________________________________________________________________________________________________
conv2_block1_1_conv (Conv2D)    (None, 56, 56, 64)   4160        pool1_pool[0][0]
__________________________________________________________________________________________________
conv2_block1_1_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block1_1_conv[0][0]
__________________________________________________________________________________________________
conv2_block1_1_relu (Activation (None, 56, 56, 64)   0           conv2_block1_1_bn[0][0]
__________________________________________________________________________________________________
conv2_block1_2_conv (Conv2D)    (None, 56, 56, 64)   36928       conv2_block1_1_relu[0][0]
__________________________________________________________________________________________________
conv2_block1_2_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block1_2_conv[0][0]
__________________________________________________________________________________________________
conv2_block1_2_relu (Activation (None, 56, 56, 64)   0           conv2_block1_2_bn[0][0]
__________________________________________________________________________________________________
conv2_block1_0_conv (Conv2D)    (None, 56, 56, 256)  16640       pool1_pool[0][0]
__________________________________________________________________________________________________
conv2_block1_3_conv (Conv2D)    (None, 56, 56, 256)  16640       conv2_block1_2_relu[0][0]
__________________________________________________________________________________________________
conv2_block1_0_bn (BatchNormali (None, 56, 56, 256)  1024        conv2_block1_0_conv[0][0]
__________________________________________________________________________________________________
conv2_block1_3_bn (BatchNormali (None, 56, 56, 256)  1024        conv2_block1_3_conv[0][0]
__________________________________________________________________________________________________
conv2_block1_add (Add)          (None, 56, 56, 256)  0           conv2_block1_0_bn[0][0]
                                                                 conv2_block1_3_bn[0][0]
__________________________________________________________________________________________________
conv2_block1_out (Activation)   (None, 56, 56, 256)  0           conv2_block1_add[0][0]
__________________________________________________________________________________________________
conv2_block2_1_conv (Conv2D)    (None, 56, 56, 64)   16448       conv2_block1_out[0][0]
__________________________________________________________________________________________________
conv2_block2_1_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block2_1_conv[0][0]
__________________________________________________________________________________________________
conv2_block2_1_relu (Activation (None, 56, 56, 64)   0           conv2_block2_1_bn[0][0]
__________________________________________________________________________________________________
conv2_block2_2_conv (Conv2D)    (None, 56, 56, 64)   36928       conv2_block2_1_relu[0][0]
__________________________________________________________________________________________________
conv2_block2_2_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block2_2_conv[0][0]
__________________________________________________________________________________________________
conv2_block2_2_relu (Activation (None, 56, 56, 64)   0           conv2_block2_2_bn[0][0]
__________________________________________________________________________________________________
conv2_block2_3_conv (Conv2D)    (None, 56, 56, 256)  16640       conv2_block2_2_relu[0][0]
__________________________________________________________________________________________________
conv2_block2_3_bn (BatchNormali (None, 56, 56, 256)  1024        conv2_block2_3_conv[0][0]
__________________________________________________________________________________________________
conv2_block2_add (Add)          (None, 56, 56, 256)  0           conv2_block1_out[0][0]
                                                                 conv2_block2_3_bn[0][0]
__________________________________________________________________________________________________
conv2_block2_out (Activation)   (None, 56, 56, 256)  0           conv2_block2_add[0][0]
__________________________________________________________________________________________________
conv2_block3_1_conv (Conv2D)    (None, 56, 56, 64)   16448       conv2_block2_out[0][0]
__________________________________________________________________________________________________
conv2_block3_1_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block3_1_conv[0][0]
__________________________________________________________________________________________________
conv2_block3_1_relu (Activation (None, 56, 56, 64)   0           conv2_block3_1_bn[0][0]
__________________________________________________________________________________________________
conv2_block3_2_conv (Conv2D)    (None, 56, 56, 64)   36928       conv2_block3_1_relu[0][0]
__________________________________________________________________________________________________
conv2_block3_2_bn (BatchNormali (None, 56, 56, 64)   256         conv2_block3_2_conv[0][0]
__________________________________________________________________________________________________
conv2_block3_2_relu (Activation (None, 56, 56, 64)   0           conv2_block3_2_bn[0][0]
__________________________________________________________________________________________________
conv2_block3_3_conv (Conv2D)    (None, 56, 56, 256)  16640       conv2_block3_2_relu[0][0]
```

conv2_block3_3_bn (BatchNormali	(None, 56, 56, 256)	1024	conv2_block3_3_conv[0][0]
conv2_block3_add (Add)	(None, 56, 56, 256)	0	conv2_block2_out[0][0] conv2_block3_3_bn[0][0]
conv2_block3_out (Activation)	(None, 56, 56, 256)	0	conv2_block3_add[0][0]
conv3_block1_1_conv (Conv2D)	(None, 28, 28, 128)	32896	conv2_block3_out[0][0]
conv3_block1_1_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block1_1_conv[0][0]
conv3_block1_1_relu (Activation	(None, 28, 28, 128)	0	conv3_block1_1_bn[0][0]
conv3_block1_2_conv (Conv2D)	(None, 28, 28, 128)	147584	conv3_block1_1_relu[0][0]
conv3_block1_2_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block1_2_conv[0][0]
conv3_block1_2_relu (Activation	(None, 28, 28, 128)	0	conv3_block1_2_bn[0][0]
conv3_block1_0_conv (Conv2D)	(None, 28, 28, 512)	131584	conv2_block3_out[0][0]
conv3_block1_3_conv (Conv2D)	(None, 28, 28, 512)	66048	conv3_block1_2_relu[0][0]
conv3_block1_0_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block1_0_conv[0][0]
conv3_block1_3_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block1_3_conv[0][0]
conv3_block1_add (Add)	(None, 28, 28, 512)	0	conv3_block1_0_bn[0][0] conv3_block1_3_bn[0][0]
conv3_block1_out (Activation)	(None, 28, 28, 512)	0	conv3_block1_add[0][0]
conv3_block2_1_conv (Conv2D)	(None, 28, 28, 128)	65664	conv3_block1_out[0][0]
conv3_block2_1_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block2_1_conv[0][0]
conv3_block2_1_relu (Activation	(None, 28, 28, 128)	0	conv3_block2_1_bn[0][0]
conv3_block2_2_conv (Conv2D)	(None, 28, 28, 128)	147584	conv3_block2_1_relu[0][0]
conv3_block2_2_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block2_2_conv[0][0]
conv3_block2_2_relu (Activation	(None, 28, 28, 128)	0	conv3_block2_2_bn[0][0]
conv3_block2_3_conv (Conv2D)	(None, 28, 28, 512)	66048	conv3_block2_2_relu[0][0]
conv3_block2_3_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block2_3_conv[0][0]
conv3_block2_add (Add)	(None, 28, 28, 512)	0	conv3_block1_out[0][0] conv3_block2_3_bn[0][0]
conv3_block2_out (Activation)	(None, 28, 28, 512)	0	conv3_block2_add[0][0]
conv3_block3_1_conv (Conv2D)	(None, 28, 28, 128)	65664	conv3_block2_out[0][0]
conv3_block3_1_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block3_1_conv[0][0]
conv3_block3_1_relu (Activation	(None, 28, 28, 128)	0	conv3_block3_1_bn[0][0]
conv3_block3_2_conv (Conv2D)	(None, 28, 28, 128)	147584	conv3_block3_1_relu[0][0]
conv3_block3_2_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block3_2_conv[0][0]
conv3_block3_2_relu (Activation	(None, 28, 28, 128)	0	conv3_block3_2_bn[0][0]
conv3_block3_3_conv (Conv2D)	(None, 28, 28, 512)	66048	conv3_block3_2_relu[0][0]
conv3_block3_3_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block3_3_conv[0][0]
conv3_block3_add (Add)	(None, 28, 28, 512)	0	conv3_block2_out[0][0] conv3_block3_3_bn[0][0]
conv3_block3_out (Activation)	(None, 28, 28, 512)	0	conv3_block3_add[0][0]
conv3_block4_1_conv (Conv2D)	(None, 28, 28, 128)	65664	conv3_block3_out[0][0]
conv3_block4_1_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block4_1_conv[0][0]
conv3_block4_1_relu (Activation	(None, 28, 28, 128)	0	conv3_block4_1_bn[0][0]
conv3_block4_2_conv (Conv2D)	(None, 28, 28, 128)	147584	conv3_block4_1_relu[0][0]
conv3_block4_2_bn (BatchNormali	(None, 28, 28, 128)	512	conv3_block4_2_conv[0][0]
conv3_block4_2_relu (Activation	(None, 28, 28, 128)	0	conv3_block4_2_bn[0][0]
conv3_block4_3_conv (Conv2D)	(None, 28, 28, 512)	66048	conv3_block4_2_relu[0][0]
conv3_block4_3_bn (BatchNormali	(None, 28, 28, 512)	2048	conv3_block4_3_conv[0][0]

```
conv3_block4_add (Add)          (None, 28, 28, 512)  0           conv3_block3_out[0][0]
                                                                 conv3_block4_3_bn[0][0]
__________________________________________________________________________________________________
conv3_block4_out (Activation)   (None, 28, 28, 512)  0           conv3_block4_add[0][0]
__________________________________________________________________________________________________
conv4_block1_1_conv (Conv2D)    (None, 14, 14, 256)  131328      conv3_block4_out[0][0]
__________________________________________________________________________________________________
conv4_block1_1_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block1_1_conv[0][0]
__________________________________________________________________________________________________
conv4_block1_1_relu (Activation (None, 14, 14, 256)  0           conv4_block1_1_bn[0][0]
__________________________________________________________________________________________________
conv4_block1_2_conv (Conv2D)    (None, 14, 14, 256)  590080      conv4_block1_1_relu[0][0]
__________________________________________________________________________________________________
conv4_block1_2_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block1_2_conv[0][0]
__________________________________________________________________________________________________
conv4_block1_2_relu (Activation (None, 14, 14, 256)  0           conv4_block1_2_bn[0][0]
__________________________________________________________________________________________________
conv4_block1_0_conv (Conv2D)    (None, 14, 14, 1024) 525312      conv3_block4_out[0][0]
__________________________________________________________________________________________________
conv4_block1_3_conv (Conv2D)    (None, 14, 14, 1024) 263168      conv4_block1_2_relu[0][0]
__________________________________________________________________________________________________
conv4_block1_0_bn (BatchNormali (None, 14, 14, 1024) 4096        conv4_block1_0_conv[0][0]
__________________________________________________________________________________________________
conv4_block1_3_bn (BatchNormali (None, 14, 14, 1024) 4096        conv4_block1_3_conv[0][0]
__________________________________________________________________________________________________
conv4_block1_add (Add)          (None, 14, 14, 1024) 0           conv4_block1_0_bn[0][0]
                                                                 conv4_block1_3_bn[0][0]
__________________________________________________________________________________________________
conv4_block1_out (Activation)   (None, 14, 14, 1024) 0           conv4_block1_add[0][0]
__________________________________________________________________________________________________
conv4_block2_1_conv (Conv2D)    (None, 14, 14, 256)  262400      conv4_block1_out[0][0]
__________________________________________________________________________________________________
conv4_block2_1_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block2_1_conv[0][0]
__________________________________________________________________________________________________
conv4_block2_1_relu (Activation (None, 14, 14, 256)  0           conv4_block2_1_bn[0][0]
__________________________________________________________________________________________________
conv4_block2_2_conv (Conv2D)    (None, 14, 14, 256)  590080      conv4_block2_1_relu[0][0]
__________________________________________________________________________________________________
conv4_block2_2_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block2_2_conv[0][0]
__________________________________________________________________________________________________
conv4_block2_2_relu (Activation (None, 14, 14, 256)  0           conv4_block2_2_bn[0][0]
__________________________________________________________________________________________________
conv4_block2_3_conv (Conv2D)    (None, 14, 14, 1024) 263168      conv4_block2_2_relu[0][0]
__________________________________________________________________________________________________
conv4_block2_3_bn (BatchNormali (None, 14, 14, 1024) 4096        conv4_block2_3_conv[0][0]
__________________________________________________________________________________________________
conv4_block2_add (Add)          (None, 14, 14, 1024) 0           conv4_block1_out[0][0]
                                                                 conv4_block2_3_bn[0][0]
__________________________________________________________________________________________________
conv4_block2_out (Activation)   (None, 14, 14, 1024) 0           conv4_block2_add[0][0]
__________________________________________________________________________________________________
conv4_block3_1_conv (Conv2D)    (None, 14, 14, 256)  262400      conv4_block2_out[0][0]
__________________________________________________________________________________________________
conv4_block3_1_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block3_1_conv[0][0]
__________________________________________________________________________________________________
conv4_block3_1_relu (Activation (None, 14, 14, 256)  0           conv4_block3_1_bn[0][0]
__________________________________________________________________________________________________
conv4_block3_2_conv (Conv2D)    (None, 14, 14, 256)  590080      conv4_block3_1_relu[0][0]
__________________________________________________________________________________________________
conv4_block3_2_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block3_2_conv[0][0]
__________________________________________________________________________________________________
conv4_block3_2_relu (Activation (None, 14, 14, 256)  0           conv4_block3_2_bn[0][0]
__________________________________________________________________________________________________
conv4_block3_3_conv (Conv2D)    (None, 14, 14, 1024) 263168      conv4_block3_2_relu[0][0]
__________________________________________________________________________________________________
conv4_block3_3_bn (BatchNormali (None, 14, 14, 1024) 4096        conv4_block3_3_conv[0][0]
__________________________________________________________________________________________________
conv4_block3_add (Add)          (None, 14, 14, 1024) 0           conv4_block2_out[0][0]
                                                                 conv4_block3_3_bn[0][0]
__________________________________________________________________________________________________
conv4_block3_out (Activation)   (None, 14, 14, 1024) 0           conv4_block3_add[0][0]
__________________________________________________________________________________________________
conv4_block4_1_conv (Conv2D)    (None, 14, 14, 256)  262400      conv4_block3_out[0][0]
__________________________________________________________________________________________________
conv4_block4_1_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block4_1_conv[0][0]
__________________________________________________________________________________________________
conv4_block4_1_relu (Activation (None, 14, 14, 256)  0           conv4_block4_1_bn[0][0]
__________________________________________________________________________________________________
conv4_block4_2_conv (Conv2D)    (None, 14, 14, 256)  590080      conv4_block4_1_relu[0][0]
__________________________________________________________________________________________________
conv4_block4_2_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block4_2_conv[0][0]
__________________________________________________________________________________________________
conv4_block4_2_relu (Activation (None, 14, 14, 256)  0           conv4_block4_2_bn[0][0]
__________________________________________________________________________________________________
conv4_block4_3_conv (Conv2D)    (None, 14, 14, 1024) 263168      conv4_block4_2_relu[0][0]
__________________________________________________________________________________________________
conv4_block4_3_bn (BatchNormali (None, 14, 14, 1024) 4096        conv4_block4_3_conv[0][0]
__________________________________________________________________________________________________
conv4_block4_add (Add)          (None, 14, 14, 1024) 0           conv4_block3_out[0][0]
                                                                 conv4_block4_3_bn[0][0]
__________________________________________________________________________________________________
```

```
conv4_block4_out (Activation)   (None, 14, 14, 1024) 0           conv4_block4_add[0][0]

conv4_block5_1_conv (Conv2D)    (None, 14, 14, 256)  262400      conv4_block4_out[0][0]

conv4_block5_1_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block5_1_conv[0][0]

conv4_block5_1_relu (Activation (None, 14, 14, 256)  0           conv4_block5_1_bn[0][0]

conv4_block5_2_conv (Conv2D)    (None, 14, 14, 256)  590080      conv4_block5_1_relu[0][0]

conv4_block5_2_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block5_2_conv[0][0]

conv4_block5_2_relu (Activation (None, 14, 14, 256)  0           conv4_block5_2_bn[0][0]

conv4_block5_3_conv (Conv2D)    (None, 14, 14, 1024) 263168      conv4_block5_2_relu[0][0]

conv4_block5_3_bn (BatchNormali (None, 14, 14, 1024) 4096        conv4_block5_3_conv[0][0]

conv4_block5_add (Add)          (None, 14, 14, 1024) 0           conv4_block4_out[0][0]
                                                                 conv4_block5_3_bn[0][0]

conv4_block5_out (Activation)   (None, 14, 14, 1024) 0           conv4_block5_add[0][0]

conv4_block6_1_conv (Conv2D)    (None, 14, 14, 256)  262400      conv4_block5_out[0][0]

conv4_block6_1_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block6_1_conv[0][0]

conv4_block6_1_relu (Activation (None, 14, 14, 256)  0           conv4_block6_1_bn[0][0]

conv4_block6_2_conv (Conv2D)    (None, 14, 14, 256)  590080      conv4_block6_1_relu[0][0]

conv4_block6_2_bn (BatchNormali (None, 14, 14, 256)  1024        conv4_block6_2_conv[0][0]

conv4_block6_2_relu (Activation (None, 14, 14, 256)  0           conv4_block6_2_bn[0][0]

conv4_block6_3_conv (Conv2D)    (None, 14, 14, 1024) 263168      conv4_block6_2_relu[0][0]

conv4_block6_3_bn (BatchNormali (None, 14, 14, 1024) 4096        conv4_block6_3_conv[0][0]

conv4_block6_add (Add)          (None, 14, 14, 1024) 0           conv4_block5_out[0][0]
                                                                 conv4_block6_3_bn[0][0]

conv4_block6_out (Activation)   (None, 14, 14, 1024) 0           conv4_block6_add[0][0]

conv5_block1_1_conv (Conv2D)    (None, 7, 7, 512)    524800      conv4_block6_out[0][0]

conv5_block1_1_bn (BatchNormali (None, 7, 7, 512)    2048        conv5_block1_1_conv[0][0]

conv5_block1_1_relu (Activation (None, 7, 7, 512)    0           conv5_block1_1_bn[0][0]

conv5_block1_2_conv (Conv2D)    (None, 7, 7, 512)    2359808     conv5_block1_1_relu[0][0]

conv5_block1_2_bn (BatchNormali (None, 7, 7, 512)    2048        conv5_block1_2_conv[0][0]

conv5_block1_2_relu (Activation (None, 7, 7, 512)    0           conv5_block1_2_bn[0][0]

conv5_block1_0_conv (Conv2D)    (None, 7, 7, 2048)   2099200     conv4_block6_out[0][0]

conv5_block1_3_conv (Conv2D)    (None, 7, 7, 2048)   1050624     conv5_block1_2_relu[0][0]

conv5_block1_0_bn (BatchNormali (None, 7, 7, 2048)   8192        conv5_block1_0_conv[0][0]

conv5_block1_3_bn (BatchNormali (None, 7, 7, 2048)   8192        conv5_block1_3_conv[0][0]

conv5_block1_add (Add)          (None, 7, 7, 2048)   0           conv5_block1_0_bn[0][0]
                                                                 conv5_block1_3_bn[0][0]

conv5_block1_out (Activation)   (None, 7, 7, 2048)   0           conv5_block1_add[0][0]

conv5_block2_1_conv (Conv2D)    (None, 7, 7, 512)    1049088     conv5_block1_out[0][0]

conv5_block2_1_bn (BatchNormali (None, 7, 7, 512)    2048        conv5_block2_1_conv[0][0]

conv5_block2_1_relu (Activation (None, 7, 7, 512)    0           conv5_block2_1_bn[0][0]

conv5_block2_2_conv (Conv2D)    (None, 7, 7, 512)    2359808     conv5_block2_1_relu[0][0]

conv5_block2_2_bn (BatchNormali (None, 7, 7, 512)    2048        conv5_block2_2_conv[0][0]

conv5_block2_2_relu (Activation (None, 7, 7, 512)    0           conv5_block2_2_bn[0][0]

conv5_block2_3_conv (Conv2D)    (None, 7, 7, 2048)   1050624     conv5_block2_2_relu[0][0]

conv5_block2_3_bn (BatchNormali (None, 7, 7, 2048)   8192        conv5_block2_3_conv[0][0]

conv5_block2_add (Add)          (None, 7, 7, 2048)   0           conv5_block1_out[0][0]
                                                                 conv5_block2_3_bn[0][0]

conv5_block2_out (Activation)   (None, 7, 7, 2048)   0           conv5_block2_add[0][0]

conv5_block3_1_conv (Conv2D)    (None, 7, 7, 512)    1049088     conv5_block2_out[0][0]
```

```
________________________________________________________________________________________________
conv5_block3_1_bn (BatchNormali (None, 7, 7, 512)    2048        conv5_block3_1_conv[0][0]
________________________________________________________________________________________________
conv5_block3_1_relu (Activation (None, 7, 7, 512)    0           conv5_block3_1_bn[0][0]
________________________________________________________________________________________________
conv5_block3_2_conv (Conv2D)    (None, 7, 7, 512)    2359808     conv5_block3_1_relu[0][0]
________________________________________________________________________________________________
conv5_block3_2_bn (BatchNormali (None, 7, 7, 512)    2048        conv5_block3_2_conv[0][0]
________________________________________________________________________________________________
conv5_block3_2_relu (Activation (None, 7, 7, 512)    0           conv5_block3_2_bn[0][0]
________________________________________________________________________________________________
conv5_block3_3_conv (Conv2D)    (None, 7, 7, 2048)   1050624     conv5_block3_2_relu[0][0]
________________________________________________________________________________________________
conv5_block3_3_bn (BatchNormali (None, 7, 7, 2048)   8192        conv5_block3_3_conv[0][0]
________________________________________________________________________________________________
conv5_block3_add (Add)          (None, 7, 7, 2048)   0           conv5_block2_out[0][0]
                                                                 conv5_block3_3_bn[0][0]
________________________________________________________________________________________________
conv5_block3_out (Activation)   (None, 7, 7, 2048)   0           conv5_block3_add[0][0]
________________________________________________________________________________________________
avg_pool (GlobalAveragePooling2 (None, 2048)         0           conv5_block3_out[0][0]
________________________________________________________________________________________________
flatten (Flatten)               (None, 2048)         0           avg_pool[0][0]
________________________________________________________________________________________________
output_layer (Dense)            (None, 2)            4098        flatten[0][0]
================================================================================================
Total params: 23,591,810
Trainable params: 23,538,690
Non-trainable params: 53,120
________________________________________________________________________________________________
```

In [12]:

```
for layer in custom_resnet_model.layers[:-1]:
    layer.trainable = False

custom_resnet_model.layers[-1].trainable
```

Out[12]: True

In [13]:

```
custom_resnet_model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['accuracy'])
```

In [14]:
```
t=time.time()
hist = custom_resnet_model.fit(X_train, y_train, batch_size=32, epochs=num_epoch, verbose=1, validation_data=(X_test, y_test))
print('Training time: %s' % (t - time.time()))
(loss, accuracy) = custom_resnet_model.evaluate(X_test, y_test, batch_size=10, verbose=1)
print("[INFO] loss={:.4f}, accuracy: {:.4f}%".format(loss,accuracy * 100))
```

```
Epoch 1/100
147/147 [==============================] - 11s 73ms/step - loss: 0.2067 - accuracy: 0.9142 - val_loss: 0.1091 - val_accuracy: 0.9616
Epoch 2/100
147/147 [==============================] - 10s 65ms/step - loss: 0.1197 - accuracy: 0.9554 - val_loss: 0.0955 - val_accuracy: 0.9676
Epoch 3/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0949 - accuracy: 0.9661 - val_loss: 0.1064 - val_accuracy: 0.9582
Epoch 4/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0924 - accuracy: 0.9654 - val_loss: 0.0828 - val_accuracy: 0.9718
Epoch 5/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0836 - accuracy: 0.9686 - val_loss: 0.0833 - val_accuracy: 0.9753
Epoch 6/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0743 - accuracy: 0.9733 - val_loss: 0.0775 - val_accuracy: 0.9761
Epoch 7/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0727 - accuracy: 0.9757 - val_loss: 0.0867 - val_accuracy: 0.9744
Epoch 8/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0664 - accuracy: 0.9765 - val_loss: 0.0931 - val_accuracy: 0.9701
Epoch 9/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0622 - accuracy: 0.9782 - val_loss: 0.0788 - val_accuracy: 0.9727
Epoch 10/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0598 - accuracy: 0.9793 - val_loss: 0.0762 - val_accuracy: 0.9770
Epoch 11/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0532 - accuracy: 0.9827 - val_loss: 0.0738 - val_accuracy: 0.9753
Epoch 12/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0503 - accuracy: 0.9821 - val_loss: 0.0948 - val_accuracy: 0.9710
Epoch 13/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0492 - accuracy: 0.9819 - val_loss: 0.0755 - val_accuracy: 0.9753
Epoch 14/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0486 - accuracy: 0.9836 - val_loss: 0.0798 - val_accuracy: 0.9770
Epoch 15/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0464 - accuracy: 0.9842 - val_loss: 0.0955 - val_accuracy: 0.9625
Epoch 16/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0418 - accuracy: 0.9861 - val_loss: 0.0794 - val_accuracy: 0.9744
Epoch 17/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0412 - accuracy: 0.9878 - val_loss: 0.0813 - val_accuracy: 0.9744
Epoch 18/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0438 - accuracy: 0.9855 - val_loss: 0.0734 - val_accuracy: 0.9787
Epoch 19/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0393 - accuracy: 0.9872 - val_loss: 0.0721 - val_accuracy: 0.9787
Epoch 20/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0358 - accuracy: 0.9883 - val_loss: 0.0855 - val_accuracy: 0.9684
Epoch 21/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0341 - accuracy: 0.9908 - val_loss: 0.0864 - val_accuracy: 0.9735
Epoch 22/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0340 - accuracy: 0.9898 - val_loss: 0.0735 - val_accuracy: 0.9778
Epoch 23/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0353 - accuracy: 0.9887 - val_loss: 0.0731 - val_accuracy: 0.9761
Epoch 24/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0286 - accuracy: 0.9921 - val_loss: 0.0750 - val_accuracy: 0.9770
Epoch 25/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0283 - accuracy: 0.9912 - val_loss: 0.0749 - val_accuracy: 0.9787
Epoch 26/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0277 - accuracy: 0.9923 - val_loss: 0.0863 - val_accuracy: 0.9727
Epoch 27/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0267 - accuracy: 0.9927 - val_loss: 0.0818 - val_accuracy: 0.9727
Epoch 28/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0250 - accuracy: 0.9940 - val_loss: 0.0814 - val_accuracy: 0.9735
Epoch 29/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0243 - accuracy: 0.9936 - val_loss: 0.0795 - val_accuracy: 0.9753
Epoch 30/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0240 - accuracy: 0.9936 - val_loss: 0.0763 - val_accuracy: 0.9778
Epoch 31/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0265 - accuracy: 0.9925 - val_loss: 0.0915 - val_accuracy: 0.9727
Epoch 32/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0206 - accuracy: 0.9951 - val_loss: 0.0808 - val_accuracy: 0.9735
Epoch 33/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0198 - accuracy: 0.9951 - val_loss: 0.0782 - val_accuracy: 0.9761
Epoch 34/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0194 - accuracy: 0.9964 - val_loss: 0.0955 - val_accuracy: 0.9693
Epoch 35/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0182 - accuracy: 0.9959 - val_loss: 0.0821 - val_accuracy: 0.9753
Epoch 36/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0179 - accuracy: 0.9966 - val_loss: 0.0887 - val_accuracy: 0.9735
Epoch 37/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0186 - accuracy: 0.9964 - val_loss: 0.0857 - val_accuracy: 0.9761
Epoch 38/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0165 - accuracy: 0.9968 - val_loss: 0.0872 - val_accuracy: 0.9735
Epoch 39/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0150 - accuracy: 0.9981 - val_loss: 0.0834 - val_accuracy: 0.9753
Epoch 40/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0180 - accuracy: 0.9944 - val_loss: 0.0843 - val_accuracy: 0.9761
Epoch 41/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0170 - accuracy: 0.9962 - val_loss: 0.0986 - val_accuracy: 0.9735
Epoch 42/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0151 - accuracy: 0.9972 - val_loss: 0.0936 - val_accuracy: 0.9735
Epoch 43/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0168 - accuracy: 0.9962 - val_loss: 0.0853 - val_accuracy: 0.9761
Epoch 44/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0127 - accuracy: 0.9983 - val_loss: 0.1224 - val_accuracy: 0.9684
Epoch 45/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0167 - accuracy: 0.9957 - val_loss: 0.1033 - val_accuracy: 0.9710
Epoch 46/100
```

```
147/147 [==============================] - 10s 66ms/step - loss: 0.0117 - accuracy: 0.9987 - val_loss: 0.0952 - val_accuracy: 0.9727
Epoch 47/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0111 - accuracy: 0.9983 - val_loss: 0.0926 - val_accuracy: 0.9744
Epoch 48/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0141 - accuracy: 0.9981 - val_loss: 0.0909 - val_accuracy: 0.9753
Epoch 49/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0113 - accuracy: 0.9983 - val_loss: 0.0916 - val_accuracy: 0.9744
Epoch 50/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0101 - accuracy: 0.9991 - val_loss: 0.0862 - val_accuracy: 0.9778
Epoch 51/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0101 - accuracy: 0.9989 - val_loss: 0.0902 - val_accuracy: 0.9753
Epoch 52/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0094 - accuracy: 0.9994 - val_loss: 0.0990 - val_accuracy: 0.9753
Epoch 53/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0090 - accuracy: 0.9996 - val_loss: 0.1023 - val_accuracy: 0.9718
Epoch 54/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0096 - accuracy: 0.9991 - val_loss: 0.0929 - val_accuracy: 0.9761
Epoch 55/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0090 - accuracy: 0.9991 - val_loss: 0.0948 - val_accuracy: 0.9727
Epoch 56/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0100 - accuracy: 0.9991 - val_loss: 0.1009 - val_accuracy: 0.9710
Epoch 57/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0083 - accuracy: 0.9996 - val_loss: 0.0982 - val_accuracy: 0.9727
Epoch 58/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0081 - accuracy: 0.9996 - val_loss: 0.0913 - val_accuracy: 0.9770
Epoch 59/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0100 - accuracy: 0.9985 - val_loss: 0.1036 - val_accuracy: 0.9744
Epoch 60/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0077 - accuracy: 0.9998 - val_loss: 0.1002 - val_accuracy: 0.9735
Epoch 61/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0068 - accuracy: 0.9998 - val_loss: 0.0951 - val_accuracy: 0.9770
Epoch 62/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0062 - accuracy: 1.0000 - val_loss: 0.1036 - val_accuracy: 0.9701
Epoch 63/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0062 - accuracy: 0.9998 - val_loss: 0.1074 - val_accuracy: 0.9727
Epoch 64/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0060 - accuracy: 0.9998 - val_loss: 0.0957 - val_accuracy: 0.9770
Epoch 65/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0057 - accuracy: 0.9998 - val_loss: 0.1313 - val_accuracy: 0.9659
Epoch 66/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0072 - accuracy: 0.9998 - val_loss: 0.1006 - val_accuracy: 0.9761
Epoch 67/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0058 - accuracy: 0.9998 - val_loss: 0.1022 - val_accuracy: 0.9753
Epoch 68/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0056 - accuracy: 1.0000 - val_loss: 0.1004 - val_accuracy: 0.9753
Epoch 69/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0047 - accuracy: 1.0000 - val_loss: 0.1055 - val_accuracy: 0.9710
Epoch 70/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0047 - accuracy: 1.0000 - val_loss: 0.1090 - val_accuracy: 0.9718
Epoch 71/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0047 - accuracy: 1.0000 - val_loss: 0.1058 - val_accuracy: 0.9744
Epoch 72/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0054 - accuracy: 1.0000 - val_loss: 0.1174 - val_accuracy: 0.9710
Epoch 73/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0053 - accuracy: 0.9998 - val_loss: 0.1061 - val_accuracy: 0.9761
Epoch 74/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0043 - accuracy: 1.0000 - val_loss: 0.1115 - val_accuracy: 0.9718
Epoch 75/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0045 - accuracy: 1.0000 - val_loss: 0.1042 - val_accuracy: 0.9753
Epoch 76/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0065 - accuracy: 0.9994 - val_loss: 0.1071 - val_accuracy: 0.9744
Epoch 77/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0043 - accuracy: 1.0000 - val_loss: 0.1119 - val_accuracy: 0.9718
Epoch 78/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0037 - accuracy: 1.0000 - val_loss: 0.1121 - val_accuracy: 0.9735
Epoch 79/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0065 - accuracy: 0.9989 - val_loss: 0.1177 - val_accuracy: 0.9735
Epoch 80/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0038 - accuracy: 0.9998 - val_loss: 0.1113 - val_accuracy: 0.9761
Epoch 81/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0043 - accuracy: 1.0000 - val_loss: 0.1083 - val_accuracy: 0.9770
Epoch 82/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0032 - accuracy: 1.0000 - val_loss: 0.1102 - val_accuracy: 0.9761
Epoch 83/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0036 - accuracy: 1.0000 - val_loss: 0.1150 - val_accuracy: 0.9744
Epoch 84/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0030 - accuracy: 1.0000 - val_loss: 0.1154 - val_accuracy: 0.9753
Epoch 85/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0026 - accuracy: 1.0000 - val_loss: 0.1183 - val_accuracy: 0.9735
Epoch 86/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0028 - accuracy: 1.0000 - val_loss: 0.1158 - val_accuracy: 0.9727
Epoch 87/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0027 - accuracy: 1.0000 - val_loss: 0.1133 - val_accuracy: 0.9753
Epoch 88/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0025 - accuracy: 1.0000 - val_loss: 0.1141 - val_accuracy: 0.9761
Epoch 89/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0024 - accuracy: 1.0000 - val_loss: 0.1178 - val_accuracy: 0.9744
Epoch 90/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0023 - accuracy: 1.0000 - val_loss: 0.1189 - val_accuracy: 0.9735
Epoch 91/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0026 - accuracy: 1.0000 - val_loss: 0.1188 - val_accuracy: 0.9735
```

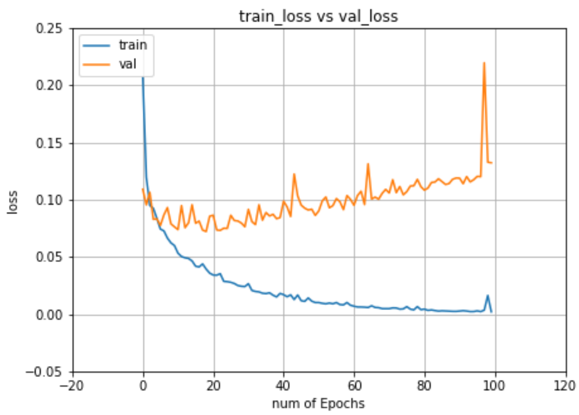
```
Epoch 92/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0029 - accuracy: 1.0000 - val_loss: 0.1139 - val_accuracy: 0.9744
Epoch 93/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0026 - accuracy: 1.0000 - val_loss: 0.1202 - val_accuracy: 0.9735
Epoch 94/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0022 - accuracy: 1.0000 - val_loss: 0.1155 - val_accuracy: 0.9761
Epoch 95/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0022 - accuracy: 1.0000 - val_loss: 0.1174 - val_accuracy: 0.9761
Epoch 96/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0028 - accuracy: 1.0000 - val_loss: 0.1203 - val_accuracy: 0.9761
Epoch 97/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0021 - accuracy: 1.0000 - val_loss: 0.1201 - val_accuracy: 0.9753
Epoch 98/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0034 - accuracy: 0.9996 - val_loss: 0.2196 - val_accuracy: 0.9488
Epoch 99/100
147/147 [==============================] - 10s 66ms/step - loss: 0.0162 - accuracy: 0.9934 - val_loss: 0.1327 - val_accuracy: 0.9735
Epoch 100/100
147/147 [==============================] - 10s 65ms/step - loss: 0.0020 - accuracy: 1.0000 - val_loss: 0.1323 - val_accuracy: 0.9744
Training time: -975.6852314472198
118/118 [==============================] - 3s 25ms/step - loss: 0.1323 - accuracy: 0.9744
[INFO] loss=0.1323, accuracy: 97.4403%
```

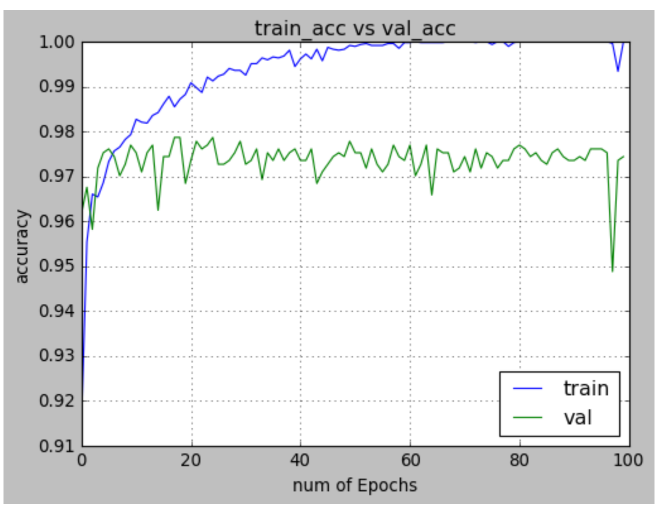
In [15]:
```
(loss, accuracy) = custom_resnet_model.evaluate(X_test, y_test, batch_size=10, verbose=1)

print("[INFO] loss={:.4f}, accuracy: {:.4f}%".format(loss,accuracy * 100))
```

```
118/118 [==============================] - 3s 23ms/step - loss: 0.1323 - accuracy: 0.9744
[INFO] loss=0.1323, accuracy: 97.4403%
```

visualizing losses and accuracy

In [16]:
```
display_loss_accuracy(hist)
```





Selection of appropriate layers

In [50]:
```
train_image_generator = ImageDataGenerator(
    rescale=1./255,
    validation_split = 0.2,
    shear_range=0.2,
    zoom_range=0.2,
)

train_generator = train_image_generator.flow_from_dataframe(
    dataframe=ftd,
    directory=train_img_dir,
    x_col='X_ray_image_name',
    y_col='target',
    target_size=(224, 224),
    batch_size=16,
    seed=2020,
    shuffle=True,
    class_mode='binary'
)

validation_generator = train_image_generator.flow_from_dataframe(
    dataframe=final_validation_data,
    directory=train_img_dir,
    x_col='X_ray_image_name',
    y_col='target',
    target_size=(224, 224),
    batch_size=16,
    seed=2020,
    shuffle=True,
    class_mode='binary'
)
```

```
Found 0 validated image filenames belonging to 0 classes.
Found 0 validated image filenames belonging to 0 classes.
```

Measurement of models performance

Convolutional Neural Network

In [56]:
```
model = Sequential()
model.add(Conv2D(32, (3, 3), input_shape= (224,224,3)))
model.add(Activation('relu'))
model.add(MaxPooling2D(pool_size=(2, 2)))

model.add(Conv2D(32, (3, 3)))
model.add(Activation('relu'))
model.add(MaxPooling2D(pool_size=(2, 2)))



model.add(Conv2D(64,(3,3)))
model.add(Activation("relu"))
model.add(Conv2D(250,(3,3)))
model.add(Dropout(0.5))
model.add(Activation("relu"))

model.add(Conv2D(128,(3,3)))
model.add(Activation("relu"))
model.add(AvgPool2D(2,2))
model.add(Conv2D(64,(3,3)))
model.add(Activation("relu"))
model.add(AvgPool2D(2,2))

model.add(Conv2D(256,(2,2)))
model.add(Activation("relu"))
model.add(MaxPool2D(2,2))

model.add(Flatten())
model.add(Dense(32))
model.add(Dropout(0.5))
model.add(Dense(1))
model.add(Activation("sigmoid"))
```

In [67]:
```
model.summary()
```

```
Model: "sequential_2"
_________________________________________________________________
Layer (type)                 Output Shape              Param #   
=================================================================
conv2d_1 (Conv2D)            (None, 222, 222, 32)      896       
_________________________________________________________________
activation (Activation)      (None, 222, 222, 32)      0         
_________________________________________________________________
max_pooling2d (MaxPooling2D) (None, 111, 111, 32)      0         
_________________________________________________________________
conv2d_2 (Conv2D)            (None, 109, 109, 32)      9248      
_________________________________________________________________
activation_1 (Activation)    (None, 109, 109, 32)      0         
_________________________________________________________________
max_pooling2d_1 (MaxPooling2 (None, 54, 54, 32)        0         
_________________________________________________________________
conv2d_3 (Conv2D)            (None, 52, 52, 64)        18496     
_________________________________________________________________
activation_2 (Activation)    (None, 52, 52, 64)        0         
_________________________________________________________________
conv2d_4 (Conv2D)            (None, 50, 50, 250)       144250    
_________________________________________________________________
dropout_4 (Dropout)          (None, 50, 50, 250)       0         
_________________________________________________________________
activation_3 (Activation)    (None, 50, 50, 250)       0         
_________________________________________________________________
conv2d_5 (Conv2D)            (None, 48, 48, 128)       288128    
_________________________________________________________________
activation_4 (Activation)    (None, 48, 48, 128)       0         
_________________________________________________________________
average_pooling2d (AveragePo (None, 24, 24, 128)       0         
_________________________________________________________________
conv2d_6 (Conv2D)            (None, 22, 22, 64)        73792     
_________________________________________________________________
activation_5 (Activation)    (None, 22, 22, 64)        0         
_________________________________________________________________
average_pooling2d_1 (Average (None, 11, 11, 64)        0         
_________________________________________________________________
conv2d_7 (Conv2D)            (None, 10, 10, 256)       65792     
_________________________________________________________________
activation_6 (Activation)    (None, 10, 10, 256)       0         
_________________________________________________________________
max_pooling2d_2 (MaxPooling2 (None, 5, 5, 256)         0         
_________________________________________________________________
flatten (Flatten)            (None, 6400)              0         
_________________________________________________________________
dense_5 (Dense)              (None, 32)                204832    
_________________________________________________________________
dropout_5 (Dropout)          (None, 32)                0         
_________________________________________________________________
dense_6 (Dense)              (None, 1)                 33        
_________________________________________________________________
activation_7 (Activation)    (None, 1)                 0         
=================================================================
Total params: 805,467
Trainable params: 805,467
Non-trainable params: 0
_________________________________________________________________
```

In [18]:

```
test_image_path = 'C:/UOFT/3546_TermProject/covid/DL-final-project/Chest_xray_seperate/PNEUMONIA/person11_bacteria_45.jpeg'
test_image = cv2.imread(test_image_path)
if ( num_channel == 1):
    test_image=cv2.cvtColor(test_image, cv2.COLOR_BGR2GRAY)
test_image=cv2.resize(test_image,(128,128))
test_image = np.array(test_image)
test_image = test_image.astype('float32')
test_image /= 255
print (test_image.shape)
test_image_nd = np.expand_dims(test_image, axis=0)
print (test_image_nd.shape)
print (test_image.shape)
# if num_channel==1:
#     if (K.image_data_format() == 'channels_first'):
#         test_image= np.expand_dims(test_image, axis=0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=3)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
# else:
#     if (K.image_data_format() == 'channels_first'):
#         test_image=np.rollaxis(test_image,2,0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)


# Predicting the test image
print((model.predict(test_image_nd)))
print(model.predict_classes(test_image_nd))
```

```
(128, 128, 3)
(1, 128, 128, 3)
(128, 128, 3)
[[0.08644115 0.91355884]]
[1]
```


In [18]:

```
test_image_path = 'C:/UOFT/3546_TermProject/covid/DL-final-project/Chest_xray_seperate/PNEUMONIA/person11_bacteria_45.jpeg'
test_image = cv2.imread(test_image_path)
if ( num_channel == 1):
    test_image=cv2.cvtColor(test_image, cv2.COLOR_BGR2GRAY)
test_image=cv2.resize(test_image,(128,128))
test_image = np.array(test_image)
test_image = test_image.astype('float32')
test_image /= 255
print (test_image.shape)
test_image_nd = np.expand_dims(test_image, axis=0)
print (test_image_nd.shape)
print (test_image.shape)
# if num_channel==1:
#     if (K.image_data_format() == 'channels_first'):
#         test_image= np.expand_dims(test_image, axis=0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=3)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
# else:
#     if (K.image_data_format() == 'channels_first'):
#         test_image=np.rollaxis(test_image,2,0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)


# Predicting the test image
print((model.predict(test_image_nd)))
print(model.predict_classes(test_image_nd))
```

```
(128, 128, 3)
(1, 128, 128, 3)
(128, 128, 3)
[[0.08644115 0.91355884]]
[1]
```

In [18]:
```python
test_image_path = 'C:/UOFT/3546_TermProject/covid/DL-final-project/Chest_xray_seperate/PNEUMONIA/person11_bacteria_45.jpeg'
test_image = cv2.imread(test_image_path)
if ( num_channel == 1):
    test_image=cv2.cvtColor(test_image, cv2.COLOR_BGR2GRAY)
test_image=cv2.resize(test_image,(128,128))
test_image = np.array(test_image)
test_image = test_image.astype('float32')
test_image /= 255
print (test_image.shape)
test_image_nd = np.expand_dims(test_image, axis=0)
print (test_image_nd.shape)
print (test_image.shape)
# if num_channel==1:
#     if (K.image_data_format() == 'channels_first'):
#         test_image= np.expand_dims(test_image, axis=0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=3)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
# else:
#     if (K.image_data_format() == 'channels_first'):
#         test_image=np.rollaxis(test_image,2,0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)


# Predicting the test image
print((model.predict(test_image_nd)))
print(model.predict_classes(test_image_nd))
```

```
(128, 128, 3)
(1, 128, 128, 3)
(128, 128, 3)
[[0.08644115 0.91355884]]
[1]
```

efficient Net80 model

In [17]:

```
score = custom_resnet_model.evaluate(X_test, y_test, verbose=0)
print('Test Loss:', score[0])
print('Test accuracy:', score[1])

test_image = X_test[0:1]
print (test_image.shape)

print(model.predict(test_image))
print(model.predict_classes(test_image))
print(y_test[0:1])
```

```
Test Loss: 0.09007590264081955
Test accuracy: 0.9692832827568054
(1, 224, 224, 3)
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---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-17-83421ec204f5> in <module>
      7
      8 print(model.predict(test_image))
----> 9 print(model.predict_classes(test_image))
     10 print(y_test[0:1])

AttributeError: 'Functional' object has no attribute 'predict_classes'
```

Confusion matrix

In [20]:
```
Y_pred = custom_resnet_model.predict(X_test)
print(Y_pred)
y_pred = np.argmax(Y_pred, axis=1)
print(y_pred)
#y_pred = model.predict_classes(X_test)
#print(y_pred)
target_names = ['class 0(Normal)', 'class 1(Pneumonia)']
print(classification_report(np.argmax(y_test,axis=1), y_pred,target_names=target_names))
print(confusion_matrix(np.argmax(y_test,axis=1), y_pred))
```

```
[[6.5542844e-07 9.9999940e-01]
 [9.9147195e-01 8.5280919e-03]
 [1.9132092e-05 9.9998093e-01]
 ...
 [2.7467880e-07 9.9999976e-01]
 [8.9294559e-08 9.9999988e-01]
 [9.9940789e-01 5.9217890e-04]]
[1 0 1 ... 1 1 0]
                    precision    recall  f1-score   support

   class 0(Normal)       0.95      0.94      0.94       312
class 1(Pneumonia)       0.98      0.98      0.98       860

          accuracy                           0.97      1172
         macro avg       0.96      0.96      0.96      1172
      weighted avg       0.97      0.97      0.97      1172

[[293  19]
 [ 17 843]]
```

Inception V3 model

In [17]:

```
score = custom_resnet_model.evaluate(X_test, y_test, verbose=0)
print('Test Loss:', score[0])
print('Test accuracy:', score[1])

test_image = X_test[0:1]
print (test_image.shape)

print(model.predict(test_image))
print(model.predict_classes(test_image))
print(y_test[0:1])
```

```
Test Loss: 0.9426031112670898
Test accuracy: 0.9044368863105774
(1, 224, 224, 3)
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  0.00000000e+00 0.00000000e+00 0.00000000e+00 0.00000000e+00
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  0.00000000e+00 0.00000000e+00 0.00000000e+00 0.00000000e+00
  0.00000000e+00 0.00000000e+00 0.00000000e+00 0.00000000e+00
  0.00000000e+00 0.00000000e+00 0.00000000e+00 0.00000000e+00]]

---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-17-83421ec204f5> in <module>
      7 
      8 print(model.predict(test_image))
----> 9 print(model.predict_classes(test_image))
     10 print(y_test[0:1])

AttributeError: 'Functional' object has no attribute 'predict_classes'
```

Testing a new image

In [18]:
```python
test_image_path = 'D:/Harold/MyDNN/DataSet/Chest_xray_seperate/PNEUMONIA/person11_bacteria_45.jpeg'
test_image = image.load_img(test_image_path, target_size=(224, 224))
x = image.img_to_array(test_image)
x = np.expand_dims(x, axis=0)
x = preprocess_input(x)
print (x.shape)


# if num_channel==1:
#     if (K.image_data_format() == 'channels_first'):
#         test_image= np.expand_dims(test_image, axis=0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=3)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
# else:
#     if (K.image_data_format() == 'channels_first'):
#         test_image=np.rollaxis(test_image,2,0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)


# Predicting the test image
yhat = custom_resnet_model.predict(x)
print(yhat)
# print(custom_resnet_model.predict_classes(x))
label = decode_predictions(yhat)
# retrieve the most likely result, e.g. highest probability
label = label[0][0]
```

```
(1, 224, 224, 3)
[[7.9543006e-20 1.0000000e+00]]

---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-18-505048f79341> in <module>
     30 print(yhat)
     31 # print(custom_resnet_model.predict_classes(x))
---> 32 label = decode_predictions(yhat)
     33 # retrieve the most likely result, e.g. highest probability
     34 label = label[0][0]

D:\Anaconda3\lib\site-packages\tensorflow\python\keras\applications\inception_v3.py in decode_predictions(preds, top)
    412 @keras_export('keras.applications.inception_v3.decode_predictions')
    413 def decode_predictions(preds, top=5):
--> 414   return imagenet_utils.decode_predictions(preds, top=top)
    415
    416

D:\Anaconda3\lib\site-packages\tensorflow\python\keras\applications\imagenet_utils.py in decode_predictions(preds, top)
    149                      'a batch of predictions '
    150                      '(i.e. a 2D array of shape (samples, 1000)). '
--> 151                      'Found array with shape: ' + str(preds.shape))
    152   if CLASS_INDEX is None:
    153     fpath = data_utils.get_file(

ValueError: `decode_predictions` expects a batch of predictions (i.e. a 2D array of shape (samples, 1000)). Found array with shape:
 (1, 2)
```

In [20]:
```python
Y_pred = custom_resnet_model.predict(X_test)
print(Y_pred)
y_pred = np.argmax(Y_pred, axis=1)
print(y_pred)
#y_pred = model.predict_classes(X_test)
#print(y_pred)
target_names = ['class 0(Normal)', 'class 1(Pneumonia)']
print(classification_report(np.argmax(y_test,axis=1), y_pred,target_names=target_names))
print(confusion_matrix(np.argmax(y_test,axis=1), y_pred))
```

```
[[2.1685484e-10 1.0000000e+00]
 [9.9941623e-01 5.8379851e-04]
 [2.1206019e-14 1.0000000e+00]
 ...
 [3.4830153e-22 1.0000000e+00]
 [1.7426691e-19 1.0000000e+00]
 [8.4951813e-07 9.9999917e-01]]
[1 0 1 ... 1 1 1]
                    precision    recall  f1-score   support

   class 0(Normal)       0.93      0.70      0.79       312
class 1(Pneumonia)       0.90      0.98      0.94       860

          accuracy                           0.90      1172
         macro avg       0.91      0.84      0.87      1172
      weighted avg       0.91      0.90      0.90      1172

[[217  95]
 [ 17 843]]
```

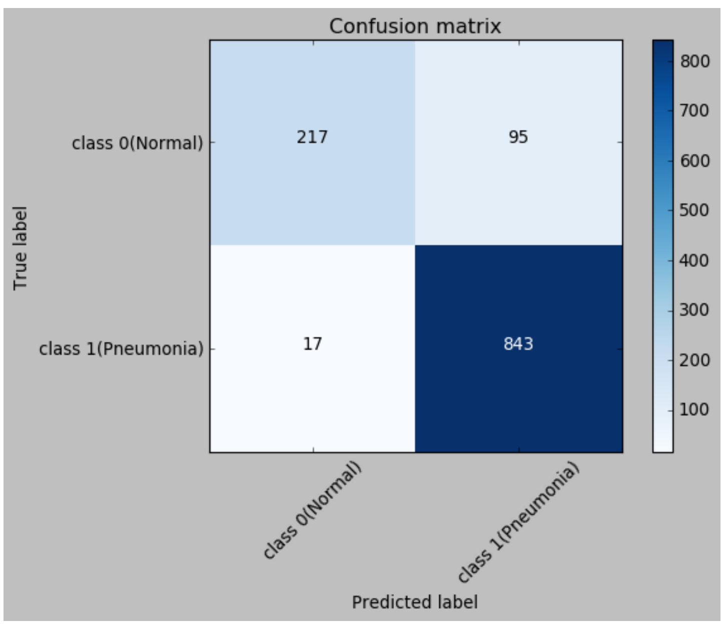
Compute confusion matrix

In [21]:
```python
# Compute confusion matrix
cnf_matrix = (confusion_matrix(np.argmax(y_test,axis=1), y_pred))

np.set_printoptions(precision=2)

# Plot non-normalized confusion matrix
plot_confusion_matrix(cnf_matrix, classes=target_names,
                      title='Confusion matrix')
```

```
Confusion matrix, without normalization
[[217  95]
 [ 17 843]]
```



Mobile NetV2 Model

In [17]:

```
score = custom_resnet_model.evaluate(X_test, y_test, verbose=0)
print('Test Loss:', score[0])
print('Test accuracy:', score[1])

test_image = X_test[0:1]
print (test_image.shape)

print(model.predict(test_image))
print(model.predict_classes(test_image))
print(y_test[0:1])
```

```
Test Loss: 0.24162615835666656
Test accuracy: 0.914675772190094
(1, 224, 224, 3)
[[8.33914601e-05 9.43122213e-05 6.17418555e-05 6.54168252e-05
  1.13233073e-04 4.74682347e-05 5.82300017e-05 1.08953674e-04
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  7.53177155e-05 1.09933528e-04 2.17667766e-04 1.03260376e-04
  1.68310271e-05 4.71250714e-05 2.25656520e-04 1.11117632e-04
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  3.52774805e-05 9.89007895e-05 3.13197001e-04 3.97188778e-05
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6.97635114e-04	2.08517420e-04	4.85319458e-03	8.05228367e-04
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6.10917123e-05	4.72707288e-05	3.22346226e-04	5.27381853e-05
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  8.71600205e-05 6.32327283e-04 2.78978841e-04 3.60339385e-04
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  3.67418434e-05 7.11586326e-05 4.39933137e-05 1.84522447e-04]]

---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-17-83421ec204f5> in <module>
      7 
      8 print(model.predict(test_image))
----> 9 print(model.predict_classes(test_image))
     10 print(y_test[0:1])

AttributeError: 'Functional' object has no attribute 'predict_classes'
```

Testing a new image

In [18]:

```
test_image_path = 'D:/Harold/MyDNN/DataSet/Chest_xray_seperate/PNEUMONIA/person11_bacteria_45.jpeg'
test_image = image.load_img(test_image_path, target_size=(224, 224))
x = image.img_to_array(test_image)
x = np.expand_dims(x, axis=0)
x = preprocess_input(x)
print (x.shape)


# if num_channel==1:
#     if (K.image_data_format() == 'channels_first'):
#         test_image= np.expand_dims(test_image, axis=0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=3)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
# else:
#     if (K.image_data_format() == 'channels_first'):
#         test_image=np.rollaxis(test_image,2,0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)


# Predicting the test image
yhat = custom_resnet_model.predict(x)
print(yhat)
# print(custom_resnet_model.predict_classes(x))
label = decode_predictions(yhat)
# retrieve the most likely result, e.g. highest probability
label = label[0][0]
```

```
(1, 224, 224, 3)
[[0.04744451 0.95255554]]

---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-18-505048f79341> in <module>
     30 print(yhat)
     31 # print(custom_resnet_model.predict_classes(x))
---> 32 label = decode_predictions(yhat)
     33 # retrieve the most likely result, e.g. highest probability
     34 label = label[0][0]

D:\Anaconda3\lib\site-packages\tensorflow\python\keras\applications\inception_v3.py in decode_predictions(preds, top)
    412 @keras_export('keras.applications.inception_v3.decode_predictions')
    413 def decode_predictions(preds, top=5):
--> 414   return imagenet_utils.decode_predictions(preds, top=top)
    415
    416

D:\Anaconda3\lib\site-packages\tensorflow\python\keras\applications\imagenet_utils.py in decode_predictions(preds, top)
    149                      'a batch of predictions '
    150                      '(i.e. a 2D array of shape (samples, 1000)). '
--> 151                      'Found array with shape: ' + str(preds.shape))
    152   if CLASS_INDEX is None:
    153     fpath = data_utils.get_file(

ValueError: `decode_predictions` expects a batch of predictions (i.e. a 2D array of shape (samples, 1000)). Found array with shape:
 (1, 2)
```

renet50

In [17]:
```
score = custom_resnet_model.evaluate(X_test, y_test, verbose=0)
print('Test Loss:', score[0])
print('Test accuracy:', score[1])

test_image = X_test[0:1]
print (test_image.shape)

print(model.predict(test_image))
print(model.predict_classes(test_image))
print(y_test[0:1])
```

```
Test Loss: 0.13225294649600983
Test accuracy: 0.9744027256965637
(1, 224, 224, 3)
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---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-17-83421ec204f5> in <module>
      7 
      8 print(model.predict(test_image))
----> 9 print(model.predict_classes(test_image))
     10 print(y_test[0:1])

AttributeError: 'Functional' object has no attribute 'predict_classes'
```
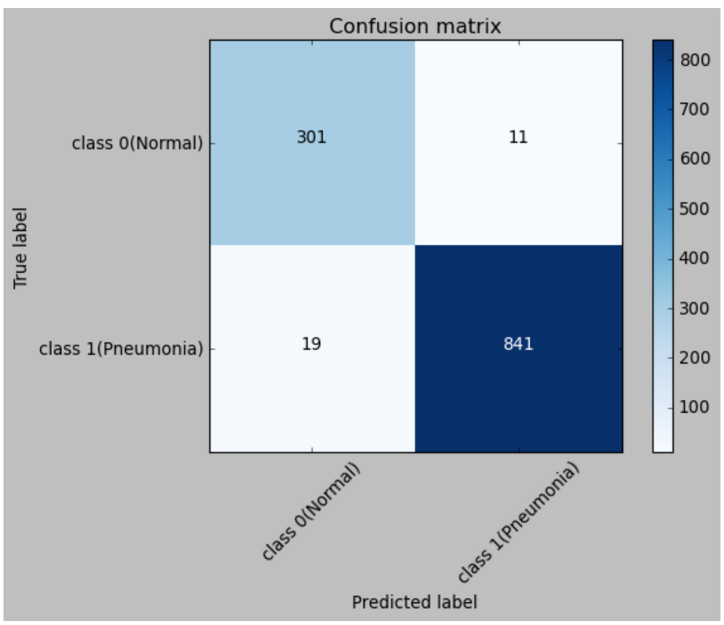

In [21]:
```
Y_pred = custom_resnet_model.predict(X_test)
print(Y_pred)
y_pred = np.argmax(Y_pred, axis=1)
print(y_pred)
#y_pred = model.predict_classes(X_test)
#print(y_pred)
target_names = ['class 0(Normal)', 'class 1(Pneumonia)']
print(classification_report(np.argmax(y_test,axis=1), y_pred,target_names=target_names))
print(confusion_matrix(np.argmax(y_test,axis=1), y_pred))
```

```
[[9.9328565e-07 9.9999905e-01]
 [1.0000000e+00 6.4503549e-16]
 [1.3406505e-04 9.9986589e-01]
 ...
 [1.9769919e-10 1.0000000e+00]
 [7.7234494e-09 1.0000000e+00]
 [9.9999988e-01 9.0127173e-08]]
[1 0 1 ... 1 1 0]
                    precision    recall  f1-score   support

   class 0(Normal)       0.94      0.96      0.95       312
class 1(Pneumonia)       0.99      0.98      0.98       860

          accuracy                           0.97      1172
         macro avg       0.96      0.97      0.97      1172
      weighted avg       0.97      0.97      0.97      1172

[[301  11]
 [ 19 841]]
```

Compute confusion matrix

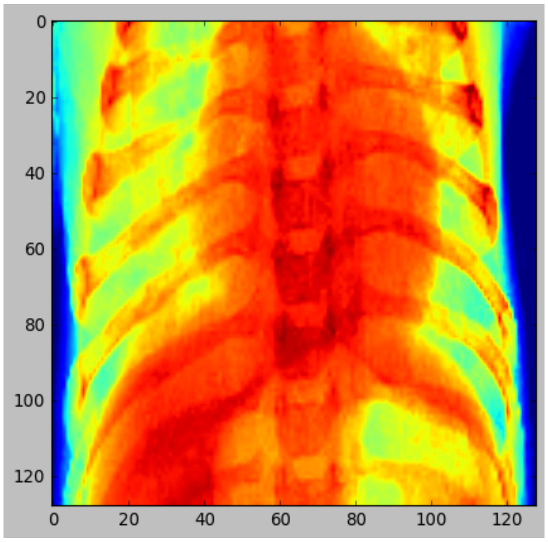
In [22]:
```
# Compute confusion matrix
cnf_matrix = (confusion_matrix(np.argmax(y_test,axis=1), y_pred))

np.set_printoptions(precision=2)

# Plot non-normalized confusion matrix
plot_confusion_matrix(cnf_matrix, classes=target_names,
                      title='Confusion matrix')
```

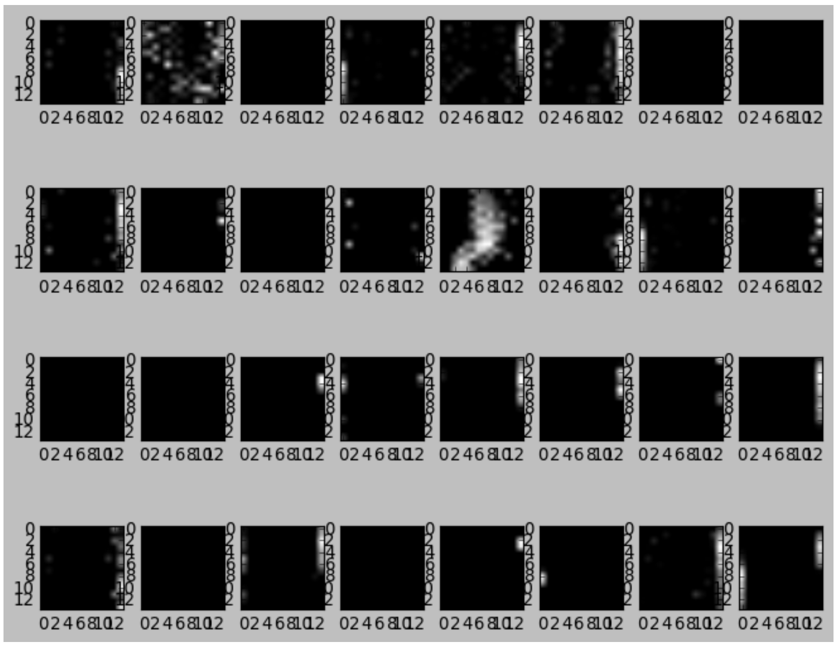
```
Confusion matrix, without normalization
[[301  11]
 [ 19 841]]
```



regulization

In [19]:
```python
# def get_featuremaps(model, layer_idx, X_batch):
#     print(model.layers[0].input)
#     print(model.layers[layer_idx].output)
#     print(test_image.shape)
#     get_activations = K.function([model.layers[0].input, K.learning_phase()],[model.layers[layer_idx].output,])
# #     activations = get_activations([X_batch,0])
#     activations = 0
#     return activations

# layer_num=3
# filter_num=0
# # print(X_train[0])

# activations = get_featuremaps(model, int(layer_num),test_image)

# # print (np.shape(activations))
# # feature_maps = activations[0][0]
# # print (np.shape(feature_maps))


# feature_maps = model.predict(test_image_nd)
# print(feature_maps.shape)
# square = 4
# index = 1
# for _ in range(square):
#     for _ in range(square):
#         ax = plt.subplot(square, square, index)
#         ax.set_xticks([])
#         ax.set_yticks([])
#         plt.imshow(feature_maps[0, index-1], cmap='viridis')
#         index += 1
# plt.show()

# model.summary()

# successive_feature_maps = model.predict(test_image_nd)

# layer_names = [layer.name for layer in model.layers]
# for layer_name, feature_map in zip(layer_names, successive_feature_maps):
#   print(feature_map.shape)
#   if len(feature_map.shape) == 4:

#     # Plot Feature maps for the conv / maxpool layers, not the fully-connected layers

#     n_features = feature_map.shape[-1]  # number of features in the feature map
#     size       = feature_map.shape[ 1]  # feature map shape (1, size, size, n_features)

#     # We will tile our images in this matrix
#     display_grid = np.zeros((size, size * n_features))

#     # Postprocess the feature to be visually palatable
#     for i in range(n_features):
#       x  = feature_map[0, :, :, i]
#       x -= x.mean()
#       x /= x.std ()
#       x *=  64
#       x += 128
#       x  = np.clip(x, 0, 255).astype('uint8')
#       # Tile each filter into a horizontal grid
#       display_grid[:, i * size : (i + 1) * size] = x# Display the grid
#     scale = 20. / n_features
#     plt.figure( figsize=(scale * n_features, scale) )
#     plt.title ( layer_name )
#     plt.grid  ( False )
#     plt.imshow( display_grid, aspect='auto', cmap='viridis' )


from keras.models import Model
layer_outputs = [layer.output for layer in model.layers]
activation_model = Model(inputs=model.input, outputs=layer_outputs)
activations = activation_model.predict(X_train[10].reshape(1,128,128,3))

def display_activation(activations, col_size, row_size, act_index):
    activation = activations[act_index]
    activation_index=0
    fig, ax = plt.subplots(row_size, col_size, figsize=(row_size*2.5,col_size*1))
    for row in range(0,row_size):
        for col in range(0,col_size):
            ax[row][col].imshow(activation[0, :, :, activation_index], cmap='gray')
            activation_index += 1
plt.imshow(test_image)
plt.imshow(X_train[10][:,:,0]);
display_activation(activations, 8, 4, 3)
```





efficient Net80 model

In [18]:
```python
test_image_path = 'D:/Harold/MyDNN/DataSet/Chest_xray_seperate/PNEUMONIA/person11_bacteria_45.jpeg'
test_image = image.load_img(test_image_path, target_size=(224, 224))
x = image.img_to_array(test_image)
x = np.expand_dims(x, axis=0)
x = preprocess_input(x)
print (x.shape)


# if num_channel==1:
#     if (K.image_data_format() == 'channels_first'):
#         test_image= np.expand_dims(test_image, axis=0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=3)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
# else:
#     if (K.image_data_format() == 'channels_first'):
#         test_image=np.rollaxis(test_image,2,0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)


# Predicting the test image
yhat = custom_resnet_model.predict(x)
print(yhat)
# print(custom_resnet_model.predict_classes(x))
label = decode_predictions(yhat)
# retrieve the most likely result, e.g. highest probability
label = label[0][0]
```

```
(1, 224, 224, 3)
[[0.00159899 0.998401  ]]

---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-18-505048f79341> in <module>
     30 print(yhat)
     31 # print(custom_resnet_model.predict_classes(x))
---> 32 label = decode_predictions(yhat)
     33 # retrieve the most likely result, e.g. highest probability
     34 label = label[0][0]

D:\Anaconda3\lib\site-packages\tensorflow\python\keras\applications\inception_v3.py in decode_predictions(preds, top)
    412 @keras_export('keras.applications.inception_v3.decode_predictions')
    413 def decode_predictions(preds, top=5):
--> 414   return imagenet_utils.decode_predictions(preds, top=top)
    415
    416

D:\Anaconda3\lib\site-packages\tensorflow\python\keras\applications\imagenet_utils.py in decode_predictions(preds, top)
    149                      'a batch of predictions '
    150                      '(i.e. a 2D array of shape (samples, 1000)). '
--> 151                      'Found array with shape: ' + str(preds.shape))
    152   if CLASS_INDEX is None:
    153     fpath = data_utils.get_file(

ValueError: `decode_predictions` expects a batch of predictions (i.e. a 2D array of shape (samples, 1000)). Found array with shape:
 (1, 2)
```

Visualizing the intermediate layer

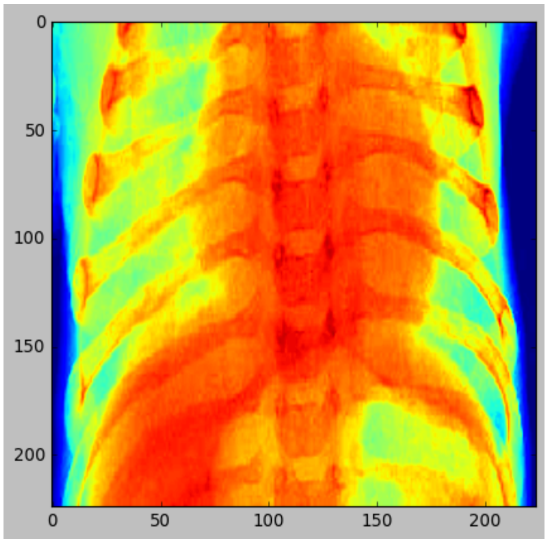
In [19]:
```
from keras.models import Model
layer_outputs = [layer.output for layer in model.layers]
activation_model = Model(inputs=custom_resnet_model.input, outputs=layer_outputs)
activations = custom_resnet_model.predict(X_train[10].reshape(1,224,224,3))
print(activations.shape)
def display_activation(activations, col_size, row_size, act_index):
    activation = activations[0, act_index]
    activation_index=1
    fig, ax = plt.subplots(row_size, col_size, figsize=(row_size*2.5,col_size*1))
    for row in range(0,row_size):
        for col in range(0,col_size):
            ax[row][col].imshow(activation[0, :, :, activation_index], cmap='gray')
            activation_index += 1
plt.imshow(test_image)
plt.imshow(X_train[10][:,:,0]);
display_activation(activations, 8, 4, 1)
```

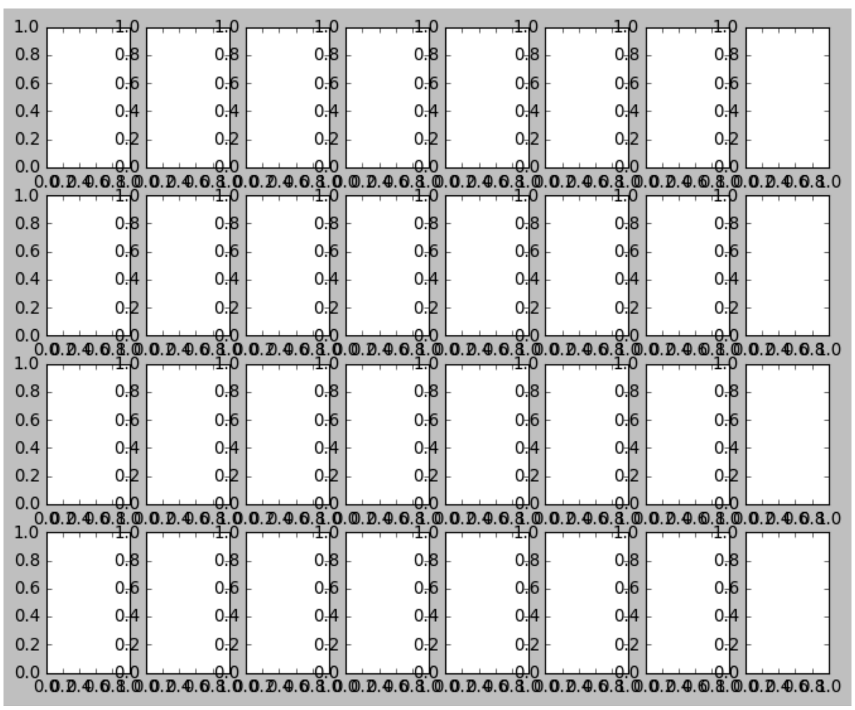
```
(1, 2)

---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
<ipython-input-19-32e8200fb41b> in <module>
     14 plt.imshow(test_image)
     15 plt.imshow(X_train[10][:,:,0]);
---> 16 display_activation(activations, 8, 4, 1)

<ipython-input-19-32e8200fb41b> in display_activation(activations, col_size, row_size, act_index)
     10     for row in range(0,row_size):
     11         for col in range(0,col_size):
---> 12             ax[row][col].imshow(activation[0, :, :, activation_index], cmap='gray')
     13             activation_index += 1
     14 plt.imshow(test_image)

IndexError: invalid index to scalar variable.
```





Inception V3 visualization

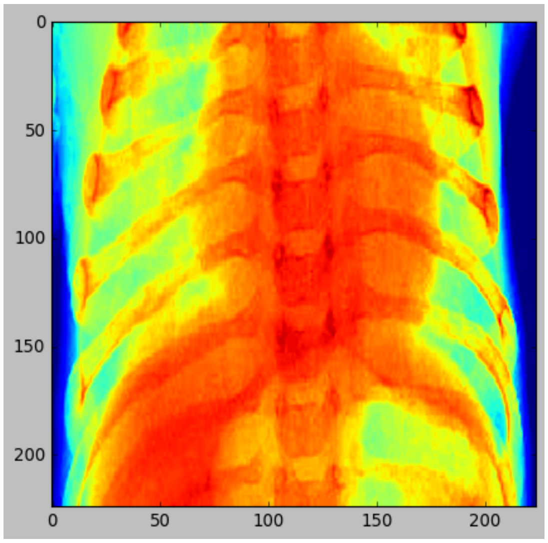
In [19]:
```
from keras.models import Model
layer_outputs = [layer.output for layer in model.layers]
activation_model = Model(inputs=custom_resnet_model.input, outputs=layer_outputs)
activations = custom_resnet_model.predict(X_train[10].reshape(1,224,224,3))
print(activations.shape)
def display_activation(activations, col_size, row_size, act_index):
    activation = activations[0, act_index]
    activation_index=1
    fig, ax = plt.subplots(row_size, col_size, figsize=(row_size*2.5,col_size*1))
    for row in range(0,row_size):
        for col in range(0,col_size):
            ax[row][col].imshow(activation[0, :, :, activation_index], cmap='gray')
            activation_index += 1
plt.imshow(test_image)
plt.imshow(X_train[10][:,:,0]);
display_activation(activations, 8, 4, 1)
```

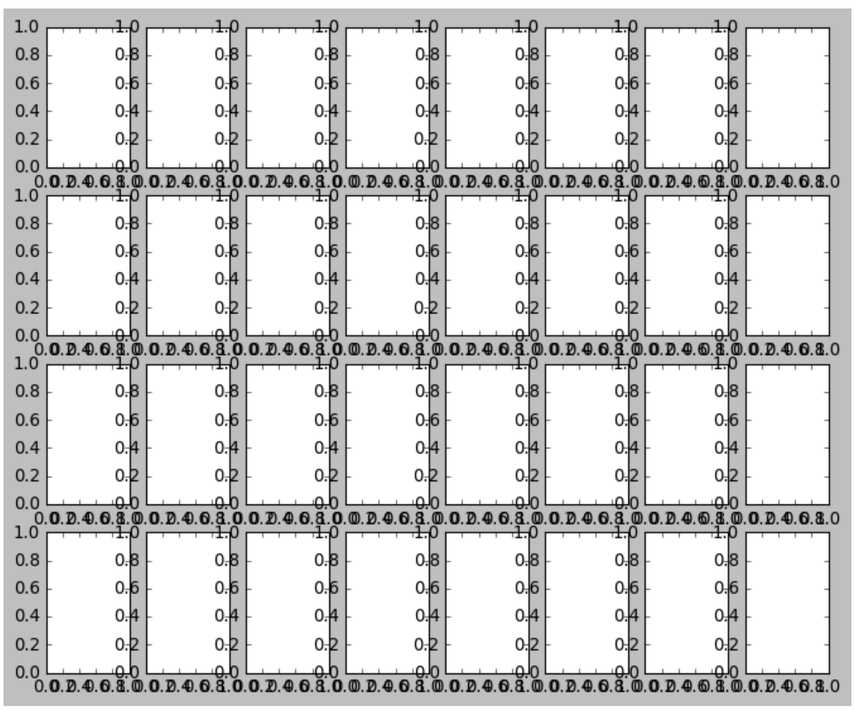
```
(1, 2)

---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
<ipython-input-19-32e8200fb41b> in <module>
     14 plt.imshow(test_image)
     15 plt.imshow(X_train[10][:,:,0]);
---> 16 display_activation(activations, 8, 4, 1)

<ipython-input-19-32e8200fb41b> in display_activation(activations, col_size, row_size, act_index)
     10     for row in range(0,row_size):
     11         for col in range(0,col_size):
---> 12             ax[row][col].imshow(activation[0, :, :, activation_index], cmap='gray')
     13             activation_index += 1
     14 plt.imshow(test_image)

IndexError: invalid index to scalar variable.
```





Mobile NetV2

In [17]:
```
score = custom_resnet_model.evaluate(X_test, y_test, verbose=0)
print('Test Loss:', score[0])
print('Test accuracy:', score[1])

test_image = X_test[0:1]
print (test_image.shape)

print(model.predict(test_image))
print(model.predict_classes(test_image))
print(y_test[0:1])
```

```
Test Loss: 0.24162615835666656
Test accuracy: 0.914675772190094
(1, 224, 224, 3)
[[8.33914601e-05 9.43122213e-05 6.17418555e-05 6.54168252e-05
  1.13233073e-04 4.74682347e-05 5.82300017e-05 1.08953674e-04
  2.47885200e-05 1.91886254e-04 7.08437146e-05 3.57683566e-05
  2.95793929e-04 5.55347469e-05 2.16536369e-04 6.21841609e-05
  3.03070352e-04 4.57870956e-05 1.19120559e-04 8.90225492e-05
  1.66406928e-04 9.70872716e-05 1.62744705e-04 1.49278203e-04
  7.53177155e-05 1.09933528e-04 2.17667766e-04 1.03260376e-04
  1.68310271e-05 4.71250714e-05 2.25656520e-04 1.11117632e-04
  1.19079450e-04 3.50336049e-05 7.37054288e-05 1.12858543e-04
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  1.32257570e-04 3.87834370e-05 6.33041956e-04 8.69823198e-05
  1.75937254e-04 4.36656082e-05 3.17085214e-04 4.07961088e-05
  3.52774805e-05 9.89007895e-05 3.13197001e-04 3.97188778e-05
  3.01094784e-04 2.42384500e-04 3.31761781e-04 3.03487395e-05
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  3.81811369e-05 1.32926434e-04 2.31196143e-04 2.24524265e-05
  9.85946317e-05 1.02861639e-04 1.61079763e-04 2.17821958e-04
  3.50604132e-05 2.44382943e-04 6.57923752e-04 1.51681917e-04
  2.78034480e-04 1.11821643e-03 1.29941225e-04 7.72509258e-04
  3.47995025e-04 1.38023504e-04 6.40542203e-05 4.19817152e-05
  4.27196617e-04 4.55504705e-05 4.25938524e-05 6.52940753e-06
  2.40640133e-04 1.50604916e-04 5.46822557e-04 1.12956704e-03
  1.23571826e-03 6.57338824e-05 9.26602224e-05 4.90679340e-05
  2.16124783e-04 5.13464547e-05 7.67093807e-05 4.40209726e-04
  1.56303606e-04 3.04156449e-04 3.77853285e-05 1.33213616e-05
  7.79672555e-05 1.12029833e-04 4.41315169e-05 5.07919642e-04
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  5.68611940e-05 3.75254785e-05 3.42668318e-05 9.50891044e-05
  5.70256343e-05 1.05972678e-04 3.37440358e-03 1.68348161e-05
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  4.81993848e-05 1.60939198e-05 1.06712716e-04 2.13666572e-04
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```

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1.31581663e-04	2.44356837e-04	8.89293879e-05	9.52232804e-04
1.69589208e-03	1.24380473e-04	1.11265399e-05	6.32024094e-05
1.05321618e-04	1.18508018e-04	1.12465736e-04	2.44203184e-05
2.22543022e-04	5.47238378e-05	4.02125734e-04	2.07621395e-03
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3.74486481e-05	6.06671856e-05	1.01255473e-05	3.70270791e-05
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1.58916961e-03	2.58721877e-04	1.62998028e-02	4.60242045e-05
1.30477099e-04	8.42971145e-04	6.61320693e-04	1.53327564e-04
1.76025023e-05	2.58769403e-04	1.16294796e-04	2.02700309e-03
1.35269817e-02	1.61069701e-03	6.28815324e-05	4.83175245e-05
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6.99314696e-05	4.23135440e-04	1.16385119e-04	1.07296789e-02
8.77031707e-05	8.07532706e-05	6.63905928e-04	8.49344142e-05
2.24430609e-04	1.57332077e-04	8.75685691e-06	7.69934268e-04
2.06400455e-05	3.19353530e-05	5.70448901e-05	1.94806253e-05
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5.23220806e-05	9.12444102e-06	2.34634455e-04	6.79804885e-04
3.31446150e-04	1.17720541e-04	9.75174538e-04	9.81520046e-04
9.12562013e-04	3.47146924e-05	1.41495068e-04	3.66432505e-04
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 3.67418434e-05 7.11586326e-05 4.39933137e-05 1.84522447e-04]]
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-17-83421ec204f5> in <module>
      7
      8 print(model.predict(test_image))
----> 9 print(model.predict_classes(test_image))
     10 print(y_test[0:1])

AttributeError: 'Functional' object has no attribute 'predict_classes'
```

Testing a new image

In [18]:

```
test_image_path = 'D:/Harold/MyDNN/DataSet/Chest_xray_seperate/PNEUMONIA/person11_bacteria_45.jpeg'
test_image = image.load_img(test_image_path, target_size=(224, 224))
x = image.img_to_array(test_image)
x = np.expand_dims(x, axis=0)
x = preprocess_input(x)
print (x.shape)


# if num_channel==1:
#     if (K.image_data_format() == 'channels_first'):
#         test_image= np.expand_dims(test_image, axis=0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=3)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
# else:
#     if (K.image_data_format() == 'channels_first'):
#         test_image=np.rollaxis(test_image,2,0)
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)
#     else:
#         test_image= np.expand_dims(test_image, axis=0)
#         print (test_image.shape)


# Predicting the test image
yhat = custom_resnet_model.predict(x)
print(yhat)
# print(custom_resnet_model.predict_classes(x))
label = decode_predictions(yhat)
# retrieve the most likely result, e.g. highest probability
label = label[0][0]
```

```
(1, 224, 224, 3)
[[0.04744451 0.95255554]]

---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-18-505048f79341> in <module>
     30 print(yhat)
     31 # print(custom_resnet_model.predict_classes(x))
---> 32 label = decode_predictions(yhat)
     33 # retrieve the most likely result, e.g. highest probability
     34 label = label[0][0]

D:\Anaconda3\lib\site-packages\tensorflow\python\keras\applications\inception_v3.py in decode_predictions(preds, top)
    412 @keras_export('keras.applications.inception_v3.decode_predictions')
    413 def decode_predictions(preds, top=5):
--> 414   return imagenet_utils.decode_predictions(preds, top=top)
    415 
    416 

D:\Anaconda3\lib\site-packages\tensorflow\python\keras\applications\imagenet_utils.py in decode_predictions(preds, top)
    149                      'a batch of predictions '
    150                      '(i.e. a 2D array of shape (samples, 1000)). '
--> 151                      'Found array with shape: ' + str(preds.shape))
    152   if CLASS_INDEX is None:
    153     fpath = data_utils.get_file(

ValueError: `decode_predictions` expects a batch of predictions (i.e. a 2D array of shape (samples, 1000)). Found array with shape:
 (1, 2)
```

Resnet50

In [19]:

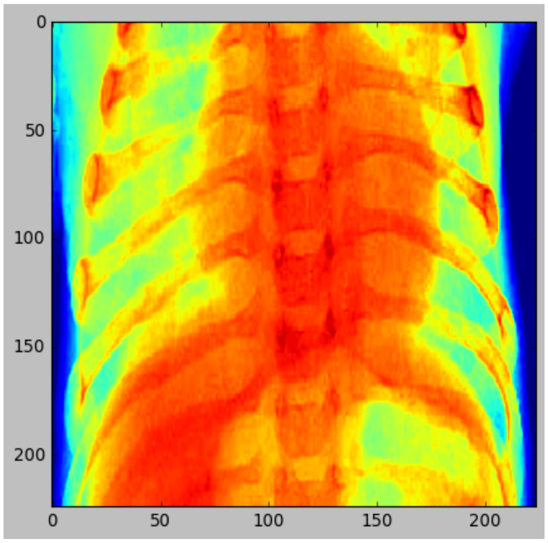
```
from keras.models import Model
layer_outputs = [layer.output for layer in model.layers]
activation_model = Model(inputs=custom_resnet_model.input, outputs=layer_outputs)
activations = custom_resnet_model.predict(X_train[10].reshape(1,224,224,3))
print(activations.shape)
def display_activation(activations, col_size, row_size, act_index):
    activation = activations[0, act_index]
    activation_index=1
    fig, ax = plt.subplots(row_size, col_size, figsize=(row_size*2.5,col_size*1))
    for row in range(0,row_size):
        for col in range(0,col_size):
            ax[row][col].imshow(activation[0, :, :, activation_index], cmap='gray')
            activation_index += 1
plt.imshow(test_image)
plt.imshow(X_train[10][:,:,0]);
display_activation(activations, 8, 4, 1)
```

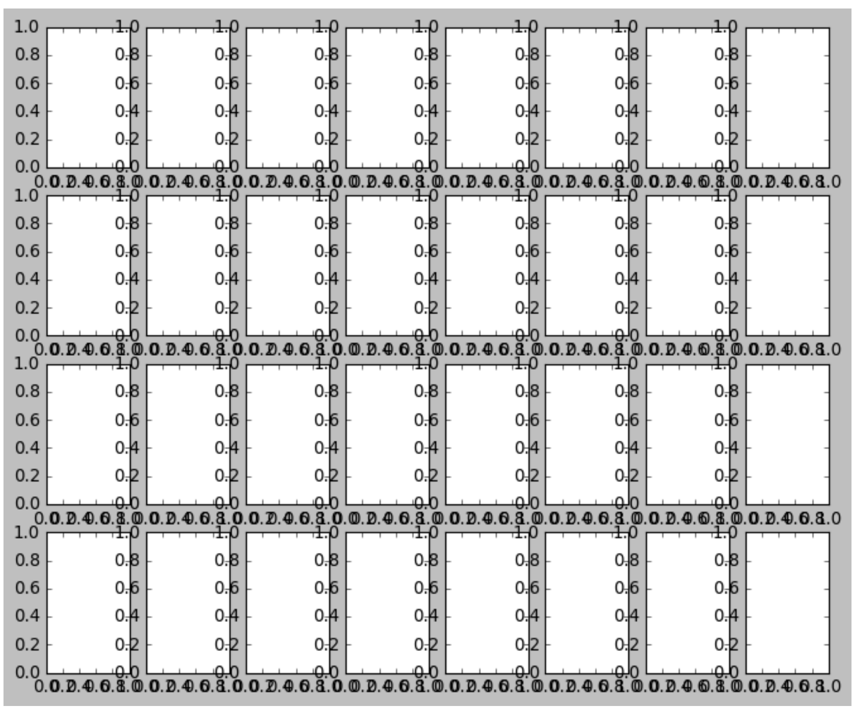
```
(1, 2)

---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
<ipython-input-19-32e8200fb41b> in <module>
     14 plt.imshow(test_image)
     15 plt.imshow(X_train[10][:,:,0]);
---> 16 display_activation(activations, 8, 4, 1)

<ipython-input-19-32e8200fb41b> in display_activation(activations, col_size, row_size, act_index)
     10     for row in range(0,row_size):
     11         for col in range(0,col_size):
---> 12             ax[row][col].imshow(activation[0, :, :, activation_index], cmap='gray')
     13             activation_index += 1
     14 plt.imshow(test_image)

IndexError: invalid index to scalar variable.
```





Overall breadth and depth of commentary/ explanations ¶

In this report, we have conducted 5 models with are Resnet50, mobileNetV2, EfficientNet80, VGG19 and InceptionV3. We have also 2 classs 0 and 1 which is normal and Pneumonia. In the MobileNetV2 we see that in class 0, the precision is 0.88, recall is 0.73, f1-score is 0.83 and support is 312. In class 1, the precision is 0.93, recall is 0.96, f1-score is 0.94 and support is 860. In the VGG19 we see that in class 0, the precision is 0.89, recall is 0.85, f1-score is 0.87 and support is 312. In class 1, the precision is 0.95, recall is 0.96, f1-score is 0.95 and support is 860. In the Inception V3 we see that in class 0, the precision is 0.93, recall is 0.70, f1-score is 0.79 and support is 312. In class 1, the precision is 0.90, recall is 0.98, f1-score is 0.94 and support is 860. In the ResNet50 we see that in class 0, the precision is 0.94, recall is 0.96, f1-score is 0.95 and support is 312. In class 1, the precision is 0.99, recall is 0.98, f1-score is 0.98 and support is 860. In the EfficientNetB0 we see that in class 0, the precision is 0.95, recall is 0.94, f1-score is 0.94 and support is 312. In class 1, the precision is 0.98, recall is 0.98, f1-score is 0.98 and support is 860. Based on the f1-score, the best models used in the x-ray dataset is EfficientNetB0.

```
In [ ]:
```