```
import pandas as pd
import numpy as np
from keras.layers import Conv2D , MaxPooling2D , Dense, Flatten , Input , Dropout
from keras.models import Sequential , Model
import keras
import tensorflow as tf
   from PIL import Image
from keras.models import model_from_json
   json_file = open('model.json', 'r')
loaded model_json = json_file.read()
json_file.close()
loaded_model = model_from_json(loaded_model_json)
# load weights into new model
loaded_model.load_weights("model_digit.h5")
print("Loaded model from disk")
loaded_model.compile(loss='categorical_crossentropy', optimizer='adam', metrics=['accuracy'])

ightharpoonup Loaded model from disk
 df = pd.read_csv('train.csv')
Y = np.asarray(df['label'])
#ddf1 = pd.read_csv('s1.csv')
#Y1 = np.asarray(df1['label'])
Y = np.concatenate((Y, Y, Y, Y), axis=0)
Y = np.reshape(Y, (Y.shape[0], 1))
print(Y.shape)
df = df.drop(['label'], axis=1)
print(Y.shape)
df = df.drop(['label'], axis=1)
a = []
for x in range(784):
    a.append('pixel'*str(783-x))
b = []
for x in range(28):
    for y in range(28):
    b.append('pixel'*str(x*28 + 27-y))
c = []
for x in range(28):
    c.append('pixel'*str(27-x)*28 + y))
df1 = df[a]
images = df.to_numpy()
ddf2 = pd.to_numpy()
ddf2 = pd.to_numpy()
ddf2 = df[b]
df3 = df[c]
immx = df1.to_numpy()
df1 = df[d]
immx = df2.to_numpy()
df2 = df[b]
df3 = df[c]
immx = df2.to_numpy()
dprint(images.shape)
print(images.shape)
images = np.concatenate((images, imr, immx, immy), axis=0)
print(images.shape)
images = np.reshape(images, (images.shape[0], 28, 28, 1))
X = images
del images
del images
del images
X = X/255.0
print(X.shape)
Y = np_utilis.to_categorical(Y)
print(Y)
    [→ (168000, 1)
(42000, 784)
(168000, 784)
(168000, 28, 28, 1)
[[0.1.0...0.0.0.0.]
[1.0.0...0.0.0.0.]
                         [0. 0. 0. ... 1. 0. 0.]
[0. 0. 0. ... 0. 0. 0.]
[0. 0. 0. ... 0. 0. 1.]]
   loaded_model.fit(X , Y , batch_size = 128 , epochs = 200 )
      ₽
```

Epoch 1/200 168000/16800	10 [======	1 -	17s	100us/step	- loss	: 0.0197 - acc: 0.993	33
Epoch 2/200							
168000/16800 Epoch 3/200	00 [======] -	16s	97us/step -	loss:	0.0190 - acc: 0.9937	,
	10 [======	1 -	16s	97us/step -	loss:	0.0188 - acc: 0.9936	;
Epoch 4/200	-						
Epoch 5/200	0 [======] -	165	9/us/step -	loss:	0.0194 - acc: 0.9934	ļ
168000/16800	0 [=====] -	16s	97us/step -	loss:	0.0196 - acc: 0.9933	3
Epoch 6/200	0 [======	1 -	160	96us/stan -	1000	0 0102 - 200: 0 003/	1
Epoch 7/200	٠ [1 -	103	Jous/31ep -	1033.	0.0192 - acc. 0.9934	•
	0 [] -	16s	97us/step -	loss:	0.0183 - acc: 0.9938	\$
Epoch 8/200 168000/16800	10 [=====	1 -	16s	96us/step -	loss:	0.0203 - acc: 0.9932	,
Epoch 9/200							
168000/16800 Epoch 10/200	10 [====================================] -	16s	97us/step -	loss:	0.0192 - acc: 0.9935	j
	10 [======] -	16s	97us/step -	loss:	0.0197 - acc: 0.9932)
Epoch 11/200		1	100	00	1	0.0102 0.0020	
Epoch 12/200	10 [=========== 1] -	105	98us/step -	1055;	0.0192 - acc: 0.9955	'
	0 [] -	16s	97us/step -	loss:	0.0186 - acc: 0.9938	3
Epoch 13/200 168000/16800) 0	1 -	175	99us/sten -	loss:	0.0189 - acc: 0.9937	,
Epoch 14/200		,		,			
168000/16800 Epoch 15/200	0 [==========] -	17s	98us/step -	loss:	0.0190 - acc: 0.9937	,
	, 10 [==========	1 -	16s	97us/step -	loss:	0.0197 - acc: 0.9934	ļ
Epoch 16/200							
Epoch 17/200	10 [=========== 1] -	165	9/us/step -	loss:	0.0182 - acc: 0.9938	j
168000/16800	0 [=====] -	16s	97us/step -	loss:	0.0186 - acc: 0.9936	;
Epoch 18/200	ı 10 [=======	1 -	160	97us/sten -	1000	0 0202 - 2001 0 003/	1
Epoch 19/200		1 -	103	37u3/3tep -	1033.	0.0202 - acc. 0.9934	•
	0 [] -	16s	97us/step -	loss:	0.0192 - acc: 0.9935	,
Epoch 20/200 168000/16800	, 10 [===========	1 -	16s	97us/step -	loss:	0.0186 - acc: 0.9937	,
Epoch 21/200	1	-					
168000/16800 Epoch 22/200	0 [===========] -	16s	97us/step -	loss:	0.0194 - acc: 0.9935	,
	10 [] -	16s	97us/step -	loss:	0.0182 - acc: 0.9939)
Epoch 23/200		1	100	07	1	0.0104 0.002	,
Epoch 24/200	10 [============ 1] -	105	97us/step -	1055;	0.0194 - acc: 0.9937	
168000/16800	0 [=====] -	16s	97us/step -	loss:	0.0190 - acc: 0.9935	;
Epoch 25/200 168000/16800	ı 10 [==========	1 -	165	97us/sten -	loss:	0.0178 - acc: 0.9946)
Epoch 26/200	1						
168000/16800 Epoch 27/200	0 [===========] -	16s	97us/step -	loss:	0.0182 - acc: 0.9940)
	, 10 [] -	16s	97us/step -	loss:	0.0196 - acc: 0.9936	;
Epoch 28/200		1	10-	00	1	0.0177 0.0020	
Epoch 29/200	10 [======== 1] -	165	98us/step -	1055:	0.01// - acc: 0.9939	'
168000/16800	0 [======] -	16s	98us/step -	loss:	0.0185 - acc: 0.9935	;
Epoch 30/200) 0	1 -	165	97us/sten -	loss.	0.0191 - acc ² 0.9936	5
Epoch 31/200		J	103	37 d3, 3 ccp	1033.	0.0131 0.013330	
168000/16800 Epoch 32/200	0 [===========] -	16s	98us/step -	loss:	0.0186 - acc: 0.9937	,
	, 10 [] -	16s	98us/step -	loss:	0.0175 - acc: 0.9941	L
Epoch 33/200		,	17-	00/	1	0.0100 0.003	
Epoch 34/200	10 [======== 1] -	1/5	99us/step -	1055:	0.0190 - acc: 0.9937	
	0 [=====] -	16s	97us/step -	loss:	0.0186 - acc: 0.9938	3
Epoch 35/200 168000/16800) 0	1 -	165	98us/sten -	loss:	0.0199 - acc: 0.9933	3
Epoch 36/200) ⁻						
168000/16800 Epoch 37/200	0 [===========] -	16s	97us/step -	loss:	0.0187 - acc: 0.9935	,
	, 10 [==========] -	16s	96us/step -	loss:	0.0181 - acc: 0.9939)
Epoch 38/200		1	100	06.44 / 44.44	1	0.0170 0.004	
Epoch 39/200	10 [============ 1] -	105	96us/step -	1055;	0.01/8 - acc: 0.9942	
	0 [] -	16s	96us/step -	loss:	0.0183 - acc: 0.9939)
Epoch 40/200) 0	1 -	165	96us/sten -	loss:	0.0178 - acc: 0.9939)
Epoch 41/200	1	-					
168000/16800 Epoch 42/200	0 [===========] -	16s	96us/step -	loss:	0.0184 - acc: 0.9938	;
	, 10 [] -	16s	96us/step -	loss:	0.0177 - acc: 0.9940)
Epoch 43/200		1	166	Ofus /ston	10001	0 0107 2001 0 0023	,
Epoch 44/200	0] -	105	96us/step -	1055;	0.0197 - acc: 0.9932	
	0 [======] -	16s	96us/step -	loss:	0.0171 - acc: 0.9944	Ļ
Epoch 45/200) 0	1 -	165	96us/sten -	loss.	0.0191 - acc: 0.9937	,
Epoch 46/200) ⁻						
168000/16800 Epoch 47/200	0 [========] -	16s	96us/step -	loss:	0.0187 - acc: 0.9938	;
	, 10 [] -	16s	96us/step -	loss:	0.0176 - acc: 0.9942)
Epoch 48/200		1	10-	07116/64	100-	0.0175 0.0000	1
168000/16800 Epoch 49/200	0] -	TP2	∍/us/step -	1055:	ם.שביס - acc: 0.9939 - כ/נט.ש	,
168000/16800	0 [=====] -	16s	96us/step -	loss:	0.0181 - acc: 0.9939)
Epoch 50/200 168000/16800	ı 10 [=======	1 -	165	95us/sten -	loss	0.0177 - acc: 0.9946)
Epoch 51/200	1						
168000/16800 Epoch 52/200	0 [====================================] -	16s	97us/step -	loss:	0.0175 - acc: 0.9942	1
	, 10 [==========] -	16s	97us/step -	loss:	0.0179 - acc: 0.9941	L
Epoch 53/200	1	-					
168000/16800 Epoch 54/200	10 [=========== 1] -	165	- sous/step	TOSS:	о.ы1/8 - acc: 0.9940	,
168000/16800	0 [======] -	16s	96us/step -	loss:	0.0172 - acc: 0.9942	2
Epoch 55/200 168000/16800) 0	1 -	160	95us/sten -	1055.	0.0180 - acc. 0 9041	ı
Epoch 56/200	1						
168000/16800 Epoch 57/200	0 [=============] -	16s	95us/step -	loss:	0.0177 - acc: 0.9941	L
	na r	1	160	OSuc/cton	10000	a a197 acc. a 9941	ı

_	010					'iy		ooginz	aı		COITIIII
		[======]	-	T02	ээиь/ьгер	-	1022:	ρ.0107	-	acc:	0.9941
	Epoch 58/200 168000/168000	[=====]	_	16s	95us/step	_	loss:	0.0187	_	acc:	0.9939
	Epoch 59/200				,						
		[]	-	16s	95us/step	-	loss:	0.0171	-	acc:	0.9941
	Epoch 60/200	[======]	_	16c	95us/sten	_	1000	0 0181	_	acc.	0 9939
	Epoch 61/200	[]		103	<i>ээиз</i> , эсср		1033.	0.0101		ucc.	0.5555
		[]	-	16s	95us/step	-	loss:	0.0183	-	acc:	0.9938
	Epoch 62/200	[]	_	16c	95us/sten	_	1000	0 0178	_	acc.	0 9941
	Epoch 63/200	[]		103	33u3/3cep		1033.	0.0178		acc.	0.5541
		[]	-	16s	95us/step	-	loss:	0.0170	-	acc:	0.9941
	Epoch 64/200	r1		166	OFus/ston		10001	0 0170		2661	0 0020
	Epoch 65/200	[======]	-	165	95us/scep	-	1055:	0.01/9	-	acc:	0.9939
	168000/168000	[=====]	-	16s	95us/step	-	loss:	0.0183	-	acc:	0.9939
	Epoch 66/200	[======]		10-	05/eten		1	0.0102			0 0040
	Epoch 67/200	[======	-	102	95us/scep	-	1055:	0.0182	-	acc:	0.9940
		[=====]	-	16s	96us/step	-	loss:	0.0181	-	acc:	0.9939
	Epoch 68/200			10-	05/-+		1	0.0100			0 0044
	Epoch 69/200	[]	-	165	95us/step	-	loss:	0.0180	-	acc:	0.9941
		[]	-	16s	95us/step	-	loss:	0.0175	-	acc:	0.9941
	Epoch 70/200				0= / .		,				
	168000/168000 Epoch 71/200	[]	-	16s	95us/step	-	loss:	0.0181	-	acc:	0.9941
		[======]	_	16s	96us/step	_	loss:	0.0162	_	acc:	0.9945
	Epoch 72/200				-						
		[======]	-	16s	95us/step	-	loss:	0.0183	-	acc:	0.9940
	Epoch 73/200 168000/168000	[======]	_	16s	95us/step	_	loss:	0.0174	_	acc:	0.9940
	Epoch 74/200				, ,						
		[======]	-	16s	95us/step	-	loss:	0.0183	-	acc:	0.9941
	Epoch 75/200 168000/168000	[]	_	165	95us/sten	_	loss:	0.0177	_	acc:	0.9941
	Epoch 76/200										
		[]	-	16s	95us/step	-	loss:	0.0180	-	acc:	0.9941
	Epoch 77/200	[]	_	165	95us/sten	_	1055.	0.0176	_	acc.	0.9940
	Epoch 78/200	. ,		103	3343, 3ccp		10331	0.0170		ucc.	0.55.0
		[]	-	16s	95us/step	-	loss:	0.0175	-	acc:	0.9943
	Epoch 79/200	[======]	_	16c	95us/sten	_	1000	0 0168	_	acc.	0 9943
	Epoch 80/200	[]		103	<i>ээиз</i> , эсср		1033.	0.0100		ucc.	0.5545
		[]	-	16s	95us/step	-	loss:	0.0179	-	acc:	0.9941
	Epoch 81/200	[]	_	16c	95us/sten	_	1055.	0 0169	_	acc.	0 9941
	Epoch 82/200	[]		103	75u3/3ccp		1033.	0.0103		ucc.	0.5541
		[]	-	16s	95us/step	-	loss:	0.0175	-	acc:	0.9942
	Epoch 83/200 168000/168000	[]	_	165	94us/sten	_	1055.	0.0170	_	acc.	0.9943
	Epoch 84/200	. ,		103	э (аз) эсср		10331	0.0170		ucc.	0.55.5
		[]	-	16s	93us/step	-	loss:	0.0172	-	acc:	0.9944
	Epoch 85/200 168000/168000	[======]	_	16s	93us/step	_	loss:	0.0179	_	acc:	0.9942
	Epoch 86/200										
		[======]	-	16s	95us/step	-	loss:	0.0168	-	acc:	0.9944
	Epoch 87/200 168000/168000	[]	_	16s	94us/step	_	loss:	0.0181	_	acc:	0.9941
	Epoch 88/200										
	168000/168000 Epoch 89/200	[======]	-	16s	95us/step	-	loss:	0.0166	-	acc:	0.9945
	168000/168000	[=====]	_	16s	94us/step	_	loss:	0.0163	_	acc:	0.9944
	Epoch 90/200										
	168000/168000 Epoch 91/200	[]	-	16s	94us/step	-	loss:	0.0169	-	acc:	0.9945
		[]	_	16s	96us/step	_	loss:	0.0170	_	acc:	0.9943
	Epoch 92/200										
	168000/168000 Epoch 93/200	[=====]	-	16s	94us/step	-	loss:	0.0170	-	acc:	0.9944
		[]	_	16s	94us/step	_	loss:	0.0178	_	acc:	0.9941
	Epoch 94/200										
	168000/168000 Epoch 95/200	[]	-	16s	94us/step	-	loss:	0.0174	-	acc:	0.9944
		[======]	_	16s	93us/step	_	loss:	0.0166	_	acc:	0.9945
	Epoch 96/200				-						
		[]	-	16s	93us/step	-	loss:	0.0164	-	acc:	0.9947
	Epoch 97/200 168000/168000	[]	-	16s	93us/step	-	loss:	0.0177	-	acc:	0.9943
	Epoch 98/200				,						
	168000/168000 Epoch 99/200	[]	-	15s	92us/step	-	loss:	0.0172	-	acc:	0.9943
		[]	-	16s	92us/step	-	loss:	0.0168	_	acc:	0.9943
	Epoch 100/200										
	168000/168000 Epoch 101/200	[]	-	15s	92us/step	-	loss:	0.0170	-	acc:	0.9944
		[]	_	16s	93us/step	_	loss:	0.0167	_	acc:	0.9945
	Epoch 102/200										
	168000/168000 Epoch 103/200	[]	-	16s	93us/step	-	loss:	0.0169	-	acc:	0.9944
		[]	-	15s	92us/step	-	loss:	0.0175	-	acc:	0.9943
	Epoch 104/200										
	168000/168000 Epoch 105/200	[]	-	15s	92us/step	-	TOSS:	0.0168	-	acc:	v.9945
		[]	-	15s	92us/step	-	loss:	0.0171	_	acc:	0.9943
	Epoch 106/200				-						
	168000/168000 Epoch 107/200	[=====]	-	16s	94us/step	-	loss:	0.0169	-	acc:	0.9945
		[]	-	15s	92us/step	-	loss:	0.0163	_	acc:	0.9946
	Epoch 108/200				-						
	168000/168000 Epoch 109/200	[======]	-	15s	91us/step	-	loss:	0.0178	-	acc:	0.9943
		[]	-	15s	92us/step	-	loss:	0.0172	-	acc:	0.9943
	Epoch 110/200										
		[======]	-	15s	92us/step	-	loss:	0.0174	-	acc:	0.9943
	Epoch 111/200 168000/168000	[]	-	16s	94us/step	-	loss:	0.0171	-	acc:	0.9943
	Epoch 112/200										
		[======]	-	15s	92us/step	-	loss:	0.0163	-	acc:	0.9945
	Epoch 113/200 168000/168000	[]	-	15s	92us/sten	-	loss:	0.0167	-	acc:	0.9946
	Epoch 114/200										
	4 < 0.000 / 4 < 0.000			4	^2		1	^ ^465			^ ^^4