

# **mLeXperts**

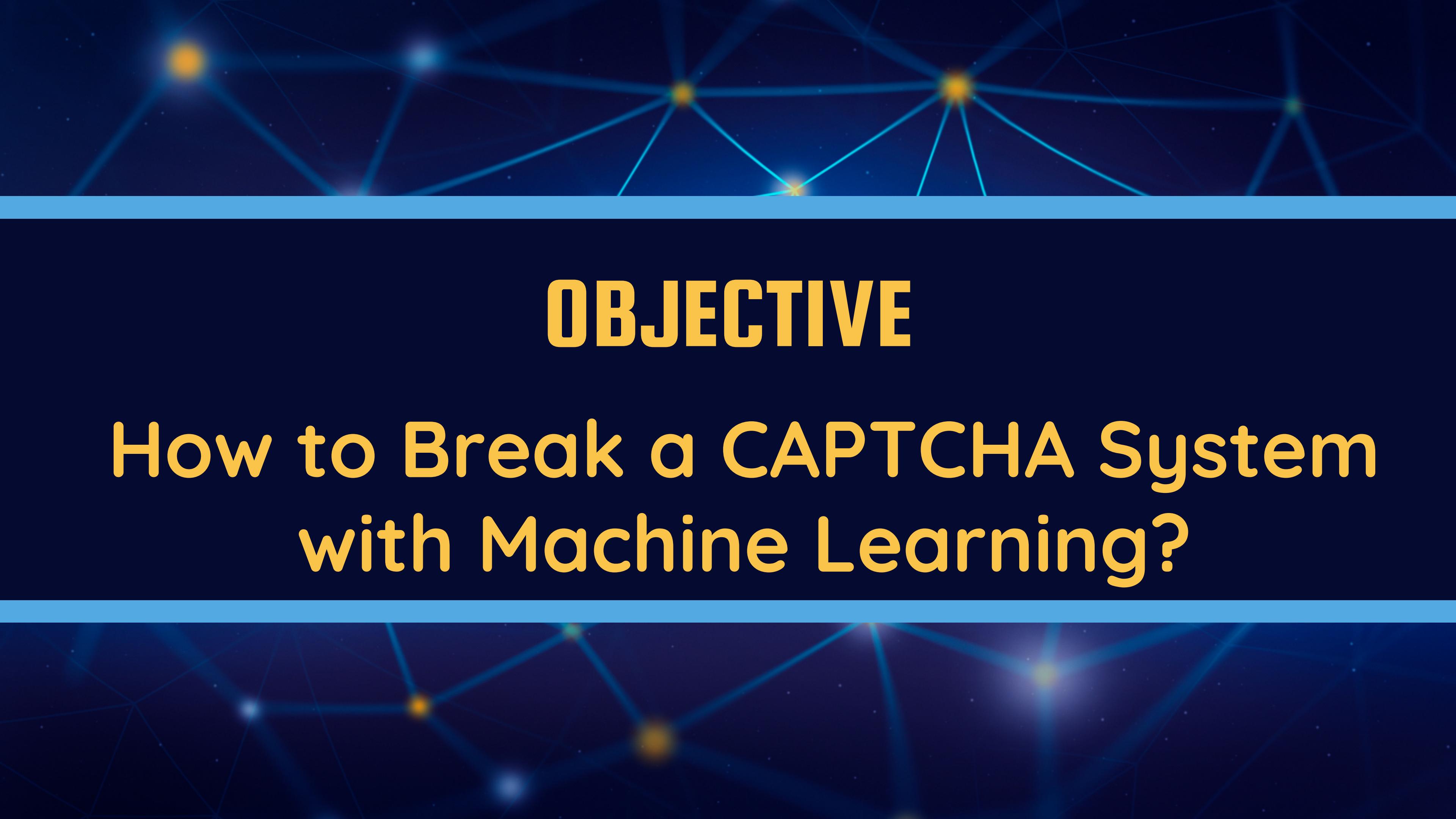
## **ML Codefest**

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# OBJECTIVE

## How to Break a CAPTCHA System with Machine Learning?

# MACHINE LEARNING

Collection &  
Preprocessing  
Data

Training of  
Machine  
Learning  
Model

Testing and  
Validation of  
model in real  
time usage

# PROBLEM STATEMENT

Our key aim was to explore how one can break a CAPTCHA system with the help of machine learning and highlight the incapability of the system to filter out non-humans.





# METHODOLOGY

Convolutional Neural Networks(CNNs) and Recurrent Neural Networks(RNNs) can both be used to break CAPTCHA. While CNNs are a perfect match for image recognition and are very effective while recognizing images, RNNs can process sequential data very proficiently, suitable for things like audio-based CAPTCHA.



Colab How to Break a CAPTCH =BreakCaptcha.ipynb ChatGPT ML Codefest by India ML Codefest Response PromoteoITJodhpur New Tab

colab.research.google.com/drive/1O9f\_aGbhqhtX2XCR5WI4l5AQhoK8etiF#scrollTo=lyoe6\_JU30oS

Kaggle Install YouTube Maps Udemy GitHub Machine Learning S... foo.bar ros basics - YouTube How to use the pyb... Adevnt of Code Ek Duje Ke Vaast...

## Captcha.ipynb

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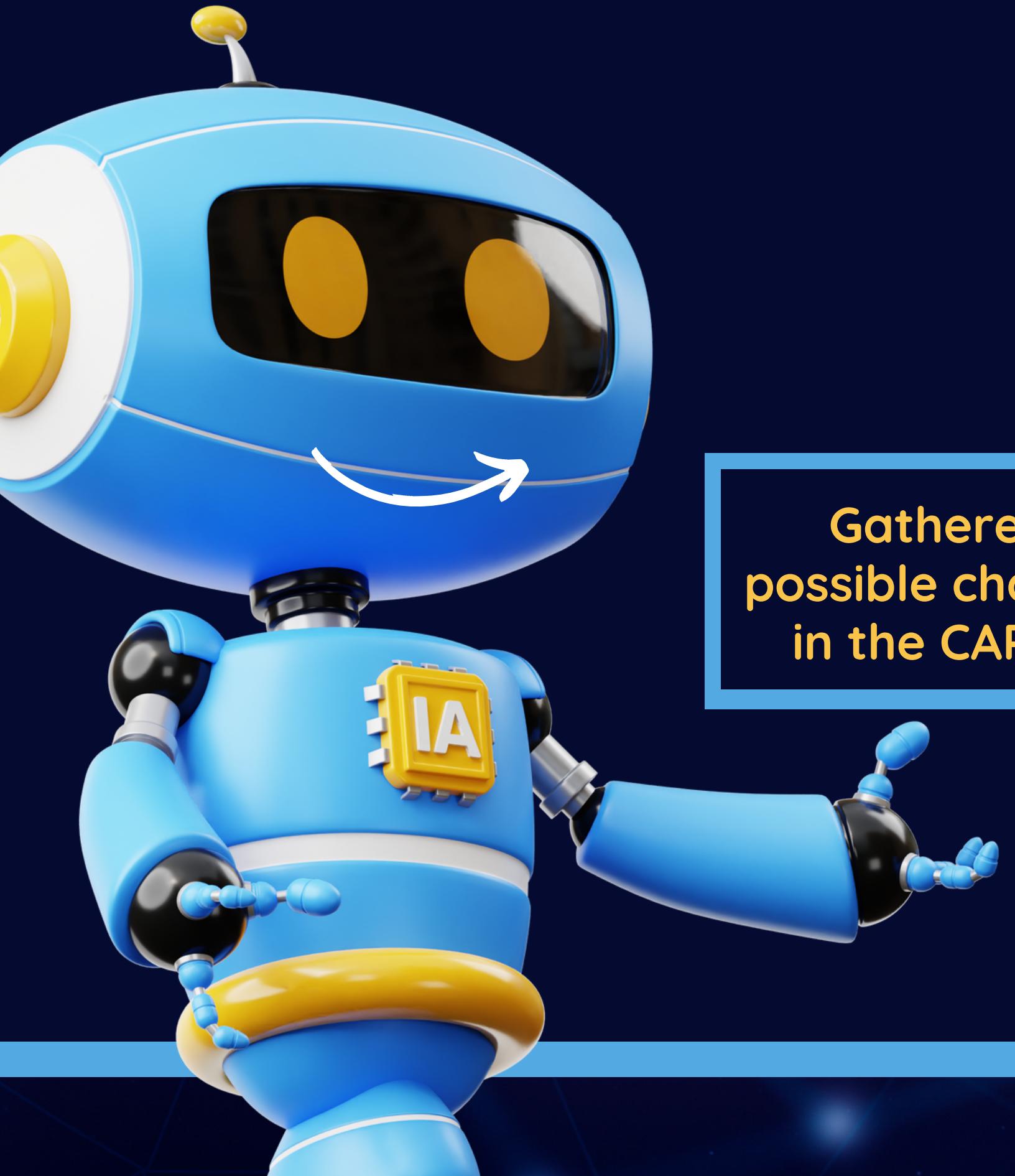
Code + Text

Model: "ocr\_model\_v1"

Layer (type)	Output Shape	Param #	Connected to
image (InputLayer)	[None, 150, 40, 1]	0	[]
Conv1 (Conv2D)	(None, 150, 40, 32)	320	['image[0][0]']
pool1 (MaxPooling2D)	(None, 75, 20, 32)	0	['Conv1[0][0]']
Conv2 (Conv2D)	(None, 75, 20, 64)	18496	['pool1[0][0]']
pool2 (MaxPooling2D)	(None, 37, 10, 64)	0	['Conv2[0][0]']
reshape (Reshape)	(None, 37, 640)	0	['pool2[0][0]']
dense1 (Dense)	(None, 37, 64)	41024	['reshape[0][0]']
dropout_3 (Dropout)	(None, 37, 64)	0	['dense1[0][0]']
bidirectional_6 (Bidirectional)	(None, 37, 256)	197632	['dropout_3[0][0]']
bidirectional_7 (Bidirectional)	(None, 37, 128)	164352	['bidirectional_6[0][0]']
label (InputLayer)	[None, None]	0	[]
dense2 (Dense)	(None, 37, 62)	7998	['bidirectional_7[0][0]']
ctc_loss (LayerCTC)	(None, 37, 62)	0	['label[0][0]', 'dense2[0][0]']

Executing (3m 42s) <cell line: 12> > error\_handler() > fit() > error\_handler() > \_\_call\_\_() > \_call() > call\_function() > \_call\_flat() > call\_preflattened() > call\_flat()





# THE FINAL PIPELINE

Gathered all possible characters in the CAPTCHA

Read the images using a convo layer

Designed an ML model using some dense layers

Final Output displayed on the Screen to the User

# ML MODEL IN ACTION

Colab research.google.com/drive/1O9f\_aGbhqhtX2XCR5WI4l5AQhoK8etiF#scrollTo=lyoe6\_JU30oS

**Captcha.ipynb**

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+ Code + Text

```
title = tpred_texts[1]
ax[i // 4, i % 4].imshow(img, cmap="gray")
ax[i // 4, i % 4].set_title(title)
ax[i // 4, i % 4].axis("off")
plt.show()
```

1/1 [=====] - 1s 1s/step

Prediction	Image
kMm6	
xEj4[UNK]	
S4SBV	
7YA4j	
ALWDN	
W2Mgn	
X2TDN	
bLYP[UNK]	
ij2ZY	
RkwXH	
2HNFM	
5LOKR	
7T8y[UNK]	
in9Un	
c1si1	
AVYB9	

Start coding or generate with AI.

5s completed at 5:28 PM

Search

17:29 08-01-2024

# THANK YOU!

Hope We brought a  
change in the Tech.

