Opening-and-Closing

Aim

To implement Opening and Closing using Python and OpenCV.

Software Required

1. Anaconda - Python 3.7
2. OpenCV

Algorithm:

Step1:

Import the necessary packages.

Step2:

Create the text image using cv2.putText.

Step3:

Then create the structuring element for opening and closing.

Step4:

Apply erosion and dilation using cv2.MORPH_OPEN and cv2.MORPH_CLOSE.

Step5:

Plot the images using plt.imshow.

Program:

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```
# Import the necessary packages

import cv2
import numpy as np
import matplotlib.pyplot as plt


# Create the Text using cv2.putText

text_image = np.zeros((100,440),dtype = 'uint8')
font = cv2.FONT_HERSHEY_SIMPLEX = 3
cv2.putText(text_image," Gowri",(5,70),font,2,(255),5,cv2.LINE_AA)
plt.title("Original Image")
plt.imshow(text_image,'magma')
plt.axis('off')


# Create the structuring element

kernel = cv2.getStructuringElement(cv2.MORPH_CROSS,(9,9))



# Use Opening operation

image1=cv2.morphologyEx(text_image,cv2.MORPH_OPEN,kernel)
plt.title("Opening")
plt.imshow(image1,'magma')
plt.axis('off')

# Use Closing Operation

image2=cv2.morphologyEx(text_image,cv2.MORPH_CLOSE,kernel)
plt.title("Closing")
plt.imshow(image2,'magma')
plt.axis('off')
```

Output:

Display the input Image

Display the result of Opening

Display the result of Closing

Result

Thus the Opening and Closing operation is used in the image using python and OpenCV.