#Image segmentation

import cv2

import numpy as np

from matplotlib import pyplot as plt

# Load the image

image = cv2.imread("/content/dog img-1.jpeg")

gray = cv2.cvtColor(image, cv2.COLOR\_BGR2GRAY)

# Apply thresholding

ret, thresh = cv2.threshold(gray, 0, 255, cv2.THRESH\_BINARY\_INV + cv2.THRESH\_OTSU)

# Noise removal

kernel = np.ones((3,3),np.uint8)

opening = cv2.morphologyEx(thresh, cv2.MORPH\_OPEN, kernel, iterations = 2)

# Sure background area

sure\_bg = cv2.dilate(opening,kernel,iterations=3)

# Finding sure foreground area

dist\_transform = cv2.distanceTransform(opening, cv2.DIST\_L2, 5)

ret, sure\_fg = cv2.threshold(dist\_transform, 0.7 \* dist\_transform.max(), 255, 0)

# Finding unknown region sure\_fg = np.uint8(sure\_fg)

sure\_fg = np.uint8(sure\_fg) # Ensure sure\_fg is of type uint8

unknown = cv2.subtract(sure\_bg, sure\_fg)

# Marker labelling

ret, markers = cv2.connectedComponents(sure\_fg)

markers = markers + 1

markers[unknown==255] = 0

# Apply watershed algorithm

markers = cv2.watershed(image, markers)

image[markers == -1] = [255,0,0]

# Display the result plt.figure(figsize=(12, 8))

plt.subplot(131), plt.imshow(cv2.cvtColor(image, cv2.COLOR\_BGR2RGB)),

plt.title('Original Image')

plt.subplot(132), plt.imshow(markers, cmap='viridis'),

plt.title('Segmented Image')

plt.show()