

Họ và tên: Nguyễn Hoàng Thắng

MSSV: 2151012009

Source code:

```
1  import cv2
2  import numpy as np
3
4  cap = cv2.VideoCapture(r"D:\\CV\\video.mp4")
5  logo = cv2.imread(r"D:\\CV\\logo1.png")
6
7  hsvr = cv2.cvtColor(logo, cv2.COLOR_BGR2HSV)
8  M = cv2.calcHist([hsvr], [0, 1], None, [180, 256], [0, 180, 0, 256])
9
10 while True:
11     ret, frame = cap.read()
12     if not ret:
13         break
14
15     blur = cv2.GaussianBlur(frame, (5, 5), 0) #5,5
16
17     hsvt = cv2.cvtColor(blur, cv2.COLOR_BGR2HSV)
18     I = cv2.calcHist([hsvt], [0, 1], None, [180, 256], [0, 180, 0, 256])
19
20     #R = I / (M + 1)
21     R = M / (I + 1)
22
23     h, s, v = cv2.split(hsvt)
24
25     B = R[h.ravel(), s.ravel()]
26     B = np.minimum(B, 1)
27     B = B.reshape(hsvt.shape[:2])
28
29     disc = cv2.getStructuringElement(cv2.MORPH_ELLIPSE, (5, 5))
30     cv2.filter2D(B, -1, disc, B)
31     B = np.uint8(B)
32     cv2.normalize(B, B, 0, 255, cv2.NORM_MINMAX)
33
```

```
34     ret, thresh = cv2.threshold(B, 10, 255, cv2.THRESH_BINARY)
35
36     contours, _ = cv2.findContours(
37         thresh, cv2.RETR_TREE, cv2.CHAIN_APPROX_SIMPLE
38     )
39
40     largest_contour = None
41     max_area = 0
42     for cnt in contours:
43         area = cv2.contourArea(cnt)
44         if area > max_area:
45             largest_contour = cnt
46             max_area = area
47
48     if largest_contour is not None:
49         x, y, w, h = cv2.boundingRect(largest_contour)
50         cv2.rectangle(
51             frame, (x, y), (x + w, y + h), (0, 225, 225), 3
52         )
53
54     cv2.imshow("Logo Target", frame)
55
56     if cv2.waitKey(40) & 0xFF == ord("q"):
57         break
58
59 cap.release()
60 cv2.destroyAllWindows()
```