**Digital Image Processing**

**Project 3**

**Title: Object Detection and Tracking**

**Code:**

import cv2  
import numpy as np  
  
cap = cv2.VideoCapture(0)  
  
if not cap.isOpened():  
 raise IOError("Cannot open webcam")  
tracker=[]  
while True:  
 ret, frame = cap.read()  
 gray = cv2.cvtColor(frame, cv2.COLOR\_BGR2GRAY)  
 blueframe=cv2.GaussianBlur(gray,(17,17),0)  
 rows = gray.shape[0]  
 circles = cv2.HoughCircles(blueframe, cv2.HOUGH\_GRADIENT, 1.2, 100,  
 param1=100, param2=30,  
 minRadius=80, maxRadius=90)  
  
 if circles is not None:  
 circles = np.uint16(np.around(circles))  
 for i in circles[0, :]:  
 center = (i[0], i[1])  
 tracker.append((i[0], i[1]))  
 radius = i[2]  
 cv2.circle(frame, center, radius, (0, 0, 255), 6)  
  
 for i in tracker :  
 cv2.circle(frame, i, 0, (200, 120, 35), 15)  
  
 cv2.imshow("Circular Object Path Detection",cv2.flip(frame,1))  
 c = cv2.waitKey(1)  
 if c == 27:  
 break  
  
cv2.waitKey(0)  
cv2.destroyAllWindows()