**בקשת קבלה לענף האוטנומיה – שחר עין קדם**

**משימה 5 – זיהוי צבעים**

כפי שניתן לראות בתמונה לדוגמה, הקוד פותח את מצלמת המשתמש ומנתח את הוידיאו בזמן אמת ומבדיל בין הצבעים השונים.

אבקש לשים לב כי הקוד מכויל לפי מצלמת הרשת שלי. אם ברצונכם לבדוק את הקוד על מצלמת רשת אחרת יש לכייל את הצבעים מחדש.

**תמונה שמכילה טקסט, צג, צילום מסך, אלקטרוניקה

התיאור נוצר באופן אוטומטי**

import cv2  
import numpy as np  
  
  
frame\_width = 320  
frame\_height = 240  
cap = cv2.VideoCapture(0)  
cap.set(3, frame\_width)  
cap.set(4, frame\_height)  
  
while True:  
 \_,before\_resize\_frame = cap.read()  
 frame = cv2.resize(before\_resize\_frame, (frame\_width, frame\_height))  
 hsv\_frame = cv2.cvtColor(frame, cv2.COLOR\_BGR2HSV)  
  
 # Red color  
 low\_red = np.array([0, 216, 59])  
 high\_red = np.array([179, 255, 255])  
 red\_mask = cv2.inRange(hsv\_frame, low\_red, high\_red)  
 red = cv2.bitwise\_and(frame, frame, mask=red\_mask)  
 cv2.putText(red, "Red Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 # Grey color  
 low\_grey = np.array([119, 27, 79])  
 high\_grey = np.array([177, 90, 193])  
 grey\_mask = cv2.inRange(hsv\_frame, low\_grey, high\_grey)  
 grey = cv2.bitwise\_and(frame, frame, mask=grey\_mask)  
 cv2.putText(grey, "Grey Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 # Blue color  
  
 low\_blue = np.array([73, 68, 149])  
 high\_blue = np.array([140, 241, 255])  
 blue\_mask = cv2.inRange(hsv\_frame, low\_blue, high\_blue)  
 blue = cv2.bitwise\_and(frame, frame, mask=blue\_mask)  
 cv2.putText(blue, "Blue Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 # Green color  
  
 low\_green = np.array([39, 51, 83])  
 high\_green = np.array([86, 255, 188])  
 green\_mask = cv2.inRange(hsv\_frame, low\_green, high\_green)  
 green = cv2.bitwise\_and(frame, frame, mask=green\_mask)  
 cv2.putText(green, "Green Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 # Orange color  
  
 low\_orange = np.array([1, 190, 200])  
 high\_orange = np.array([18, 255, 255])  
 orange\_mask = cv2.inRange(hsv\_frame, low\_orange, high\_orange)  
 orange = cv2.bitwise\_and(frame, frame, mask=orange\_mask)  
 cv2.putText(orange, "Orange Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 # Brown color  
 low\_brown = np.array([44, 191, 91])  
 high\_brown = np.array([179, 255, 255])  
 brown\_mask = cv2.inRange(hsv\_frame, low\_brown, high\_brown)  
 brown = cv2.bitwise\_and(frame, frame, mask=brown\_mask)  
 cv2.putText(brown, "Brown Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 # White color  
  
 low\_white = np.array([0, 0, 159])  
 high\_white = np.array([179, 99, 255])  
 white\_mask = cv2.inRange(hsv\_frame, low\_white, high\_white)  
 white = cv2.bitwise\_and(frame, frame, mask=white\_mask)  
 cv2.putText(white, "White Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (180, 255, 30), 1)  
  
 # Black color  
  
 low\_black = np.array([20, 54, 40])  
 high\_black = np.array([179, 116, 138])  
 black\_mask = cv2.inRange(hsv\_frame, low\_black, high\_black)  
 black = cv2.bitwise\_and(frame, frame, mask=black\_mask)  
 cv2.putText(black, "Black Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 #  
 # Purple color  
 low\_purple = np.array([115, 75, 111])  
 high\_purple = np.array([160, 236, 255])  
 purple\_mask = cv2.inRange(hsv\_frame, low\_purple, high\_purple)  
 purple = cv2.bitwise\_and(frame, frame, mask=purple\_mask)  
 cv2.putText(purple, "Purple Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 # Pink color  
 low\_pink = np.array([147, 55, 205])  
 high\_pink = np.array([176, 167, 255])  
 pink\_mask = cv2.inRange(hsv\_frame, low\_pink, high\_pink)  
 pink = cv2.bitwise\_and(frame, frame, mask=pink\_mask)  
 cv2.putText(pink, "Pink Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 # Yellow color  
  
 low\_yellow = np.array([15, 96, 180])  
 high\_yellow = np.array([42, 216, 252])  
 yellow\_mask = cv2.inRange(hsv\_frame, low\_yellow, high\_yellow)  
 yellow = cv2.bitwise\_and(frame, frame, mask=yellow\_mask)  
 cv2.putText(yellow, "Yellow Color", (1, 30), cv2.FONT\_HERSHEY\_COMPLEX, 1, (179, 255, 255), 1)  
  
 Img1 = np.hstack((frame, green, blue, red))  
 Img2 = np.hstack((pink, purple, black, white))  
 Img3 = np.hstack((yellow, brown, orange, grey))  
 ImgTotal = np.vstack((Img1, Img2, Img3))  
 cv2.imshow("All visible colors", ImgTotal)  
  
  
  
 if cv2.waitKey(1) & 0xFF == ord('q'):  
 break