# import tensorflow as tf  
# from tensorflow import keras  
import cv2  
import mediapipe as mp  
from keras.models import load\_model  
import numpy as np  
import time  
  
detectFace = mp.solutions.face\_detection.FaceDetection(min\_detection\_confidence=0.6)  
  
cam = cv2.VideoCapture(0)  
cam.set(3, 1280)  
cam.set(4, 720)  
font = cv2.FONT\_HERSHEY\_COMPLEX  
  
model = load\_model('keras\_model.h5')  
  
# variables for FPS  
t\_old = 0  
t\_new = 0  
  
def get\_className(classNo):  
 if classNo == 0:  
 return "Nick"  
 elif classNo == 1:  
 return "ice"  
 elif classNo == 2:  
 return "william"  
 elif classNo == 3:  
 return "Unknown"  
  
while True:  
 ret, img = cam.read()  
 if not ret:  
 print("wait...")  
 continue  
 imgRGB = cv2.cvtColor(img, cv2.COLOR\_BGR2RGB)  
 results = detectFace.process(imgRGB)  
 # print(results.detections)  
 if results.detections != None:  
 for face in results.detections:  
 # drawFace.draw\_detection(img, face)  
 boundingBox = face.location\_data.relative\_bounding\_box  
 x1 = int(boundingBox.xmin \* 1280)  
 y1 = int(boundingBox.ymin \* 720)  
 x2 = int((boundingBox.xmin + boundingBox.width) \* 1280)  
 y2 = int((boundingBox.ymin + boundingBox.height) \* 720)  
 pt1 = (x1, y1)  
 pt2 = (x2,y2)  
 cv2.rectangle(img, pt1, pt2, (255, 0, 0), 3)  
 crop\_img = img[y1:y2, x1:x2]  
 imgResize = cv2.resize(crop\_img, (224, 224))  
 imgReshape = imgResize.reshape(1, 224, 224, 3)  
 prediction = model.predict(imgReshape)  
 print(prediction)  
 classIndex = np.argmax(prediction)  
 print(classIndex)  
  
 if classIndex == 0 or 1 or 2:  
 cv2.rectangle(img, (x1, y1), (x2, y2), (80, 255, 0), 2)  
 cv2.rectangle(img, (x1, y1 - 40), (x2, y1), (80, 255, 0), -2)  
 cv2.putText(img, str(get\_className(classIndex)), (x1, y1 - 10), font, 0.75, (255, 255, 255), 1, cv2.LINE\_AA)  
  
 # Calculate FPS and display on upper left  
 t\_new = time.time()  
 fps = 1 / (t\_new - t\_old)  
 t\_old = t\_new  
 cv2.putText(img, 'FPS = ' + str(int(fps)), (10, 50), cv2.FONT\_HERSHEY\_PLAIN, 3,  
 (255, 0, 255), 3)  
  
 cv2.imshow("MBS3523 - Assignment 2 - Face Recognition Result", img)  
 if cv2.waitKey(1) & 0xff == 27:  
 break  
  
cam.release()  
cv2.destroyAllWindows()