Technological Institute of the Philippines	Quezon City - Computer Engineering
Course Code:	CPE 018
Code Title:	Emerging Technologies in CpE 1 - Fundamentals of Computer Vision
1st Semester	AY 2023-2024

FINAL PROJECT	**HELLMET GUARDIAN**
Name	SANTIAGO & CALVADORES & EFA
Section	CPE31S2
Date Performed:	28/11/2023
Date Submitted:	9/12/2023
Instructor:	Engr. Roman M. Richard

```
import cv2

def HelmetDetection():
    #Load video
    Video = cv2.VideoCapture("C://Users//John loyd Santiago//Desktop//New folder (2)//head.mp4")

    #Load the classifier for helmet
    #Helmet Cascade (HC)
    HC = cv2.CascadeClassifier("C://Users//John loyd Santiago//Desktop//New folder (2)//haarcascade_helmet

    while True:
      #Reading the Video
      ret, Frame = Video.read()
      #Covert into gray
      gray2 = cv2.cvtColor(Frame, cv2.COLOR_BGR2GRAY)
      #Break the loop after the video is finished
      if not ret:
         break

      #Helmet detection using the Haar Cascade classifier
      Helmet = HC.detectMultiScale(gray2, scaleFactor = 1.1, minNeighbors = 9, minSize = (85, 85))

      #Draw the Rectangle for the detection
      for(x, y, w, h) in Helmet:
         cv2.rectangle(Frame, (x, y), (x+w, y+h), (0, 255, 0), 4)
         #Resize the Frame in detection
         roi = cv2.resize(gray2, (200, 200), interpolation=cv2.INTER_LINEAR)
         #Text for detection
         cv2.putText(Frame, " Helmet Detected", (x, y - 20), cv2.FONT_HERSHEY_SIMPLEX, 1, (255, 0, 0), 2)


      cv2.imshow("Helmet Detection", cv2.resize(Frame, (800, 600)))
      if cv2.waitKey(1) & 0xFF == ord("q"):
        break

    Video.release()
    cv2.destroyAllWindows()

if __name__ == "__main__":
    HelmetDetection()
```