PRACTICAL NO: 4

AIM: Implementing computer vision for object detection, path planning and real time decision making.

----------CODE----------

```
import cv2

face_cascade = cv2.CascadeClassifier(cv2.data.haarcascades +
'haarcascade_frontalface_default.xml')

cap = cv2.VideoCapture(0)

if not cap.isOpened():
    print("Error: Could not open video stream.")
    exit()

while True:
    ret, frame = cap.read()

    if not ret:
        print("Failed to grab frame.")
        break

    gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)

    faces = face_cascade.detectMultiScale(gray, scaleFactor=1.1, minNeighbors=5, minSize=(30, 30))

    if len(faces) > 0:
        for (x, y, w, h) in faces:
            cv2.rectangle(frame, (x, y), (x + w, y + h), (255, 0, 0), 2)

        cv2.putText(frame, "Face Detected!", (50, 50), cv2.FONT_HERSHEY_SIMPLEX, 1, (0, 255, 0),
2)

    else:
        cv2.putText(frame, "No Face Detected!", (50, 50), cv2.FONT_HERSHEY_SIMPLEX, 1, (0, 0,
255), 2)

    cv2.imshow("Real-Time Face Detection", frame)

    if cv2.waitKey(1) & 0xFF == ord('q'):
        break

cap.release()
cv2.destroyAllWindows()
```

----------OUTPUT----------