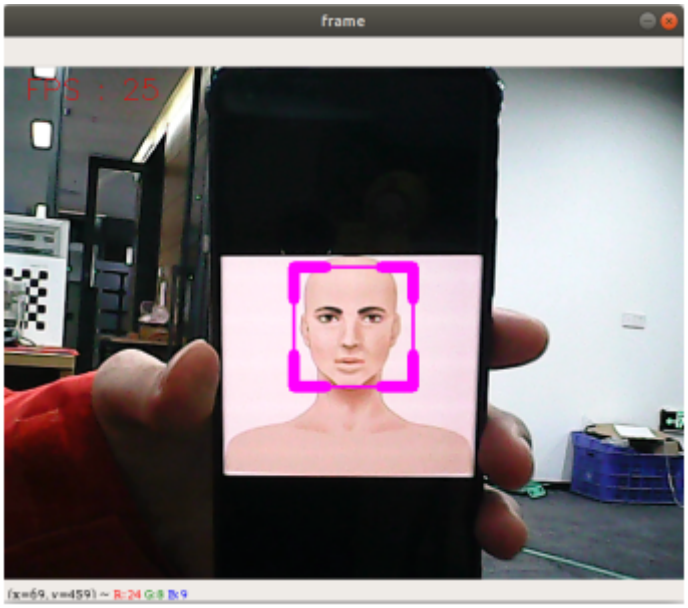
5.Personal insurance identification

1) Start

Input following command:

```
ros2 run yahboomcar_mediapipe 05_FaceEyeDetection
```



2) Code

Code path:
~/orbbec_ws/src/yahboomcar_mediapipe/yahboomcar_mediapipe/05_FaceEyeDetection.py

```
#!/usr/bin/env python2
# encoding: utf-8
#import ros lib
import rclpy
from rclpy.node import Node
from geometry_msgs.msg import Point
import mediapipe as mp
from cv_bridge import CvBridge
from sensor_msgs.msg import CompressedImage,Image
#import define msg
from yahboomcar_msgs.msg import PointArray
#import commom lib
import cv2 as cv
import numpy as np
import time
print("import done")


class FaceEyeDetection(Node):
    def __init__(self,name):
        super().__init__(name)
        self.bridge = CvBridge()
```

```
        self.eyeDetect = cv.CascadeClassifier(
"/home/yahboom/orbbec_ws/src/yahboomcar_mediapipe/yahboomcar_mediapipe/file/haar
cascade_eye.xml")
        self.faceDetect = cv.CascadeClassifier(
"/home/yahboom/orbbec_ws/src/yahboomcar_mediapipe/yahboomcar_mediapipe/file/haar
cascade_eye.xml")
        self.pub_rgb = self.create_publisher(Image,"/FaceEyeDetection/image",
500)

    def cancel(self):
        self.pub_rgb.unregister()

    def face(self, frame):
        gray = cv.cvtColor(frame, cv.COLOR_BGR2GRAY)
        faces = self.faceDetect.detectMultiScale(gray, 1.3)
        for face in faces: frame = self.faceDraw(frame, face)
        return frame

    def eye(self, frame):
        gray = cv.cvtColor(frame, cv.COLOR_BGR2GRAY)
        eyes = self.eyeDetect.detectMultiScale(gray, 1.3)
        for eye in eyes:
            cv.circle(frame, (int(eye[0] + eye[2] / 2), int(eye[1] + eye[3] /
2)), (int(eye[3] / 2)), (0, 0, 255), 2)
        return frame

    def faceDraw(self, frame, bbox, l=30, t=10):
        x, y, w, h = bbox
        x1, y1 = x + w, y + h
        cv.rectangle(frame, (x, y), (x + w, y + h), (255, 0, 255), 2)
        # Top left x,y
        cv.line(frame, (x, y), (x + l, y), (255, 0, 255), t)
        cv.line(frame, (x, y), (x, y + l), (255, 0, 255), t)
        # Top right x1,y
        cv.line(frame, (x1, y), (x1 - l, y), (255, 0, 255), t)
        cv.line(frame, (x1, y), (x1, y + l), (255, 0, 255), t)
        # Bottom left x1,y1
        cv.line(frame, (x, y1), (x + l, y1), (255, 0, 255), t)
        cv.line(frame, (x, y1), (x, y1 - l), (255, 0, 255), t)
        # Bottom right x1,y1
        cv.line(frame, (x1, y1), (x1 - l, y1), (255, 0, 255), t)
        cv.line(frame, (x1, y1), (x1, y1 - l), (255, 0, 255), t)
        return frame

    def pub_img(self, frame):
        self.pub_rgb.publish(self.bridge.cv2_to_imgmsg(frame, "bgr8"))


def main():
    rclpy.init()
    capture = cv.VideoCapture(0)
    capture.set(6, cv.VideoWriter_fourcc(*'XVID'))
    capture.set(cv.CAP_PROP_FRAME_WIDTH, 640)
    capture.set(cv.CAP_PROP_FRAME_HEIGHT, 480)
    print("capture get FPS : ", capture.get(cv.CAP_PROP_FPS))
```

```
    pTime, cTime, content_index = 0, 0, 0
    dat_file = "./file/shape_predictor_68_face_landmarks.dat"
    face_eye_detection = FaceEyeDetection('face_eye_detection')
    content = ["face", "eye", "face_eye"]
    while capture.isOpened():
        ret, frame = capture.read()
        # frame = cv.flip(frame, 1)
        action = cv.waitKey(1) & 0xFF
        if action == ord("f") or action == ord("F"):
            content_index += 1
            if content_index >= len(content): content_index = 0
        if content[content_index] == "face": frame =
face_eye_detection.face(frame)
        elif content[content_index] == "eye": frame =
face_eye_detection.eye(frame)
        else: frame = face_eye_detection.eye(face_eye_detection.face(frame))
        if action == ord('q') or action == ord("Q"): break
        cTime = time.time()
        fps = 1 / (cTime - pTime)
        pTime = cTime
        text = "FPS : " + str(int(fps))
        cv.putText(frame, text, (20, 30), cv.FONT_HERSHEY_SIMPLEX, 0.9, (0, 0,
255), 1)
        cv.imshow('frame', frame)
        face_eye_detection.pub_img(frame)
    capture.release()
    cv.destroyAllWindows()
```