AndroidFaceDemo

User Manual

2017-11-28

OPEN AI LAB

Revision Record

Date	Rev	Change Description	Author
2017-11-30	1.0.0	Initial	Morris

catalog

1 Purpose

This guide help user start to build an Android application adapt the Face-demo which uses CaffeOnACL as accelerate library for Caffe model to run on Android.

2 Terminology

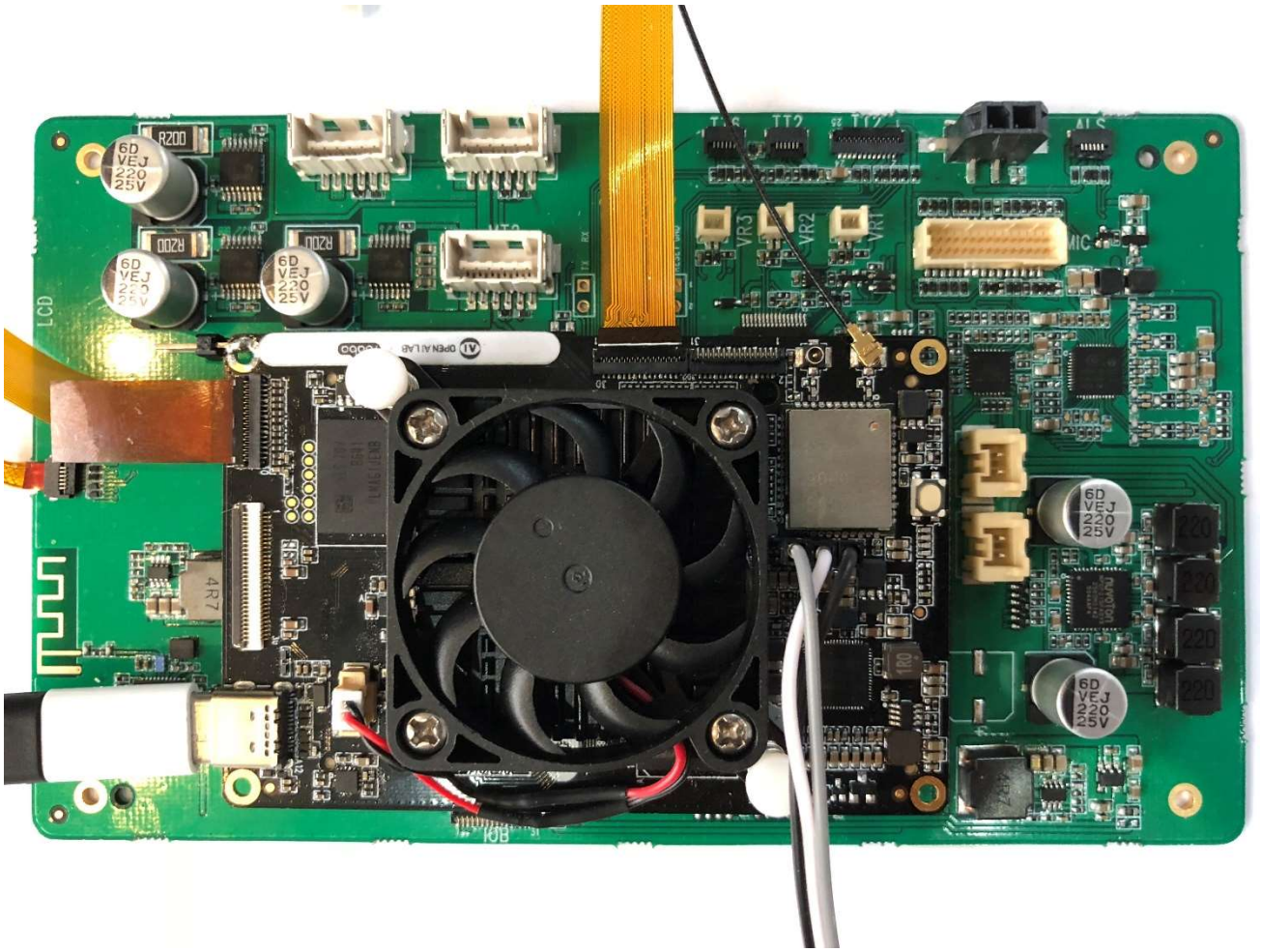
- Face-demo: https://github.com/OAID/face-demo it uses MTCNN to detect and LightenedCNN to recognize face.
- mtcnn : https://github.com/OAID/mtcnn This is a C++ project to implement MTCNN, a perfect face detect algorithm, on different DL frameworks.
- CaffeOnACL: https://github.com/OAID/CaffeOnACL it uses Arm Compute Library (NEON+GPU) to speed up Caffe and provide utilities to debug, profile and tune application performance.
- OpenCV: OpenCV (Open Source Computer Vision Library) is an open source computer vision and machine learning software library. OpenCV was built to provide a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products. Being a BSD-licensed product, OpenCV makes it easy for businesses to utilize and modify the code.

3 Environment

3.1 Hardware Platform

SoC : Rockchip RK3399

- GPU : Mali T864 (800MHz)
- CPU : Dual-core Cortex-A72 up to 2.0GHz (real frequency is 1.8GHz); Quad-core Cortex-A53 up to 1.5GHz (real frequency is 1.4GHz)



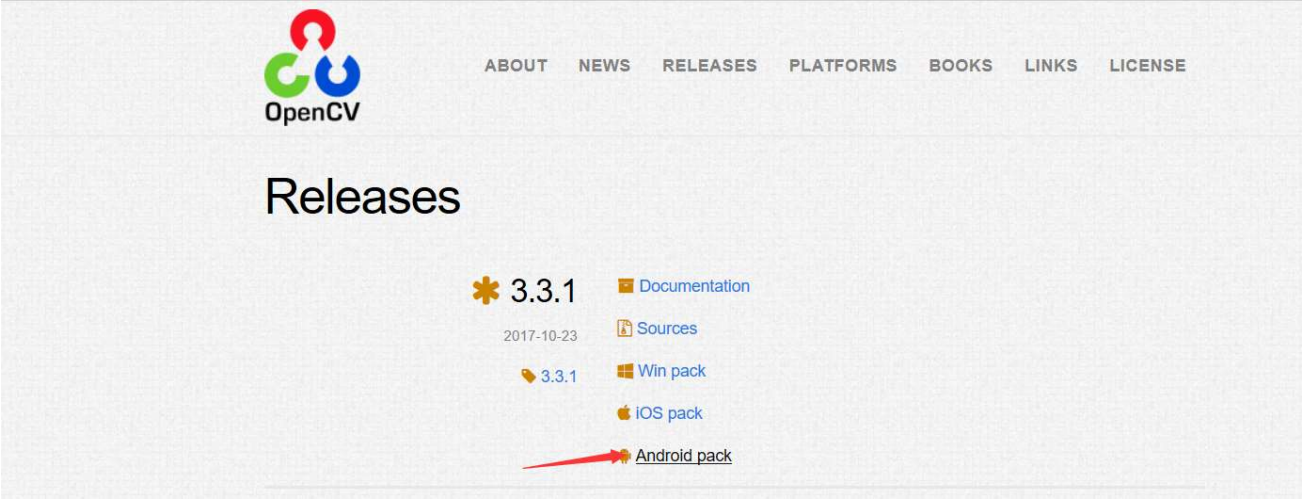
3.2 Software platform

Operating System : Android 6.0

4 Install Guide

4.1 Download OpenCV Android SDK

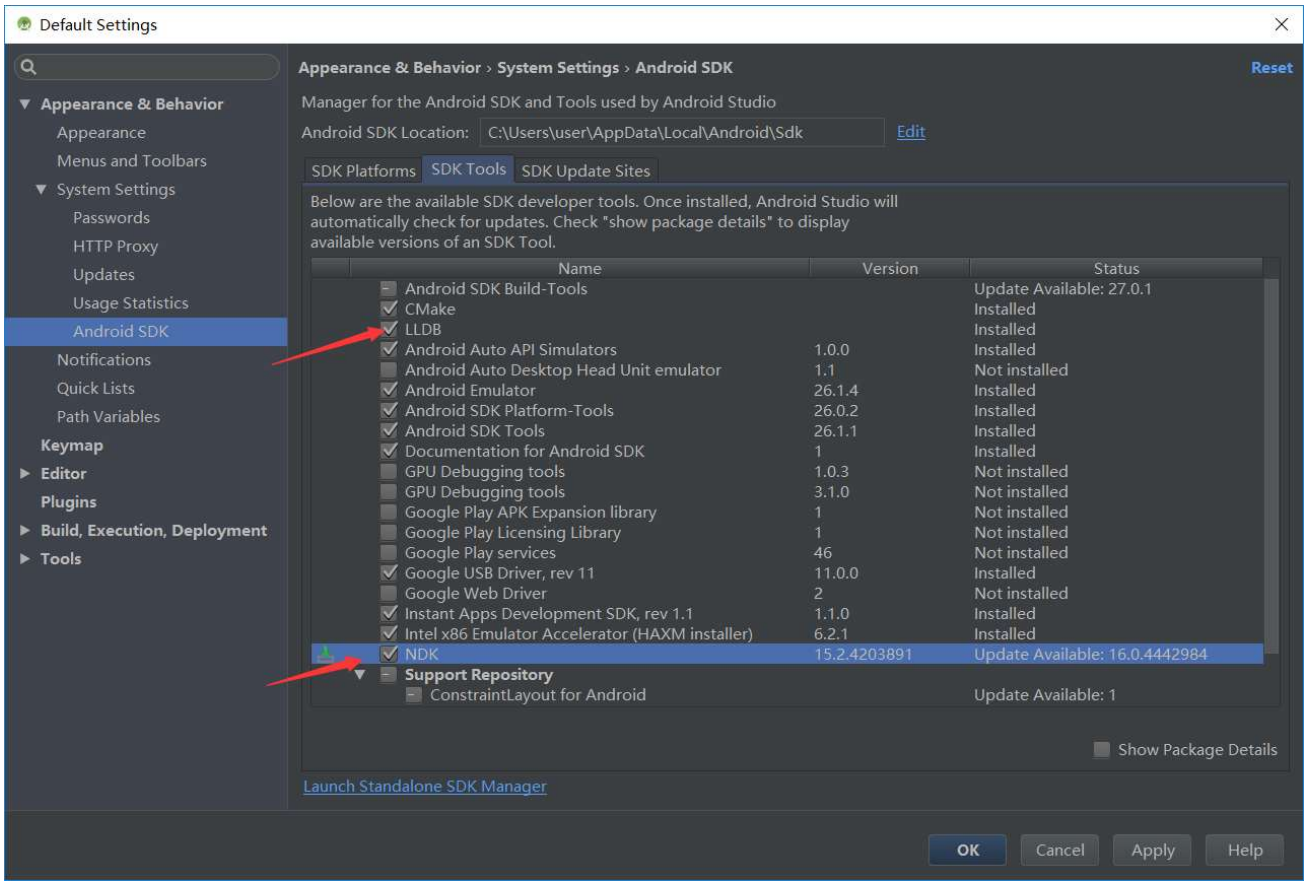
https://opencv.org/releases.html



4.2 Download Development Environment

Install Android Studio version >=2.2, in version 2.2 NDK support cmakelists.txt for NDK compile and link. NDK is needed and LLDB is preferred

http://www.android-studio.org/

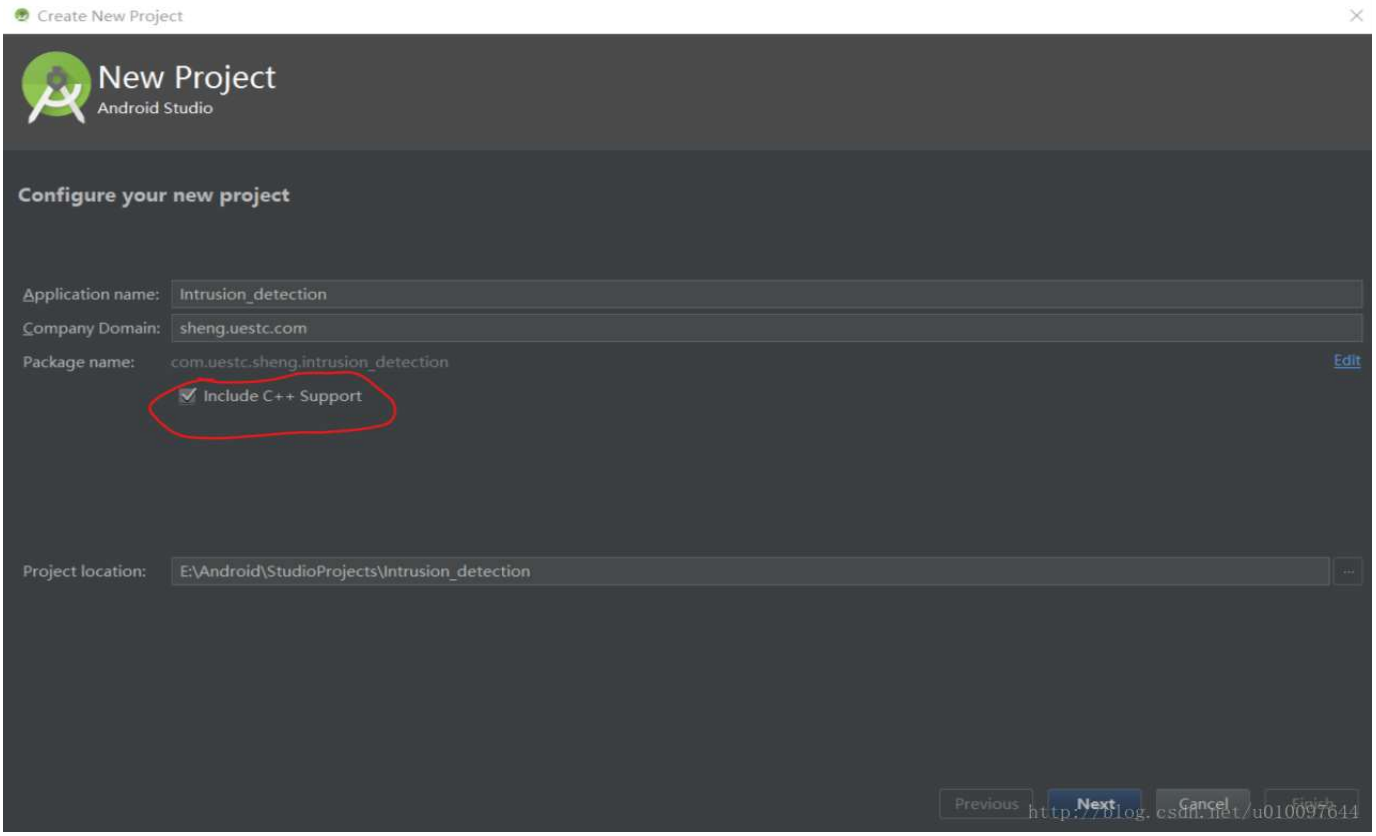


4.3 Download library source code from GitHub

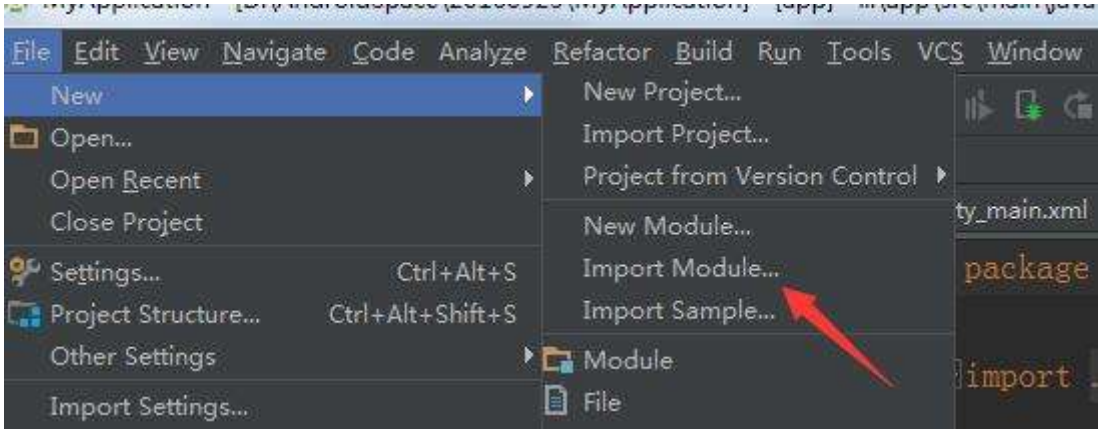
Face-demo: https://github.com/OAID/face-demo

5 Create project Guide

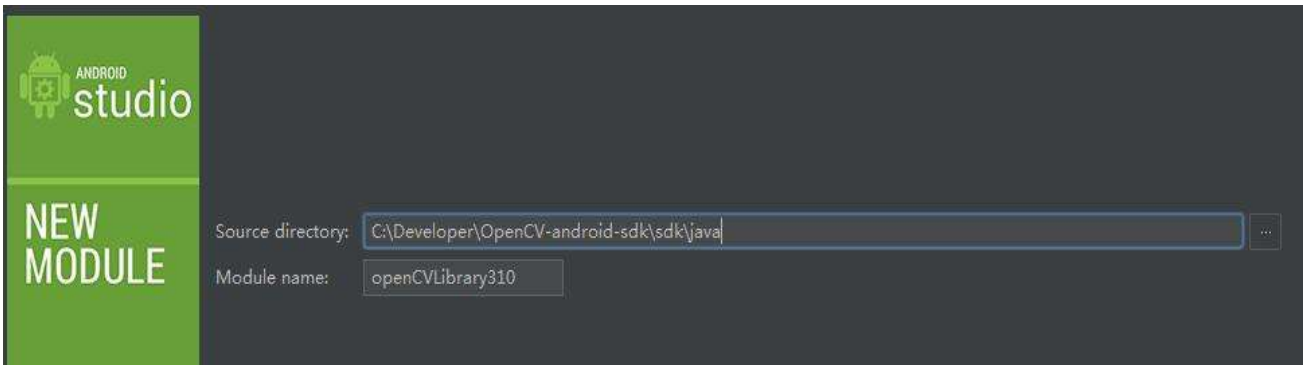
1 In Android Studio create a project with c++ support



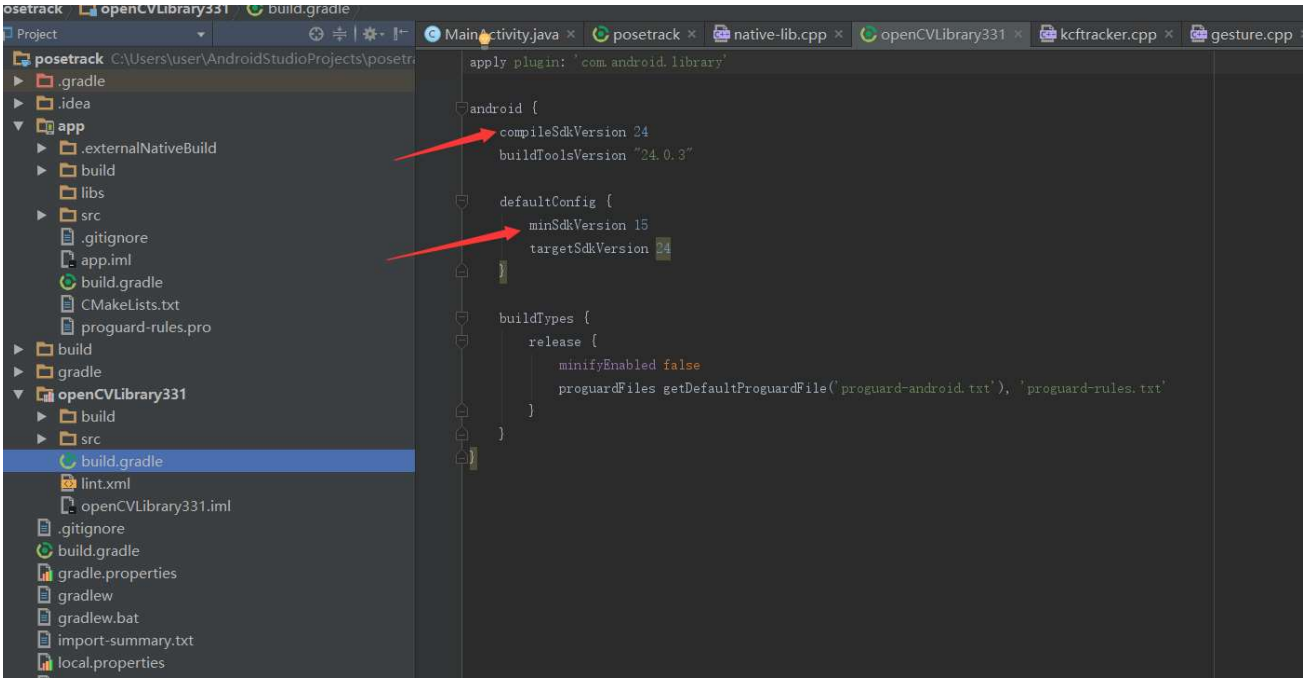
2 import OpenCV-Android-SDK to this project



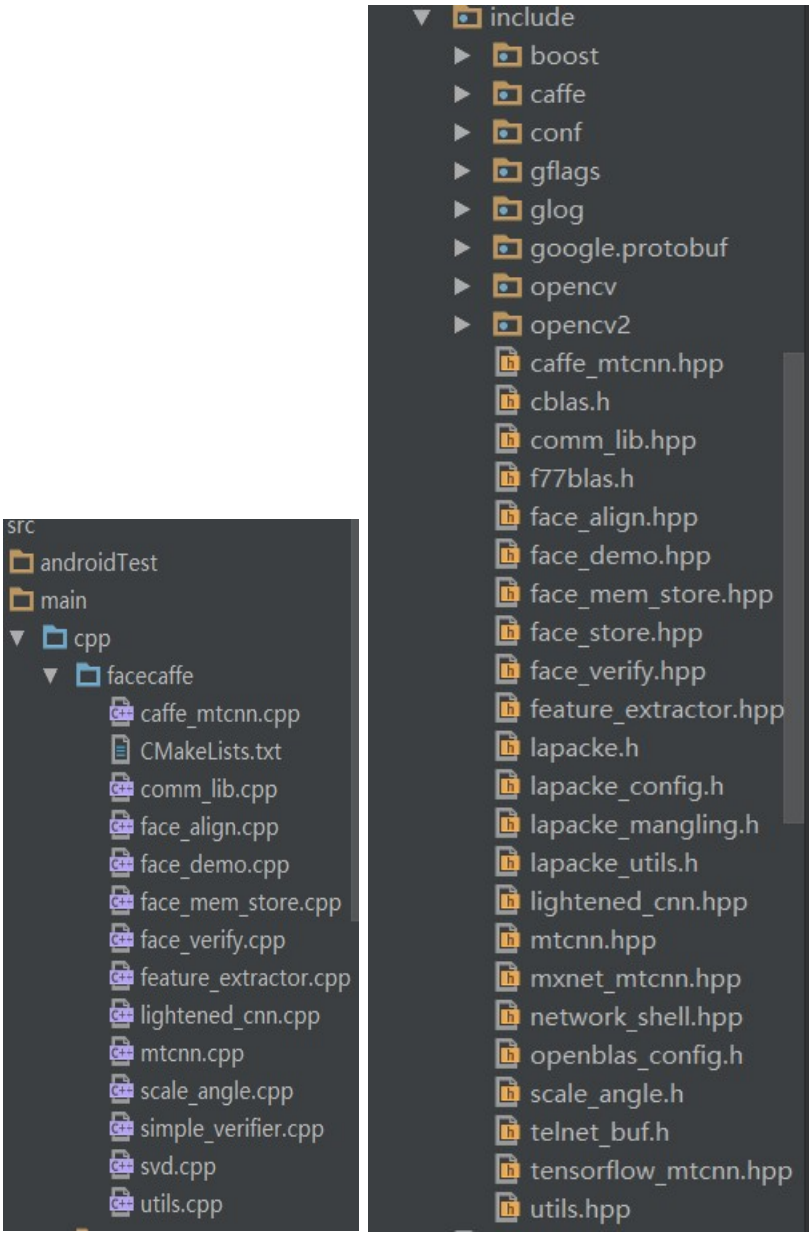
Select the directory where you store your OpenCV-android-sdk, select sub directory sdk\java.



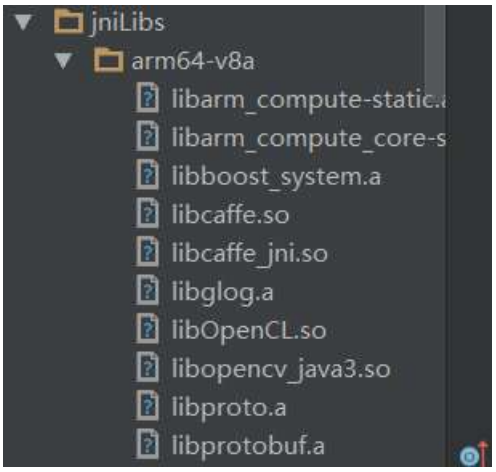
If the module built with error, change it's SDK version according to your project



3 Create sub directory in src/main/cpp named facecaffe, copy source code from face-demo to this directory, create sub directory in src/main/cpp named include, copy .h to include. The include file in AndroidFaceDemo/prebuilts/.



4 Copy static and dynamic library from AndroidFaceDemo/prebuilts/ to src/main/jniLibs



For details how to setup Android OpenCV project with NDK please refer to this blog:

http://blog.csdn.net/zxx20145/article/details/53020964

6 Function Guide

After build and install the application, please create a directory /mnt/sdcard/openailab/models and copy /AndroidFaceDemo/models to this directory before launch the APK.

When a face in the camera preview, the app will draw the rectangle on the face cover the eye nose and mouth, with an flag “x unknow’, this app only demo recognize function, you can use API register to register a face with an ID, and then it will show the ID.

Remind: This demo APK uses USB camera, in Android USB camera is used as back camera, we use OpenCV API flip to make it look like mirror mode. If you are using on board front camera please fix this in src/main/cpp/native-lib.cpp.

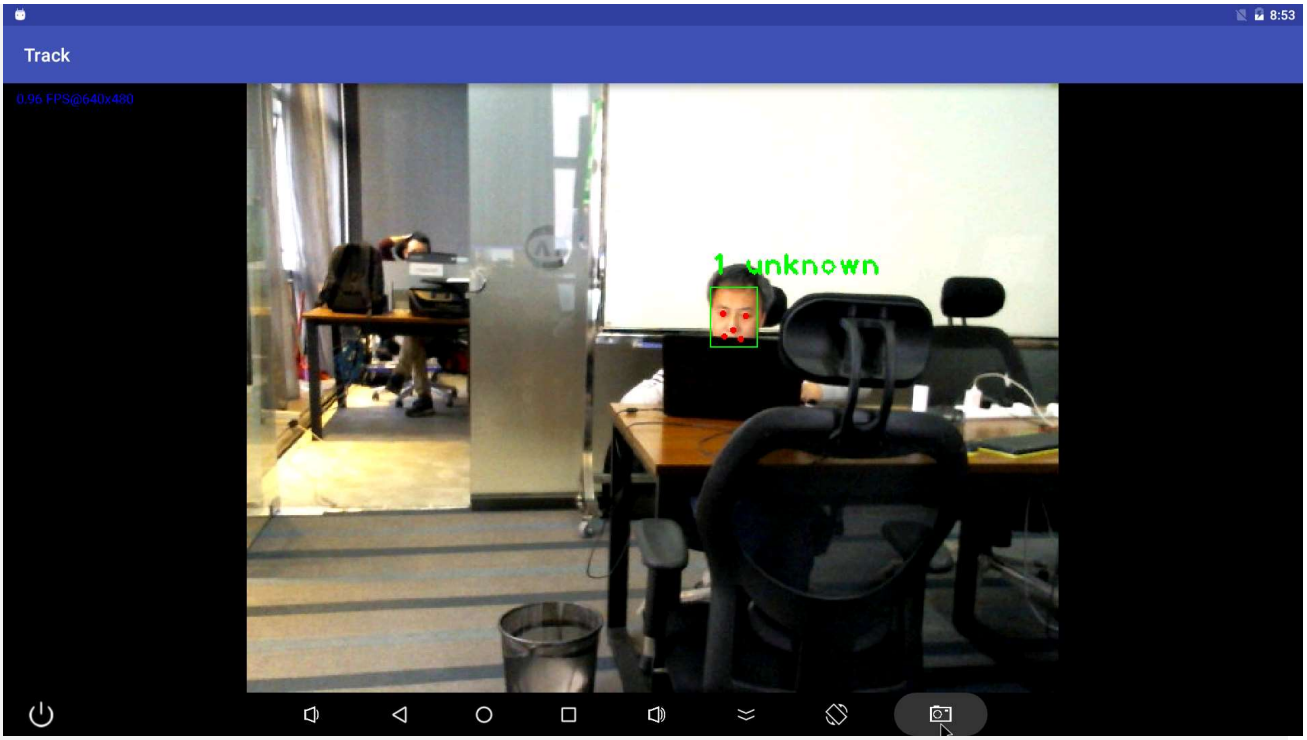


Image 6-1