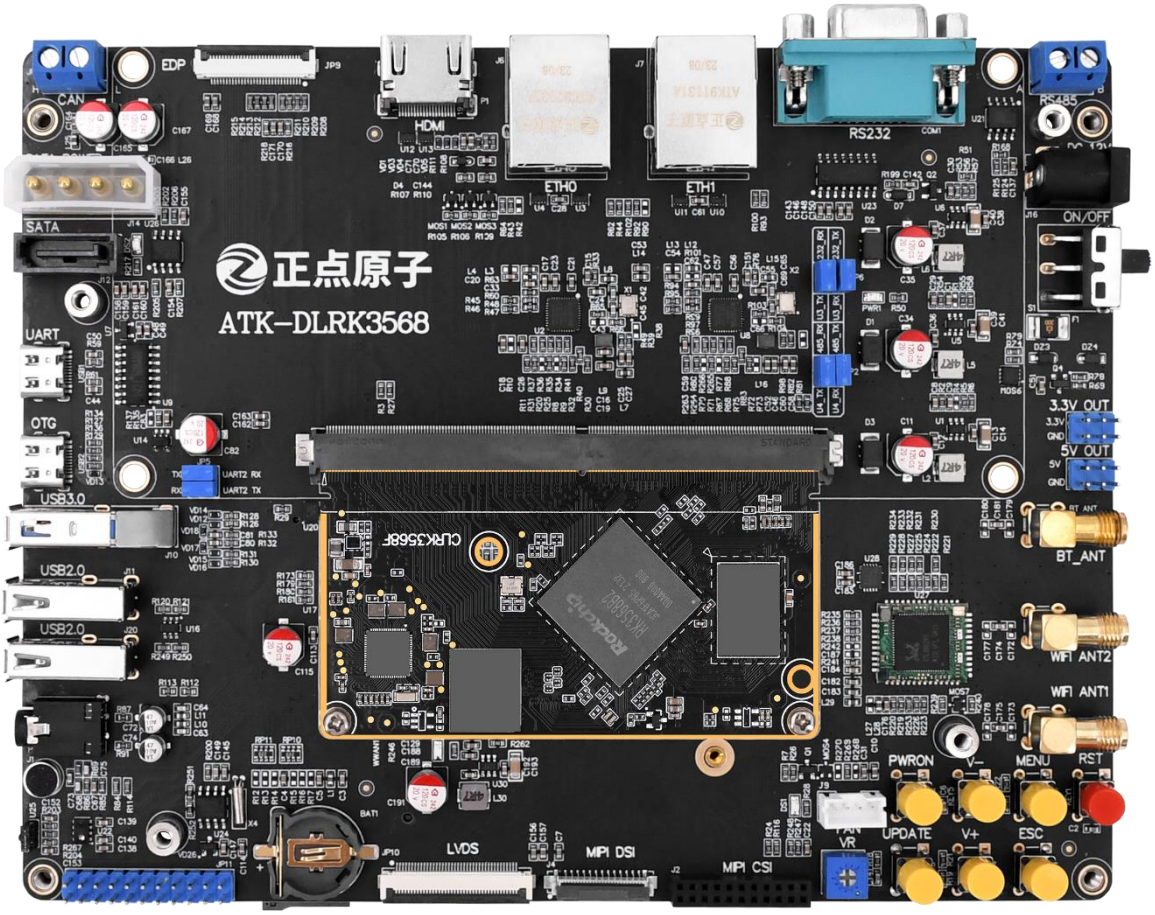
ATK-DLRK3568

Android AI Routine Test Manual

V1.0



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Revision History:

Version	Version Update Notes	Responsible person	Proofreading	Date
V1.0	release officially	ALIENTEK	ALIENTEK	2023.08.10

Catalogue

Brief

This document is a test manual for the AI application of ATK-DLRK3568 under the Android 11 system. It mainly explains how to use the Android AI routines provided by ALIENTEK.

Chapter 1. Description of the AI Routine Testing Environment

This chapter mainly provides an explanation of the testing environment during the process, including both software and hardware testing environments.

1.1 Software Platform

The software platform consists mainly of Windows 10 64-bit system and Android Studio 2022.2.1 software. In theory, Ubuntu and Mac systems are also applicable. The main point is that the version of Android Studio needs to be consistent with the documentation. Android Studio with a version lower than the documentation may not be able to compile the routines normally. Regarding the acquisition of the Android Studio software, it can be obtained from the Android official website or at the path of the development board CD A disk - **Basic Materials -> 04_softwares -> android-studio-2022.2.1.20-windows.exe**. Regarding how to install the Android Studio software, you can refer to the development board CD A disk - **Basic Materials -> 10_user_manual -> 02, Development Documentation -> 06 [ALIENTEK] ATK-DLRK3568_Android Application Development V1.0.pdf**.

1.2 Hardware Platform

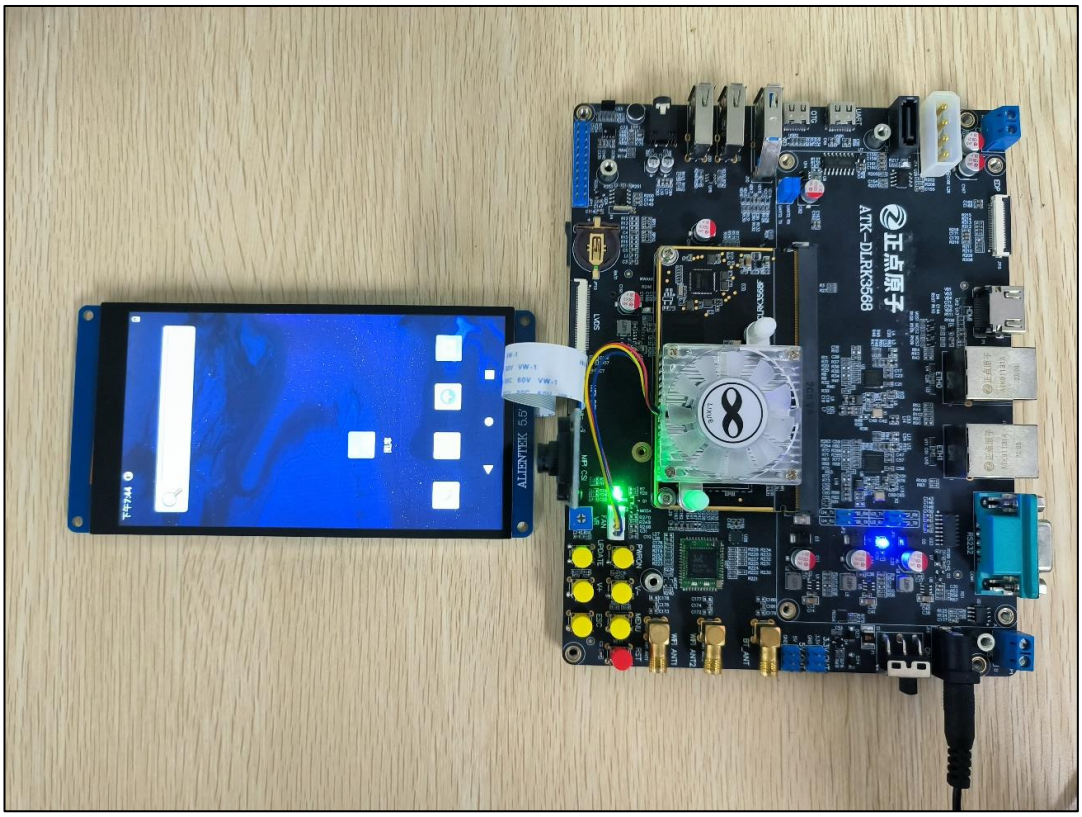
The hardware platform used in this document is the ATK-DLRK3568 development board and the ATK-OV13580 camera, as well as an external 720P resolution MIPI screen. The Android image burned onto the ATK-DLRK3568 is the CD A of the development board - **Basic Data -> 09_system_image -> 03, Android 11 System Image -> update(MIPI).img**. For details on how to burn the Android system image, please refer to the CD A of the development board - **Basic Data -> 10_user_manual -> 03, Supplementary Documents -> 03 [ALIENTEK] ATK-DLRK3568 Factory Image Burning Guide V1.0.pdf**.

Chapter 2. Testing of Android AI Routines

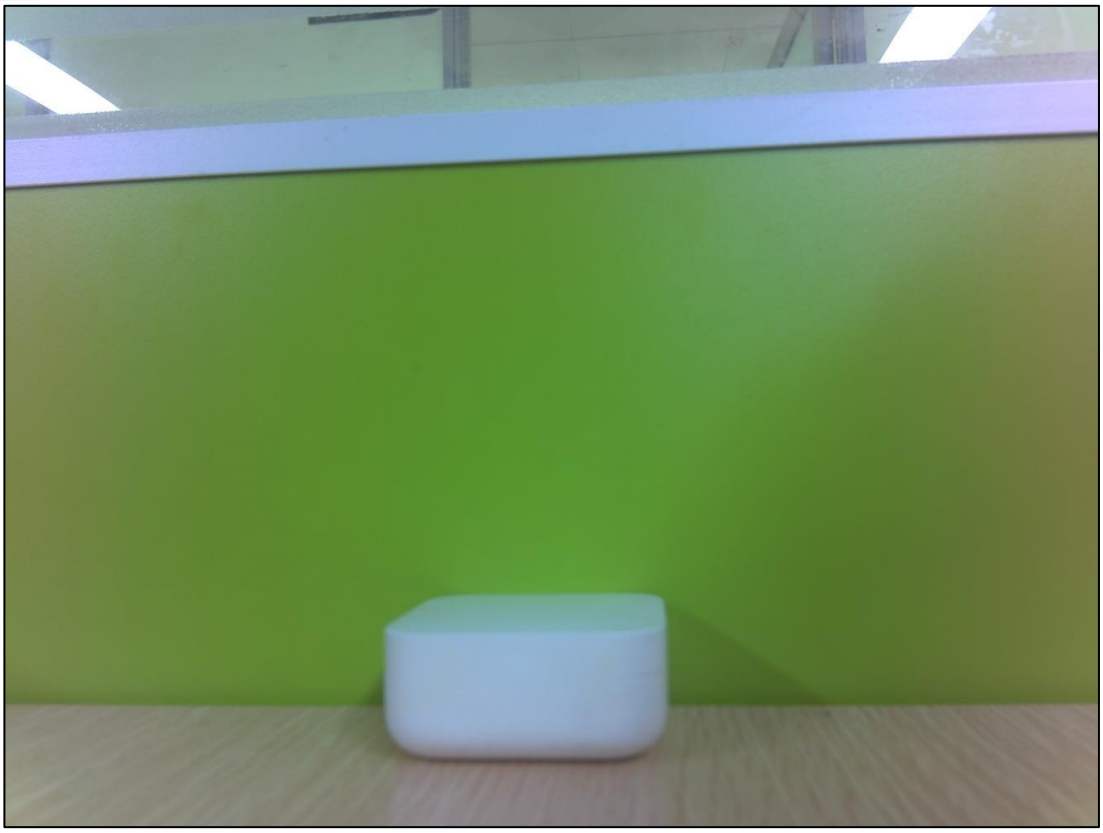
After introducing the software and hardware platforms used in this document, this chapter mainly explains how to test the Android AI routines. The source code of the Android AI routines can be obtained from the development board CD-ROM, in the A drive - **Basic Materials -> 01_codes -> 02, under the Android Studio Routine Directory.**

2.1 Android Yolov5 Classification Detection Routine

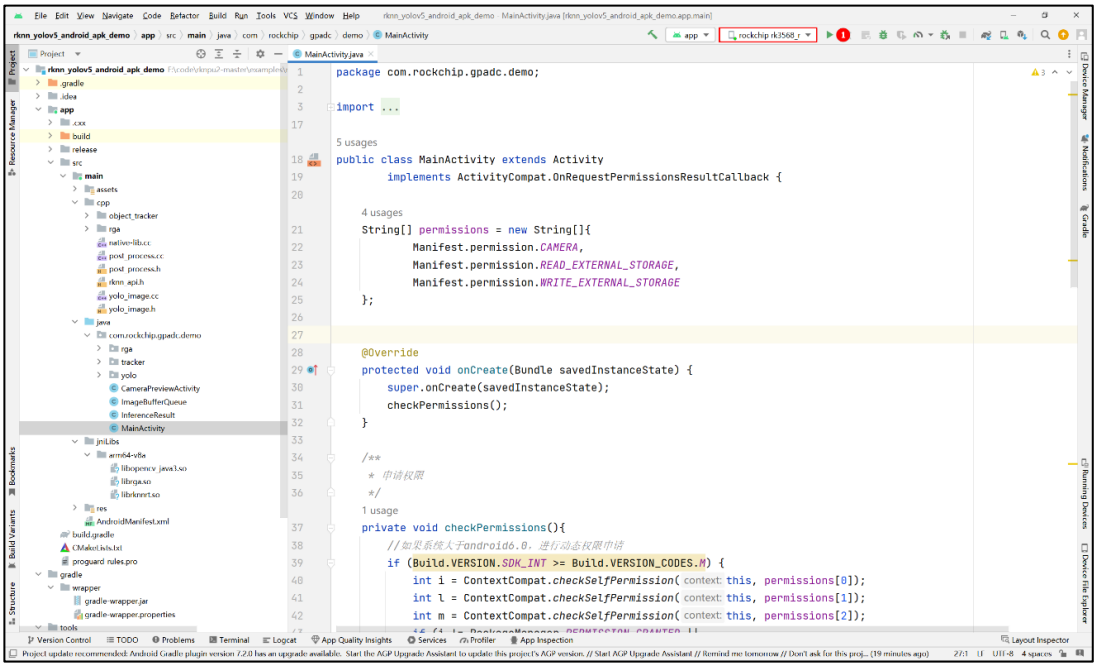
Preparation before testing: ATK-DLRK3568 + 720PMIPI screen + ATK-OV13850 camera module (**For the compatibility of other camera modules, please refer to the table at the end of this section**). Before conducting the routine test, it is necessary to connect the above-mentioned screen, camera, and ATK-DLRK3568 correctly before proceeding. The connection method of the screen and camera module should be as shown in the following figure.



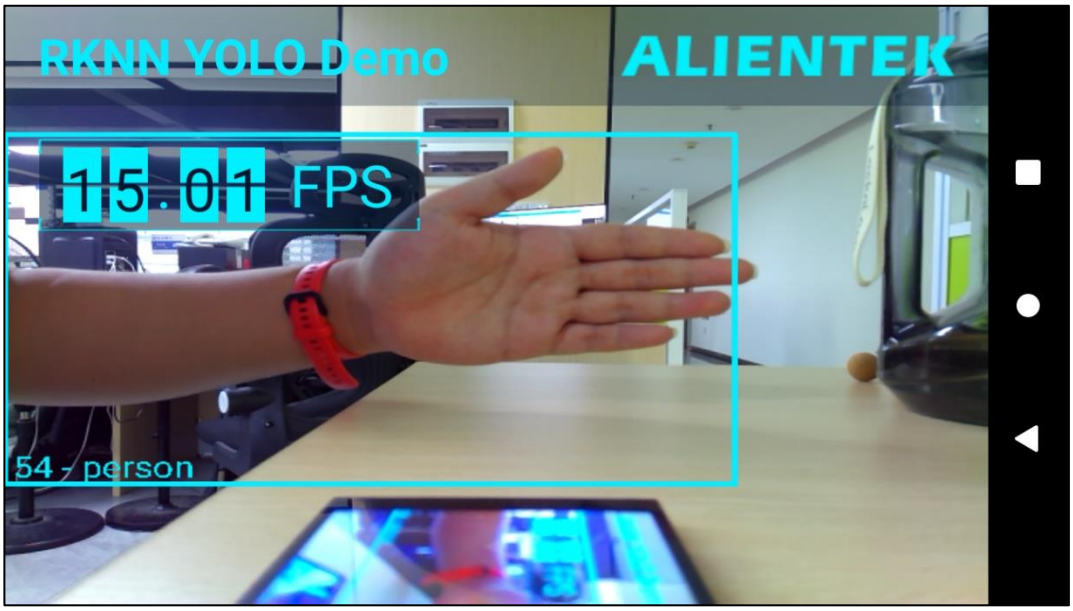
After making the hardware connections as shown in the above diagram, you can directly click on the built-in camera app of the Android system to test whether the hardware is properly connected. Under normal circumstances, the camera app can capture images through the camera, as shown in the following picture, which is the captured image from the camera using the camera app.



The source code of the Android Yolov5 classification detection routine can be obtained from the development board CD-ROM, A drive - **Basic Materials -> 01_codes -> 02, Android Studio Routines -> rknn_yolov5_android_apk_demo.rar**. It should be noted that the Android Studio version must be no lower than android studio 2021.2.1. It is recommended to directly use the Android Studio installation package provided by ALIENTEK. For instructions on how to use Android Studio to load the rknn_yolov5_android_apk_demo source code, please refer to the CD-ROM A drive - **Basic Materials -> 10_user_manual -> 02, Development Documents -> 06 [ALIENTEK] ATK-DLRK3568_Android Application Development V1.0.pdf.** If the rknn_yolov5_android_apk_demo source code is successfully loaded and the computer is connected to the ATK-DLRK3568 development board's OTG type-c interface via a data cable, it should look as shown in the following figure:



Click the run button, and on the MIPI screen connected to the ATK-DLRK3568 development board, the interface as shown in the following figure will be displayed. At the preview resolution of 720P, the frame rate for recognition can reach around 15 FPS, and the effect is still quite good.



The table below shows the performance of this AI routine when using the camera module adapted for the ATK-DLRK3568 development board:

Camera module	Identify frame rate	Note
Driver-free USB Camera	Around 15.58 FPS	The recognition effect is good.
ATK-MCIMX335	Around 15.06 FPS	The recognition effect is good.

ATK-MCIMX415	Unable to properly detect objects	The imaging direction of IMX415 is inconsistent with the image direction of the model for recognizing the object, which leads to the inability to recognize the object normally.
ATK-OV13850	15.01FPS	The recognition effect is good.