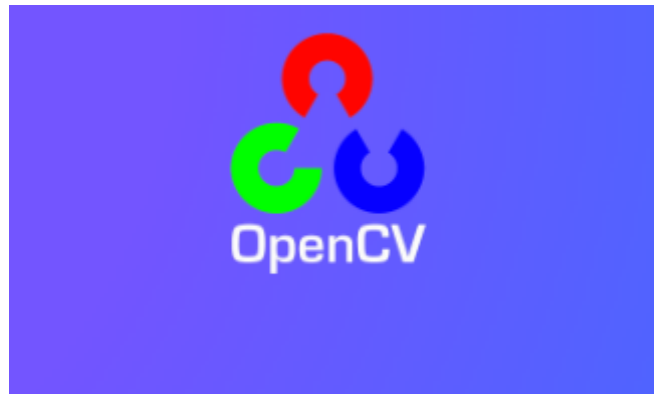# 1. Introduction to OpenCV

What is OpenCV? Its full name is Open source Computer Vision Library. As shown in the picture above, we can see the OpenCV logo, which is composed of three small circles of the three primary colors of R, G, and B. In other words, it is an open source API function library for computer vision. This means that

(1) Whether it is scientific research or commercial application, it can be used for development;

(2) The source code of all API functions is public, and you can see the program steps implemented internally;

(3) You can modify the source code of OpenCV and compile it to generate the specific API function you need.

The image processing on Raspblock uses some functions of the OpenCV function library, or it can be said that it is indispensable in most image processing design fields. As early as many years ago, OpenCV has been very useful in intrusion detection, specific target tracking, target detection, face detection, face recognition, face tracking and other fields, and these are just the tip of the iceberg of its application. Since we know that OpenCV is so universal, in this chapter we will introduce you to some very basic image processing functions used in our course, which are also some universal functions. Here we first have a general understanding of these knowledge, and then there are two practical projects of color recognition and tracking and face recognition and tracking to teach you how to get started. However, the powerful application functions provided by OpenCV are far more than this. If you are very interested in the development of Opencv computer vision library and want to learn more, the following are several websites for your reference and study:

OpenCV official homepage: https://www.opencv.org