TDA4 ISP AWB Problem

目 录

一 Problem Description

Abnormal color of some scenes captured by the right camera。

use case	Around View Monitor(4 cameras in total)
sensor	OV OX03C10

二 Problem recurrence

The reproduction is performed on the client side. When the vehicle passes through an environment with a large area of grass on the right (Figure 1), the scene in the non grass part of the right camera's field of view is bluish. When the vehicle leaves the environment (Figure 2), and there is no large area of grass on the right, the color returns to normal.
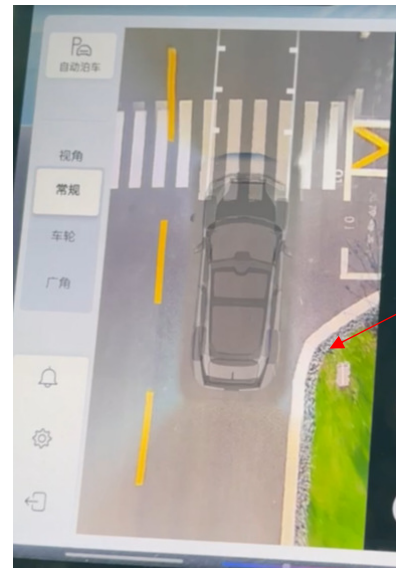

Figure 1

Figure 2

二、 Problem recurrence

　　Simulated in the laboratory, under the same ambient light source, Figure 3 is taken with a large area of green. It can be seen from the figure that the color of the object is slightly blue except for green, which is similar to the abnormal phenomenon on the vehicle. At this time, the color temperature estimated by AWB is 5659K, and the complementary RGB gain is 1072，512，1032; Figure 4 is taken without a large area of green, and its color is closer to reality. The AWB estimated color temperature is 7200K, and the complementary RGB gain is 1222，512，864.

Summary: The abnormal color in the right view is caused by a large area of green in the field of view, resulting in a low color temperature estimated by AWB.
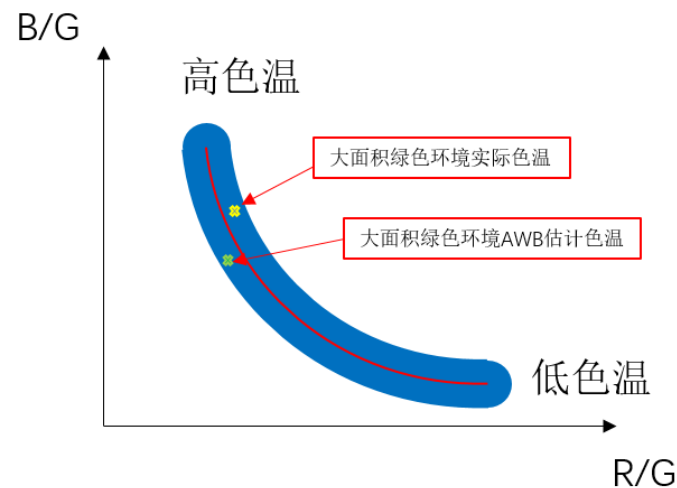

图3　　　　　　　　　　　　　　图4

三 Problem analysis

As far as we can guess，the principle of AWB algorithm is to divide the image into multiple small partitions, and count the B/G and R/G values falling on the calibration curve under each partition. When most of the falling points are concentrated at a certain color temperature, the algorithm will consider the color temperature as the current ambient color temperature. When there is a large area of green in the environment, the G value increases, while the B and R values remain unchanged, and the B/G and R/G values decrease. As is assumed in the following figure, the falling point will move to the lower left, this way, the color temperature estimated by the algorithm will be lower than the actual value, and the B gain for the image will be higher, while the R gain will be lower, So the area will turn blue except for grass.

B/G

高色温

大面积绿色环境实际色温

大面积绿色环境AWB估计色温

低色温

R/G

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